

COMMENTARY

Collaborative Medication-Related Roles for Pediatric Primary Care Psychologists

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Children and adolescents are increasingly being prescribed psychotropic medications to address mental health needs. With the difficulty in accessing child and adolescent psychiatrists, primary care providers are often tasked with initiating and managing these medication regimens. The standard of care around psychotropic prescribing in primary care often falls short of practice parameters and prescribing guidelines due to a number of factors including lack of training, time, and payment reimbursement for these services. Pediatric psychologists embedded in the primary care medical home are well positioned to undertake collaborative medication-related roles as part of the standard of care in these settings. This commentary highlights the rationale for pediatric psychologists to undertake collaborative roles in medication management, outlines what collaborative roles may look like in practice, and discusses implications for training and research. A case example is also included to highlight a collaborative consultation around medication management in primary care.

Keywords: psychopharmacology, interdisciplinary collaboration, pediatrics, primary care, integrated care

Mental health needs of children and adolescents are prevalent and are being managed increasingly with the assistance of psychotropic medications (Olfson, Druss, & Marcus, 2015). These medications are far more likely to be

prescribed by primary care providers (PCPs) than psychiatrists (Anderson, Chen, Perrin, & Van Cleave, 2015). This is likely due to the national shortage of child and adolescent psychiatrists, particularly in poor urban and rural areas (Thomas & Holzer, 2006), and the finding that primary care is often the first and only contact for a majority of families who seek and receive mental health services (Polaha, Dalton, & Allen, 2011). As a result, the American Academy of Pediatrics (AAP) released a policy statement (Committee on Psychosocial Aspects of Child & Family Health & Task Force on Mental Health, 2009) highlighting the need for pediatricians to expand their role in managing children's mental health needs including around psychotropic medication management.

While most PCPs consider it as their responsibility to identify children with mental health needs, they generally do not believe it is their

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responsibility to manage these conditions, with the exception of ADHD (Heneghan et al., 2008). Reasons why PCPs report they resist managing mental health problems include a lack of confidence, knowledge, skills, and time to manage these concerns (e.g., Horwitz et al., 2007). This is not surprising given the lack of mental health training that PCPs receive in medical school and residency (McMillan, Land, & Leslie, 2017), and studies demonstrating that PCPs spend more time with patients when a mental health concern is raised and receive less reimbursement (Meadows, Valleley, Haack, Thorson, & Evans, 2011). In recognition of these barriers, three approaches have been trialed to address the concern related to the ability of PCPs to confidently manage psychotropic medication for youth in primary care: (a) clinical practice guidelines/toolkits; (b) coordinated psychiatric services; and (c) collaborative care models.

Clinical practice guidelines and toolkits provide PCPs with screening measures as well as step-by-step algorithms for determining diagnoses and selecting appropriate treatments including medication dosing guidelines (e.g., Cheung et al., 2007). Guidelines are designed to improve PCP knowledge and confidence in managing behavioral health conditions. However, brief guidelines often lack the nuance needed to address the complexity inherent in the management of mental health conditions (e.g., physical, mental, and social comorbidities) and do not address the time barriers that PCPs face. This may be why practice-based studies have indicated that practice guidelines and toolkits are implemented with significant variability in community pediatric settings (e.g., Epstein et al., 2014).

Coordinated psychiatric services provide training and offsite consultation to increase the knowledge, skills, and confidence of PCPs in managing psychotropic medications in primary care (e.g., MA Child Psychiatry Access Project (MCPAP); Straus & Sarvet, 2014). The strength of this model is that it affords support for PCPs to manage more complicated cases that do not neatly fit within the practice guidelines through case-based consultation. Research examining the effectiveness of coordinated psychiatric service models suggests these services lead to considerable improvements in access to psychotropic medication management and PCP confidence in caring for children with mental

health problems, and are generally well received by PCPs (Kuehn, 2011). The limitation of this model is that coordinated services often do not address two of the most salient barriers for PCPs: lack of time and reimbursement.

Collaborative care models strive to address the needs of PCPs onsite by screening for a specific, high-frequency condition (e.g., ADHD, depression) and engaging in a protocol-driven decision process that may include onsite or coordinated behavioral health services and offsite psychiatric consultation (e.g., ROAD, Richardson et al., 2014; IMPACT, Katon et al., 1995). The strength of this model is that it builds on the coordinated models to include care managers that can provide brief, onsite behavioral health services and help PCPs manage administrative tasks such as administering, scoring, and documenting screening measures. Emerging evidence supports that these models can be more effective than usual care for specific conditions such as depression (e.g., Richardson et al., 2014). A limitation of this model is the need to hire care managers, which may be financially unfeasible without grant support. A model that addresses a limited scope of concerns may be perceived as inconsistent with the current zeitgeist of providing efficient care for a large portfolio of presenting concerns (Stancin & Perrin, 2014). Moreover, care managers often lack sufficient training to support the PCPs in achieving the diagnostic clarity that is necessary for making decisions regarding treatment recommendations for complex cases or for identifying behavioral treatment resources.

The purpose of this paper is to present collaborative medication management with integrated primary care psychologists as a promising alternative model. Specifically, this paper will outline the rationale for the involvement of pediatric psychologists in collaborative medication management, describe practice roles, and discuss implications for training and research. A case example is also included to highlight key advantages of collaborative medication management by pediatric psychologists.

Rationale for Involvement of Pediatric Primary Care Psychologists

Collaborative psychotropic medication management refers to a partnership between a physician who prescribes a medication and a pro-

professional with specific drug therapy knowledge and/or expertise on a clinical concern for which a drug is being prescribed. The partnership is intended to augment the competencies of the physician in the context of assessment/diagnosis and treatment selection, implementation, and monitoring. Pediatric primary care psychologists possess the clinical competencies to engage in this type of collaborative professional practice. Understanding neurobiological bases of behavior and medication management of chronic conditions are included as core competencies of pediatric psychologists (Palermo et al., 2014). In fact, these competencies have long allowed psychologists to undertake numerous collaborative medication-related roles. Vanden-Bos and Williams (2000) found that a majority of psychologists are involved in determining when medication evaluations are indicated (95%), deciding whether to initiate medications (87%), consulting with physicians about medication changes (94%), discussing medication-related issues with patients (84%), and recommending a specific medication (60%). As further evidence of increasing competency that many psychologists are obtaining, several states (e.g., New Mexico, Louisiana, and Idaho, among others) have passed legislation granting prescriptive authority to psychologists.

Pediatric primary care psychologists' positioning within the medical home allows for comprehensive, coordinated, team-based care that improves access and quality of care (Asarnow, Kolko, Miranda, & Kazak, 2017; Stancin & Perrin, 2014). Primary care psychologists often serve many roles (e.g., consultant, coordinator, treatment provider) and are equipped to address the diverse range of physical and mental health needs that present in primary care. This breadth and flexibility allows psychologists in primary care to be efficient and productive as collaborative medication management is just one of several clinical activities performed.

This role and function is increasingly important with the high prevalence of off-label prescribing (i.e., prescribing for an intended use that is different from the FDA-approved use), polypharmacy (i.e., prescribing of two or more drug agents simultaneously), and black-box warning labels (i.e., notification of increased suicide risk with antidepressant use in pediatric populations; AACAP, 2015). Of particular concern is the rise in psychotropic prescribing in

preschool populations, particularly stimulants and clonidine (Rappley, 2006).

Although AAP guidelines recommend behavioral interventions as a part of first-line treatment for school-age children (e.g., AAP, 2001), PCPs may be unaware of the range of evidence-based treatment modalities such as psychotherapy or family-based therapy. Further, limited access to these services often force PCPs to decide whether a child should go untreated or start a medication trial prior to behavioral health treatment. Pediatric psychologists in primary care address this problem by increasing knowledge of and access to evidence-based treatments for pediatric patients within primary care which additionally allows for careful joint management and communication (Asarnow et al., 2017), which may improve clinical outcomes and reduce costs (e.g., Pelham et al., 2016; Page et al., 2016).

Collaborative Roles in Medication Management

Supporting Diagnostic Clarity

Routine and selective behavioral screening has been encouraged to assist PCPs in identification of behavioral health conditions that may benefit from psychotropic or behavioral interventions (Weitzman et al., 2015). However, the proliferation of brief behavioral screening measures for ADHD, depression, and other pediatric behavioral conditions may tempt a well-meaning PCP to confuse "screening" with "assessment," and to use screening results as a basis for diagnosing disorders and making psychotropic treatment decisions (Perrin & Stancin, 2002). Primary care psychologists are trained to diagnose mental health disorders by incorporating historical, interview, observational, and collateral assessment data. They are also trained to evaluate the psychometric properties and appropriateness of screening and assessment procedures for an intended purpose. Thus, primary care psychologists are ideally prepared to assist PCPs in providing diagnostic clarity and guidance regarding treatment recommendations including psychopharmacologic decision making.

Providing Psychotropic Information to Families

Psychologists may provide information regarding potential risks and benefits to assist patients and families in making informed decisions about pharmacotherapy as a stand-alone treatment or in combination with behavioral treatment. This information may include discussion regarding what psychotropic medications can and cannot do for a given condition. This is important as in recent years there has generally been increased public acceptance regarding the pharmacological treatment of mental health conditions, including overprescribing of children in foster care and receiving Medicaid (Pires et al., 2013; Government Accountability Office, 2014). Meanwhile, there is wide recognition that psychosocial interventions are generally underutilized (AACAP, 2015), particularly with the most marginalized and underserved child populations. This information may empower patients for more active roles in treatment decision making by advising them on a wider range of treatment options that may have varying levels of alignment with their belief systems.

Joint Planning and Care Coordination With PCPs

Psychologists can provide consultation to PCPs regarding the integration of the pharmacological intervention within existing services. The consultation can review the empirical support regarding relative benefits for psychotherapy versus medication in a cost-to-benefit framework. Data gathered by psychologists has much to offer PCPs in terms of problem identification and treatment decision making. Psychologists embedded in a primary care clinic are positioned to recommend and implement appropriate evidence-based behavioral interventions, perhaps as a first-line treatment (typically for subclinical or mild to moderate clinical presentations) before or in conjunction with medication initiation. Patients who do not improve with behavioral intervention may have a follow-up appointment with the PCP to discuss potential medication initiation in conjunction with ongoing behavioral therapy.

This collaboration should be guided by the child and family with the goal of ensuring that

care provided is based on a case conceptualization/formulation and encompasses a biopsychosocial framework. This framework should include consideration for costs (financial and clinical) and patient belief systems (acceptability and preferences). Joint planning must recognize and address the risk for fragmentation and/or duplication in services and approach care from the least restrictive/intrusive perspective, particularly regarding medication usage.

Addressing Barriers to Adherence

Evidence-based treatments, including use of psychotropic medication, are unlikely to be effective unless the patient and family are engaged in their care and find the treatment to be acceptable. Without engagement and empowerment in the decision-making process, the patient and family are likely to feel marginalized and not see the intervention as occurring in alignment with their values. While the efficacy of psychotropic medication for certain conditions is clear and robust, many patients may still not find this treatment modality to be acceptable from a patient preference perspective (e.g., side-effect profile, stigma associated with taking a psychotropic medication, family history/experiences with prior usage; APA Presidential Task force on Evidence-Based Practice, 2006). These preferences may influence medication adherence as the literature suggests that nonadherence and early discontinuation rates with psychotropic medications, while variable depending on the drug class, are generally high (Gajria et al., 2014). Because the patient can often follow up for their care with the psychologist after initiation of medication, this psychologist can identify and address unexpected issues potentially affecting adherence or compliance (e.g., pill swallowing difficulty, lack of information regarding treatment regimen; taking different dosage than intended). Psychologists can work directly with the patient and family to address these variables or with the PCP to discuss alternative routes of administration such as liquids, chewables, or transdermal patches.

Evaluation and Monitoring of Medication Effects

Professional guidelines for physician prescribing of psychotropic medications stipulate

that medication use be monitored for safety and effectiveness (AACAP, 2015). However, data suggests that this close monitoring of response to intervention does not routinely occur (Government Accountability Office, 2014; Epstein et al., 2008). Given the continuity of care afforded in the primary care medical home setting, psychologists are positioned to conduct this monitoring using a number of evaluation approaches.

In general, these approaches use validated instruments in the context of single-case design frameworks to measure response to medication initiation compared to baseline. The simplest format occurs via narrow-band rating scales or designated progress-monitoring forms (e.g., Columbia Impairment Scale; Bird et al., 1996; NICHQ Vanderbilt Assessment Monitoring and Follow-up; AAP, 2002; PHQ-9a; Kroenke & Spitzer, 2002; SCARED; Birmaher et al., 1999; Child and Adolescent Symptom Inventory Progress Monitor-Teacher; Sprafkin, Mattison, Gadow, Schneider, & Lavigne, 2011; IOWA Conners Teacher Rating Scale; Sprafkin & Gadow, 1996). For side-effect monitoring purposes, there are instruments (e.g., Stimulant Drug Side Effects Rating Scale; Barkley, 1998) that may more accurately target specific physiological effects not assessed in the progress-monitoring scales.

Another tool that has a dual purpose as a behavioral treatment and a progress monitor is a daily report card (i.e., DRC or home-school note) intervention. This approach provides a cost- and time-effective method of monitoring behavioral response to intervention in the performance-based classroom setting where mental health symptoms often present. Benefits of this approach are its high acceptability to parents and teachers (Chafouleas, Riley-Tillman, & McDougal, 2002), its ability to enhance continuity between the home and school, and its provision of quantitative and qualitative data that can be shared periodically with the PCP for progress monitoring and decision-making purposes.

Considerations in Making Collaborative Medication Management a Practice Reality

Training

Professional psychology, and specifically health-oriented subfields such as pediatric psy-

chology, are deemed to be “health care professions” (Health Service Psychology Education Collaborative, 2013). With that distinction, there are assumed competencies in more traditional psychosocial and behavioral proficiencies, but also in medically oriented proficiencies in care delivery. The growth of integrated primary care and patient-centered medical homes have showcased the unique training competencies that psychologists possess given their education and training in APA-accredited doctoral and internship programs.

These competencies are uniquely tailored for collaboration with other health professionals, including roles in medication management. Formal training in professional psychology encompasses knowledge in the neurobiological basis of behavior, program evaluation and practice-based research including single case research designs, consultation and liaison methods, behavioral assessment techniques and therapies, and behavior modification. Training in the area of pediatric psychology in particular includes knowledge of pediatric acute and chronic illness and medical management from the medical literature, including the effects of disease process and medical regimens (Palermo et al., 2014).

Pediatric psychologists are also versed in understanding the various systems in which children interact (e.g., family, school, community, and health care systems) and the importance of coordinating care among these systems. These cross-cutting knowledge competencies position psychologists to undertake roles that bridge the gap between where medication regimens are prescribed (primary care clinic) and the performance-based settings where children interact (home, school, social settings). Hoffses and colleagues (2016) highlight the importance of these intersystem skill sets in a recent review of competencies necessary for pediatric psychologists in integrated primary care settings.

As early as 1981, the APA recognized the need for psychologists to be trained in psychopharmacology (McGrath, 2010), and has since delineated a guiding model consisting of three distinct levels for practice roles. Level 3 roles are fixed and mandated in terms of the pathway to that level of practice. Currently however, recommendations regarding the intensity/content of training necessary to undertake Level 1 and 2 roles are deemed to be “aspirational” rather than as rigid mandates, thus providing a

degree of flexibility in how practitioners and training programs determine how they elect to meet minimal competency standards for each role. Ultimately, these medication-related roles must correspond to the level of training one has received to perform those roles per ethical guidelines (APA, 2010).

Level 1 (i.e., Psychotropic Information Provider) roles pertain to involvement in treatment collaboration and decision making through the act of providing empirical/research support to relevant stakeholders (families, PCPs, etc.) on uses/indications, contraindications, and side/adverse effects. This is the minimal acceptable level of psychopharmacology training for psychologists. Training for this minimal level of involvement is attained via coursework that should already be included at the doctoral level (biopsychology, biological bases of behavior, or psychopharmacology). Many graduate training programs may only offer a full course in psychopharmacology as an elective or elect to embed psychopharmacology modules within pre-existing coursework.

Level 2 (Collaborative Practice) roles pertain to involvement in monitoring/evaluation of dose–response for medication titration and side-effect monitoring, as well as enhancement of pharmacotherapy integration into a comprehensive treatment plan. Training for these roles includes multiple courses at the graduate level (e.g., developmental psychopharmacology, pathophysiology, and psychodiagnosis) plus supervised practice. This practice role is ideal for preparation to collaborate/consult on psychotropic drugs with other prescribers who may seek counseling of a psychologist. Practical ways to achieve this level are through either formal graduate coursework listed above or through formal internships/fellowships that include this aspect in their training curricula (e.g., teaching hospitals that offer collaborative training with the departments of psychiatry; see example description of MetroHealth model below as a pathway for obtaining competency for Level 2 roles).

Level 3 (Prescriptive Authority) roles allow psychologists to prescribe, administer, discontinue, and/or distribute medications used in the diagnosis, treatment, and management of individuals with psychiatric, mental, cognitive, nervous, emotional or behavioral disorders. While prescriptive authority has long been the subject

of contention, increasing numbers of psychologists are opting to obtain the required training. The APA Designation Committee for Postdoctoral Education and Training Programs in Psychopharmacology for Prescriptive Authority (“RxP Designation Committee”) was approved by the APA Council of Representatives in 2009 to provide public recognition of postdoctoral psychopharmacology education and training programs that meet certain minimum standards and published criteria. These standards assume that training for prescriptive authority would be conducted at the postdoctoral level with conferral of a master’s degree or certificate in psychopharmacology through specialized programs (e.g., Alliant International University, Nova Southeastern University, Fairleigh Dickinson University; Shahidullah, & Carlson, 2012) and passing of the Psychopharmacology Examination for Psychologists (PEP). Moreover, standards emphasize the integration of didactic instruction and supervised experience, competence based assessment, and a capstone competency.

Although psychologists may never take a graduate-level psychopharmacology course, the training they do receive is grounded in psychological science with an emphasis on integrating knowledge from biology, physiology, pathophysiology, and neuroscience as appropriate. Moreover, this training is aimed at equipping practitioners to be critical consumers of the scientific research in their reliance on selecting, implementing, and evaluating empirically supported interventions, regardless of whether they are psychosocial or biological in nature. Pragmatically speaking, because of the already over-extended training for most doctoral programs and difficulty in adding additional coursework, Shahidullah and Carlson (2012) acknowledge that for many psychologists, training to undertake collaborative medication roles comes from informal didactic exposure (e.g., seminars, lectures, grand rounds, supplemental psychopharmacology readings, research) and clinical exposure through practicum in mental health and medical settings.

One innovative model for interprofessional training to prepare psychologists working in primary care to provide Level 2 (Collaborative Practice) services has been piloted at MetroHealth Medical Center. Psychology doctoral residents are embedded and fully integrated in pediatric resident primary (“continuity care”)

clinics and provide a full range of prevention, evaluation and brief interventions services, including consultation regarding medication matters. In monthly psychiatrist-led didactic and case-based psychopharmacology educational conferences, psychology residents receive training on pediatric psychopharmacology, pathophysiology, and evidence-based treatment recommendations for common pediatric conditions (e.g., ADHD, Major Depressive Disorder) alongside pediatric medical residents. They are given guidance on gathering patient and family information during mental health assessments to inform medication decisions (e.g., previous history of psychotropic medication, side-effect history, family experiences with psychotropic medications). In addition, they learn how to monitor and evaluate effectiveness and side effects of medications, and can provide input on medication adjustment decisions.

During continuity care clinics, psychology doctoral residents (under supervision of faculty pediatric psychologists) collaborate with pediatric residents and attending pediatricians to identify patients for psychotropic medication consultation. Psychology residents conduct mental health assessments of patients in the clinic and review cases with a child and adolescent psychiatrist. The psychiatrist then messages recommendations to the primary care team (psychology resident, pediatric resident and attending PCP) through electronic health records. The pediatric resident assumes responsibility for prescribing the medication and the psychology resident collaborates in monitoring medication response.

Preliminary program evaluation indicated that not only did this program greatly increase access to psychiatric consultation services for patients, but it also increased psychology and pediatric resident knowledge and comfort with psychotropic medication management. Because of this training, interns should be competent to provide Level 2 psychopharmacology services in integrated care settings.

It is important to note that due to the lack of literature on graduate school training on medication-related roles, there is a lack of clarity about the nature and intensity of training needed to meet competency standards, particularly for Level 1 and 2 roles. Trainers and practitioners need to be mindful of the ethical issues related to their professional competency to perform a

role and understand that there are not clear answers regarding the pathway to “aspirational” levels of competency. There is a need for future work to clearly articulate necessary knowledge and competencies so that training programs can modify curricula to support psychologists to take on Level 1 and 2 collaborative roles.

The interested reader can obtain more information on increasing their competence in this area by reviewing training resources from the new APA Integrated Health Care Alliance at http://pages.apa.org/ihca/?_ga=2.168648673.1932055447.1498218267-694597681.1498218266. Though not specific to psychopharmacology training, the Integrated Health Care Alliance provides training and support leading to essential skills for integrated care including evidence based clinical practices and working collaboratively on a health care team. Also, psychologists interested in learning more about advanced training in psychopharmacology possibly leading to prescriptive authority are referred to the APA website for information on approved programs: http://www.apa.org/education/grad/psychopharmacology.aspx?_ga=2.8221810.1932055447.1498218267-694597681.1498218266.

Outcomes of Collaborative and Consultative Care

Research on adult models of integrated primary care have found that integration results in improved PCP medication prescription practices (Katon et al., 1995) and increased patient adherence and follow-through with treatment (Mynors-Wallis, Gath, Day, & Baker, 2000). However, there is limited data on the effects of integrating psychologists into pediatric primary care on the prescription practices of PCPs and patient outcomes. Radovic and colleagues (2014) found that pediatric PCPs who read a clinical vignette describing an adolescent with moderate to severe symptoms were more likely to recommend psychotropic medication if they had access to an onsite behavioral health provider. However, Mayne et al. (2016) found that simply having a behavioral health provider co-located in the practice was not associated with differences in actual prescribing practices. Richardson and colleagues (2014) found that a collaborative care program for adolescents that included specific interventions addressing adherence resulted in improved adherence to psy-

chotropic medications. Thus, the limited data available suggest simply having a mental health provider present in primary care may not impact prescribing practices or outcomes.

Moving forward, it is recommended that research on the effects of integrating pediatric psychology services in primary care be organized around the “Quadruple Aim” of health care reform (Bodenheimer & Sinsky, 2014). Specifically, it will be helpful to determine whether collaborative psychotropic medication management improves *provider satisfaction* regarding medication management, *patient satisfaction* with prescribing practices, *patient outcomes* (e.g., improvements in adherence, symptoms, and impairment), and whether integration can *reduce health care costs*. For example, pediatric psychologists in primary care may reduce costs through more accurate diagnostic processes, improving adherence thereby reducing unnecessary dosage increases, and initiating behavioral interventions, which has been shown to reduce the need for and cost of medications for some conditions such as ADHD (e.g., Pelham et al., 2016; Page et al., 2016). This is particularly important as ADHD and Autism Spectrum Disorders are two of the fastest growing health care costs in pediatrics and ADHD is currently the second costliest condition after well-newborn care (Bui et al., 2017).

Finally, research efforts should explore how uses of technology can facilitate collaborative efforts to increase the effectiveness, efficiency, and safety around medication decision making. Web-portal-based programs have already been developed for information sharing between home and school providers with the prescribing physician (e.g., myADHDportal.com; Epstein, Langberg, Lichtenstein, Kolb, & Simon, 2013; ADHD Care Assistant; Power et al., 2016).

Conclusion

The following case serves to illustrate a real-world example incorporating many of the collaborative practice roles and functions described in this paper:

Joey is a 9-year-old male presenting at his annual well-child visit with parental concerns of inattention, hyperactivity-impulsivity, and academic underachievement that have been persistent since early childhood. Parents are raising the issue to the PCP now due to extensive concerns raised by his third-grade teacher.

The PCP introduced the family to the onsite psychologist via a “warm hand-off,” in which the psychologist conducted a brief evaluation and provided parents with rating scales to complete along with Joey’s teachers and return in 2 weeks to review. In the meantime, the psychologist implemented a daily report card (DRC) intervention with the family and school.

Two weeks later, the family returned to clinic for a follow-up appointment with the psychologist to review rating scale results (which included broad-based, multidimensional parent and teacher rating scales along with the NICHQ Vanderbilt). These data, along with history provided by parents, information obtained through a phone call with Joey’s primary teacher, and academic performance data, suggested that DSM-5 criteria were met for an ADHD-combined type diagnosis. However, based on symptom counts, percentile ranks, and functional impairment, the severity fell in the mild or borderline range. The psychologist discussed the range of evidence-based treatment options for ADHD, and the risks–benefits associated with each. Parents expressed a reluctance to initiate stimulant medication unless absolutely necessary. They expressed preference for continuing the use of the DRC as they had already noticed some improvement. The psychologist agreed to continue to meet weekly with the family to implement behaviorally based intervention approaches involving the family as well as continue to monitor progress. The psychologist shared this information with the PCP through a note in the electronic medical record as well as a brief face-to-face information exchange. The PCP supported this plan and expressed gratitude that the psychologist could follow up with this family.

After one month of weekly appointments in which the family brought the DRC forms and Vanderbilt monitoring and follow-up forms completed by teachers and parents each week, modest behavioral improvements were apparent at school and home as evidenced by rating scale data and parent and teacher verbal feedback. Despite improvement, Joey still struggled with behavioral- and attention-control in performance-based situations such as the classroom and during homework. The option of medication was again discussed with the family as an additional treatment to be used in conjunction with ongoing behavioral treatment. Handouts on medications were provided to parents as they scheduled a joint medication initiation appointment with their PCP and psychologist. The psychologist again discussed this plan with the PCP who was in agreement, pending physical exam results and review of medical history to ensure that stimulant medication was not contraindicated. While waiting for the next available PCP appointment, Joey improved his pill-swallowing skills via a protocol implemented by the psychologist after this was identified as a potential barrier to treatment plan adherence.

Later that week, the PCP initiated a trial of Adderall XR 10 mg once daily in the morning with weekly 5 mg dosage titrations until a therapeutic dosage was achieved, pending the drug being tolerated well by Joey. The parents continued to meet weekly with the

psychologist to review ongoing Vanderbilt and DRC data, and after 4 weeks, behavioral goals developed collaboratively by parents and teachers were largely being met. However, parents expressed concern that it was difficult for Joey to complete homework when medication effects wore off in the afternoon. In conjunction with parent management training around homework completion, the psychologist also discussed the option for initiation of a nonstimulant in the afternoons to help with homework completion. The PCP added Guanfacine 1 mg to the treatment regimen to be taken after school. The family continued periodic follow-ups with the PCP and psychologist for ongoing support to ensure maximal therapeutic benefits were maintained with minimal side/adverse effects.

This case example shows how collaborative medication management with pediatric psychologists can contribute to improving access to and quality of care delivered in an integrated primary care practice setting via enhanced diagnostic and treatment decision making and follow-up. This approach represents alignment with delivering care that is clinically effective while also adhering to tenets of the patient-centered medical home model valuing patient engagement, shared decision making, and autonomy in patient care. Further, this approach aligns with using the least restrictive/intrusive treatment mantra with attention paid to most efficiently utilizing systems resources. From the provider's perspective, this approach to care has the potential to improve efficiency, and accordingly billing reimbursement, from a patient throughput standpoint by positioning providers to manage aspects of care in which each provider is more competent, while efficiently relying on colleague expertise.

Innovations like coordinated psychiatric consultation (e.g., MCPAP) and toolkits like those put forth by the AAP are helpful, but not sufficient to address unmet mental health needs of children and adolescents. Pediatric primary care psychologists are well trained and positioned to collaborate with PCPs to support decisions to initiate, integrate, monitor, and terminate psychotropic and behavioral interventions in primary care. As a result, psychologists can play an important and complimentary role in collaborative psychotropic medication management to help address the many gaps and inefficiencies that currently present in primary care practice. These include a lack of adherence to practice parameters and prescribing guidelines, limited referral options to psychiatrists, and inadequate training, time, and payment reimbursement for

when PCPs, as the de facto behavioral health providers, are conscripted to perform these roles.

Collaborative psychotropic management enables pediatric psychologists to provide better and more comprehensive services to patients in primary care. In a competitive health care economy, pediatric psychologist collaborative support for PCP prescription practices are likely to contribute to improvements in access to care, value, outcomes and reduced cost. Moreover, a psychotropic management role offers another way in which psychologists can differentiate their skill set from that of other behavioral health providers (e.g., counselors, social workers). Thus, despite challenges for obtaining proper training and clinical supervision to function competently and ethically, there are compelling potential benefits of pediatric psychology moving in the direction of, and advocating for, collaborative medication management roles in primary care.

References

- American Academy of Child and Adolescent Psychiatry. (2015). *Recommendations about the use of psychotropic medications for children and adolescents involved in child-serving systems*. Retrieved from https://www.aacap.org/App_Themes/AACAP/docs/clinical_practice_center/systems_of_care/AACAP_Psychotropic_Medication_Recommendations_2015_FINAL.pdf
- American Academy of Pediatrics and National Initiative for Children's Healthcare Quality. (2002). *Vanderbilt Assessment follow-up*. Boston, MA: Author. Retrieved from <http://www.nichq.org/childrens-health/adhd/resources/adhd-toolkit>
- American Academy of Pediatrics. Subcommittee on Attention-Deficit/Hyperactivity Disorder and Committee on Quality Improvement. (2001). Clinical practice guideline: Treatment of the school-aged child with attention-deficit/hyperactivity disorder. *Pediatrics*, 108, 1033-1044. <http://dx.doi.org/10.1542/peds.108.4.1033>
- American Psychological Association. (2010). *Ethical principles of psychologists and code of conduct*. Washington DC: Author. Retrieved from <http://www.apa.org/ethics/code/index.aspx>
- APA Presidential Task Force on Evidence-Based Practice. (2006). Evidence-based practice in psychology. *American Psychologist*, 61, 271-285. <http://dx.doi.org/10.1037/0003-066X.61.4.271>
- Anderson, L. E., Chen, M. L., Perrin, J. M., & Van Cleave, J. (2015). Outpatient visits and medication

- prescribing for U.S. children with mental health conditions. *Pediatrics*, *136*, e1178–e1185. <http://dx.doi.org/10.1542/peds.2015-0807>
- Asarnow, J. R., Kolko, D. J., Miranda, J., & Kazak, A. E. (2017). The Pediatric Patient-Centered Medical Home: Innovative models for improving behavioral health. *American Psychologist*, *72*, 13–27. <http://dx.doi.org/10.1037/a0040411>
- Barkley, R. (1998). *Stimulant Drug Side Effects Rating Scale*. New York, NY: Guilford Press.
- Bird, H. R., Andrews, H., Schwab-Stone, M., Goodman, S., Dulcan, M., Richters, J., . . . Gould, M. S. (1996). Global measures of impairment for epidemiologic and clinical use with children and adolescents. *International Journal of Methods in Psychiatric Research*, *6*, 295–307. [http://dx.doi.org/10.1002/\(SICI\)1234-988X\(199612\)6:4<295::AID-MPR173>3.3.CO;2-5](http://dx.doi.org/10.1002/(SICI)1234-988X(199612)6:4<295::AID-MPR173>3.3.CO;2-5)
- Birmaher, B., Brent, D. A., Chiappetta, L., Bridge, J., Monga, S., & Baugher, M. (1999). Psychometric properties of the Screen for Child Anxiety Related Emotional Disorders (SCARED): A replication study. *Journal of the American Academy of Child & Adolescent Psychiatry*, *38*, 1230–1236. <http://dx.doi.org/10.1097/00004583-199910000-00011>
- Bodenheimer, T., & Sinsky, C. (2014). From triple to quadruple aim: Care of the patient requires care of the provider. *Annals of Family Medicine*, *12*, 573–576. <http://dx.doi.org/10.1370/afm.1713>
- Bui, A. L., Dieleman, J. L., Hamavid, H., Birger, M., Chapin, A., Duber, H. C., . . . Murray, C. J. (2017). Spending on children's personal health care in the United States, 1996–2013. *JAMA Pediatrics*, *171*, 181–189. <http://dx.doi.org/10.1001/jamapediatrics.2016.4086>
- Chafouleas, S. M., Riley-Tillman, C. T., & McDougal, J. L. (2002). Good, bad, or in-between: How does the daily behavior report card rate? *Psychology in the Schools*, *39*, 157–169. <http://dx.doi.org/10.1002/pits.10027>
- Cheung, A. H., Zuckerbrot, R. A., Jensen, P. S., Ghalib, K., Laraque, D., Stein, R. E., & the GLAD-PC Steering Group. (2007). Guidelines for adolescent depression in primary care (GLAD-PC): II. Treatment and ongoing management. *Pediatrics*, *120*, e1313–e1326. <http://dx.doi.org/10.1542/peds.2006-1395>
- Committee on Psychosocial Aspects of Child and Family Health and Task Force on Mental Health. (2009). Policy statement—The future of pediatrics: Mental health competencies for pediatric primary care. *Pediatrics*, *124*, 410–421. <http://dx.doi.org/10.1542/peds.2009-1061>
- Epstein, J. N., Kelleher, K. J., Baum, R., Brinkman, W. B., Peugh, J., Gardner, W., . . . Langberg, J. (2014). Variability in ADHD care in community-based pediatrics. *Pediatrics*, *134*, 1136–1143. <http://dx.doi.org/10.1542/peds.2014-1500>
- Epstein, J. N., Langberg, J. M., Lichtenstein, P. K., Kolb, R., & Simon, J. O. (2013). The myADHD-portal.com Improvement Program: An innovative quality improvement intervention for improving the quality of ADHD care among community-based pediatricians. *Clinical Practice in Pediatric Psychology*, *1*, 55–67. <http://dx.doi.org/10.1037/cpp0000004>
- Epstein, J. N., Langberg, J. M., Lichtenstein, P. K., Mainwaring, B. A., Luzader, C. P., & Stark, L. J. (2008). Community-wide intervention to improve the attention-deficit/hyperactivity disorder assessment and treatment practices of community physicians. *Pediatrics*, *122*, 19–27. <http://dx.doi.org/10.1542/peds.2007-2704>
- Gajria, K., Lu, M., Sikirica, V., Greven, P., Zhong, Y., Qin, P., & Xie, J. (2014). Adherence, persistence, and medication discontinuation in patients with attention-deficit/hyperactivity disorder: A systematic literature review. *Neuropsychiatric Disease and Treatment*, *10*, 1543–1569. <http://dx.doi.org/10.2147/NDT.S65721>
- Government Accountability Office. (2014). *Foster children: Additional federal guidance could help states better plan for oversight of psychotropic medications administered by managed-care organizations*. Retrieved from www.gao.gov/products/GAO-14-362
- Health Service Psychology Education Collaborative. (2013). Professional psychology in health care services: A blueprint for education and training. *American Psychologist*, *68*, 411–426. <http://dx.doi.org/10.1037/a0033265>
- Heneghan, A., Garner, A. S., Storfes-Isser, A., Kortepeter, K., Stein, R. E., & Horwitz, S. M. (2008). Pediatricians' role in providing mental health care for children and adolescents: Do pediatricians and child and adolescent psychiatrists agree? *Journal of Developmental and Behavioral Pediatrics*, *29*, 262–269. <http://dx.doi.org/10.1097/DBP.0b013e31817dbd97>
- Hoffses, K. W., Ramirez, L. Y., Berdan, L., Tunick, R., Honaker, S. M., Meadows, T. J., . . . Stancin, T. (2016). Topical review: Building competency: Professional skills for pediatric psychologists in integrated primary care settings. *Journal of Pediatric Psychology*, *41*, 1144–1160. <http://dx.doi.org/10.1093/jpepsy/jsw066>
- Horwitz, S. M., Kelleher, K. J., Stein, R. E., Storfes-Isser, A., Youngstrom, E. A., Park, E. R., . . . Hoagwood, K. E. (2007). Barriers to the identification and management of psychosocial issues in children and maternal depression. *Pediatrics*, *119*, e208–e218. <http://dx.doi.org/10.1542/peds.2005-1997>
- Katon, W., Von Korff, M., Lin, E., Walker, E., Simon, G. E., Bush, T., . . . Russo, J. (1995). Collaborative management to achieve treatment

- guidelines. Impact on depression in primary care. *Journal of the American Medical Association*, 273, 1026–1031. <http://dx.doi.org/10.1001/jama.1995.03520370068039>
- Kroenke, K., & Spitzer, R. L. (2002). The PHQ-9: A new depression diagnostic and severity measure. *Psychiatric Annals*, 32, 509–515. <http://dx.doi.org/10.3928/0048-5713-20020901-06>
- Kuehn, B. M. (2011). Pediatrician-psychiatrist partnerships expand access to mental health care. *Journal of the American Medical Association*, 306, 1531–1533. <http://dx.doi.org/10.1001/jama.2011.1444>
- Mayne, S. L., Ross, M. E., Song, L., McCarn, B., Steffes, J., Liu, W., . . . Fiks, A. G. (2016). Variations in mental health diagnosis and prescribing across pediatric primary care practices. *Pediatrics*, 137, e20152974. <http://dx.doi.org/10.1542/peds.2015-2974>
- McGrath, R. E. (2010). Prescriptive authority for psychologists. *Annual Review of Clinical Psychology*, 6, 21–47. <http://dx.doi.org/10.1146/annurev-clinpsy-090209-151448>
- McMillan, J. A., Land, M., Jr., & Leslie, L. K. (2017). Pediatric residency education and the behavioral and mental health crisis: A call to action. *Pediatrics*, 139, e20162141. <http://dx.doi.org/10.1542/peds.2016-2141>
- Meadows, T., Valleley, R., Haack, M. K., Thorson, R., & Evans, J. (2011). Physician “costs” in providing behavioral health in primary care. *Clinical Pediatrics*, 50, 447–455. <http://dx.doi.org/10.1177/0009922810390676>
- Mynors-Wallis, L., Gath, D., Day, A., & Baker, F. (2000). Randomized controlled trial of problem solving treatment, antidepressant medication, and combined treatment for major depression in primary care. *British Medical Journal*, 320, 26–30. <http://dx.doi.org/10.1136/bmj.320.7226.26>
- Olfson, M., Druss, B. G., & Marcus, S. C. (2015). Trends in mental health care among children and adolescents. *The New England Journal of Medicine*, 372, 2029–2038. <http://dx.doi.org/10.1056/NEJMs1413512>
- Page, T. F., Pelham, W. E., III, Fabiano, G. A., Greiner, A. R., Gnagy, E. M., Hart, K. C., . . . Pelham, W. E., Jr. (2016). Comparative cost analysis of sequential, adaptive, behavioral, pharmacological, and combined treatments for childhood ADHD. *Journal of Clinical Child and Adolescent Psychology*, 45, 416–427. <http://dx.doi.org/10.1080/15374416.2015.1055859>
- Palermo, T. M., Janicke, D. M., McQuaid, E. L., Mullins, L. L., Robins, P. M., & Wu, Y. P. (2014). Recommendations for training in pediatric psychology: Defining core competencies across training levels. *Journal of Pediatric Psychology*, 39, 965–984. <http://dx.doi.org/10.1093/jpepsy/jsu015>
- Pelham, W. E., Jr., Fabiano, G. A., Waxmonsky, J. G., Greiner, A. R., Gnagy, E. M., Pelham, W. E., III, . . . Murphy, S. A. (2016). Treatment sequencing for childhood ADHD: A multiple-randomization study of adaptive medication and behavioral interventions. *Journal of Clinical Child and Adolescent Psychology*, 45, 396–415. <http://dx.doi.org/10.1080/15374416.2015.1105138>
- Perrin, E., & Stancin, T. (2002). A continuing dilemma: Whether and how to screen for concerns about children’s behavior. *Pediatrics*, 23, 264–276. <http://dx.doi.org/10.1542/pir.23-8-264>
- Pires, S., Grimes, K., Gilmer, T., Allen, K., Mahadevan, R., & Hendricks, T. (2013). *Identifying opportunities to improve children’s behavioral health care. An analysis of Medicaid utilization and expenditures*. Trenton, NJ: Center for Health Care Strategies. Retrieved from <http://www.chcs.org/media/Identifying-Opportunities-to-Improve-Childrens-Behavioral-Health-Care2.pdf>
- Polaha, J., Dalton, W. T., III, & Allen, S. (2011). The prevalence of emotional and behavior problems in pediatric primary care serving rural children. *Journal of Pediatric Psychology*, 36, 652–660. <http://dx.doi.org/10.1093/jpepsy/jsq116>
- Power, T. J., Michel, J., Mayne, S., Miller, J., Blum, N. J., Grundmeier, R. W., . . . Fiks, A. G. (2016). Coordinating systems of care using health information technology: Development of the ADHD Care Assistant. *Advances in School Mental Health Promotion*, 9, 201–218. <http://dx.doi.org/10.1080/1754730X.2016.1199283>
- Radovic, A., Farris, C., Reynolds, K., Reis, E. C., Miller, E., & Stein, B. D. (2014). Primary care providers’ initial treatment decisions and antidepressant prescribing for adolescent depression. *Journal of Developmental and Behavioral Pediatrics*, 35, 28–37. <http://dx.doi.org/10.1097/DBP.0000000000000008>
- Rappley, M. D. (2006). Actual psychotropic medication use in preschool children. *Infants & Young Children*, 19, 154–163. <http://dx.doi.org/10.1097/00001163-200604000-00008>
- Richardson, L. P., Ludman, E., McCauley, E., Lindenbaum, J., Larison, C., Zhou, C., . . . Katon, W. (2014). Collaborative care for adolescents with depression in primary care: A randomized clinical trial. *Journal of the American Medical Association*, 312, 809–816. <http://dx.doi.org/10.1001/jama.2014.9259>
- Shahidullah, J. D., & Carlson, J. S. (2012). Training considerations for pediatric psychopharmacology in RxP. *The Tablet: Newsletter of Division 55 of the APA*, 13, 6–18. Retrieved from <http://www.apadivisions.org/division-55/publications/tablet/2012/07-issue.pdf>
- Sprafkin, J., & Gadow, K. D. (1996). Double-blind versus open evaluations of stimulant drug response

- in children with attention-deficit hyperactivity disorder. *Journal of Child and Adolescent Psychopharmacology*, *6*, 215–228. <http://dx.doi.org/10.1089/cap.1996.6.215>
- Sprafkin, J., Mattison, R. E., Gadow, K. D., Schneider, J., & Lavigne, J. V. (2011). A brief *DSM-IV*-referenced teacher rating scale for monitoring behavioral improvement in ADHD and co-occurring symptoms. *Journal of Attention Disorders*, *15*, 235–245. <http://dx.doi.org/10.1177/1087054709360655>
- Stancin, T., & Perrin, E. C. (2014). Psychologists and pediatricians: Opportunities for collaboration in primary care. *American Psychologist*, *69*, 332–343. <http://dx.doi.org/10.1037/a0036046>
- Straus, J. H., & Sarvet, B. (2014). Behavioral health care for children: The Massachusetts Child Psychiatry Access Project. *Health Affairs*, *33*, 2153–2161. <http://dx.doi.org/10.1377/hlthaff.2014.0896>
- Thomas, C. R., & Holzer, C. E., III. (2006). The continuing shortage of child and adolescent psychiatrists. *Journal of the American Academy of Child & Adolescent Psychiatry*, *45*, 1023–1031. <http://dx.doi.org/10.1097/01.chi.0000225353.16831.5d>
- VandenBos, G. R., & Williams, S. (2000). Is psychologists' involvement in the prescribing of psychotropic medication really a new activity? *Professional Psychology: Research and Practice*, *31*, 615–618. <http://dx.doi.org/10.1037/0735-7028.31.6.615>
- Weitzman, C., Wegner, L., Section on Developmental and Behavioral Pediatrics, Committee on Psychosocial Aspects of Child and Family Health, Council on Early Childhood, and Society for Developmental and Behavioral Pediatrics. (2015). Promoting optimal development: Screening for behavioral and emotional problems. *Pediatrics*, *135*, 384–395. <http://dx.doi.org/10.1542/peds.2014-3716>

Received May 26, 2017

Revision received July 17, 2017

Accepted July 17, 2017 ■