

Five-Year Outcomes of Behavioral Health Integration in Pediatric Primary Care

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BACKGROUND AND OBJECTIVES: In the context of protracted shortages of pediatric behavioral health (BH) specialists, BH integration in pediatric primary care can increase access to BH services. The objectives of this study were to assess the structure and process of pediatric BH integration and outcomes in patient experience (access and quality), cost, and provider satisfaction.

METHODS: In 2013, we launched a multicomponent, transdiagnostic integrated BH model (Behavioral Health Integration Program [BHIP]) in a large pediatric primary care network in Massachusetts. Study participants comprised the first 13 practices to enroll in BHIP (Phase-1). Phase-1 practices are distributed across Greater Boston, with ~105 primary care practitioners serving ~114 000 patients. Intervention components comprised in-depth BH education, on-demand psychiatric consultation, operational support for integrated practice transformation, and on-site clinical BH service.

RESULTS: Over 5 years, BHIP was associated with increased practice-level BH integration ($P < .001$), psychotherapy ($P < .001$), and medical ($P = .04$) BH visits and guideline-congruent medication prescriptions for anxiety and depression ($P = .05$) and attention-deficit/hyperactivity disorder ($P = .05$). Total ambulatory BH spending increased by 8% in constant dollars over 5 years, mainly attributable to task-shifting from specialty to primary care. Although an initial decline in emergency BH visits from BHIP practices was not sustained, total emergency BH spending decreased by 19%. BHIP providers reported high BH self-efficacy and professional satisfaction from BHIP participation.

CONCLUSIONS: Findings from this study suggest that integrating BH in the pediatric setting can increase access to quality BH services while engendering provider confidence and satisfaction and averting substantial increases in cost.

Psychiatric disorders are estimated to occur in 15 million children and adolescents in the United States,¹ with annual treatment costs of ~\$40 billion.^{2,3} Despite effective treatments,^{4,5} because of the protracted shortage of child-trained behavioral health (BH) specialists,^{6–8} many youth with

psychiatric disorders receive no services^{9–11} or receive services in settings (schools, primary care) where BH expertise may be limited.¹² Untreated or inadequately treated child and adolescent psychiatric disorders persist over decades, become increasingly intractable to treatment,

abstract

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and incur progressively greater social, educational, occupational, and economic consequences over time.^{13,14}

To increase access to pediatric BH services, both the American Academy of Pediatrics (AAP)¹⁵ and the American Academy of Child and Adolescent Psychiatry¹⁶⁻¹⁸ propose that mild and moderate presentations of common psychiatric disorders (anxiety, depression, attention-deficit/hyperactivity disorder [ADHD]), comprising up to three-quarters of all presentations of these disorders,^{19,20} can be effectively managed in pediatric primary care. Yet despite an abundance of BH tools,²¹⁻³⁰ pediatric primary care practitioners (PCPs) continue to experience challenges around providing BH services.³¹⁻³⁶

Collaborative partnerships between pediatric and BH practitioners have the potential to attenuate the challenges of managing BH problems in primary care and thereby substantially extend the BH workforce.^{37,38} Arising from the chronic care model,³⁹ integrated collaborative BH care employs multidisciplinary teams to address whole-person needs in the medical home.⁴⁰ Although this model has been effective among adult populations in improving medical and BH outcomes and reducing costs,⁴¹⁻⁴⁶

TABLE 1 Selected Items From the BHIRA Instrument

Leadership domain	Extent of organizational leadership for integrated BH care Extent of providers' engagement in integrated BH care
Resources domain	Extent of colocation of treatment of primary care and BH Extent of linkages to community BH resources
Administrative mechanisms domain	Extent of EHR sharing between medical and BH providers Extent of practice knowledge in coding and billing for BH services
Screening domain	Extent of BH screening
Clinical management domain	Extent to which patient care is informed by best practice evidence Extent of provider comfort with prescribing BH medications
Family centeredness domain	Extent of communication with patients about integrated BH care Extent of patient and family engagement in BH planning processes
Care coordination domain	Extent to which care coordination needs are assessed Extent to which primary care and BH treatment plans are integrated
Quality improvement domain	Extent to which physician, team, and staff training in integrated care and evidence-based practice is provided, supported, and incentivized

empirical support in pediatric populations is limited but promising.⁴⁷⁻⁵⁰

In this context, we undertook the development of a multicomponent, transdiagnostic model of integrated pediatric BH care with potential for broad scaling in real-world clinical settings. In accordance with the AAP and American Academy of Child and Adolescent Psychiatry recommendations,¹⁵⁻¹⁸ this model (Behavioral Health Integration Program [BHIP]) comprises 4

components: in-depth BH education, on-demand psychiatric consultation, operational and clinical support for integrated practice transformation, and on-site clinical BH service. We report the quality metrics⁵¹ of structure, process, and outcomes associated with the BHIP over the first 5 years of the first phase of a multiphase rollout within a large pediatric primary care network. Informed by the "quadruple aim" of health care,⁵² outcomes encompassed patient experience (access, quality), cost, and provider satisfaction.

METHODS

Study Design

The eligible BHIP population comprises 84 pediatric practices enrolled in a statewide, independent practice association affiliated with an academic medical center. The practices include nearly 400 PCPs serving >350 000 patients.

After notification of project launch and participation requirements through usual network communication channels, 71 practices (85%) agreed to participate in the BHIP. Program participation

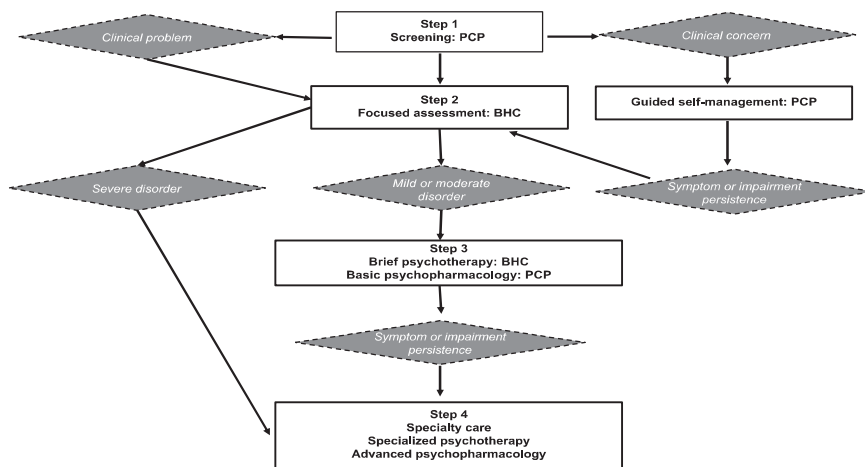


FIGURE 1 Stepped model for BH integration.

requires that practices (1) designate ≥ 1 PCPs (physicians or nurse practitioners) to attend the education component and serve as BH “champion” for the practice; (2) use the consultation component as needed; (3) engage in integrated practice transformation, including creating a BH team composed of PCPs, behavioral health clinicians (BHCs [psychologists, social workers, counselors]), and care coordinators; and (4) provide on-site clinical BH services. Participating practices phased into the BHIP at a rate of ~ 10 to 15 per year. BHIP enrollment began in July 2013; once a practice is enrolled, participation is ongoing. Because the project is consistent with our institution’s definition of a quality improvement program, the need for individual informed consent was waived.

Study Sample

The sample for this article (BHIP, Phase-1) comprises the first 13 practices (with ~ 105 PCPs serving $\sim 114\,000$ patients) reporting readiness to meet all BHIP participation requirements. The Phase-1 practices are located in the Greater Boston area and range in size from 3 to 17 PCPs. The practices’ communities range from 14 714 to 86 241 in population and \$28 000 to \$72 744 in per capita income (mean: \$47 258, compared with \$35 763 in Massachusetts⁵³) and are on average 78% white, 8% African American, 6% Hispanic, and 5% Asian American

TABLE 2 Billing (CPT) Codes Included in Analyses

Psychotherapy CPT codes
90791, 90832, 90834, 90837, 90839, 90845, 90846, 90847, 90848, 90849, 90853, 90875, 90876, 90880
Medical BH visit CPT codes (primary BH diagnosis)
99211, 99212, 99213, 99214, 99215
Emergency BH visit CPT codes (primary BH diagnosis)
99281, 99282, 99283, 99284, 99285, 99286, 99287, 99288

CPT, current procedural terminology.

TABLE 3 Guideline-Congruent Medications Included in Analyses

Medications for anxiety and depression
SSRIs
Medications for ADHD
Stimulants
α -agonists
Atomoxetine

Sources: Perou R, Bitsko RH, Blumberg SJ, et al; Centers for Disease Control and Prevention (CDC). Mental health surveillance among children—United States, 2005–2011. *MMWR Suppl*. 2013;62(2):1–35; Connolly SD, Bernstein GA; Work Group on Quality Issues. Practice parameter for the assessment and treatment of children and adolescents with anxiety disorders. *J Am Acad Child Adolesc Psychiatry*. 2007;46(2):267–283; Pliszka S; AACAP Work Group on Quality Issues. Practice parameter for the assessment and treatment of children and adolescents with attention-deficit/hyperactivity disorder. *J Am Acad Child Adolesc Psychiatry*. 2007;46(7):894–921; and Birmaher B, Brent D, Bernet W, et al; AACAP Work Group on Quality Issues. Practice parameter for the assessment and treatment of children and adolescents with depressive disorders. *J Am Acad Child Adolesc Psychiatry*. 2007;46(11):1503–1526.

(compared with 74%, 9%, 11%, and 6%, respectively, in Massachusetts⁵³). Approximately 85% of practices’ patients are commercially insured; 15% have Medicaid. Structure, process, and outcomes were assessed in Phase-1 practices from July 2013 through June 2018.

Intervention

Education

The BHIP education component (Behavioral Health Learning Community [BHLC]) comprised 10 sessions (16 hours) delivered over the first 2 years of Phase-1; 12 hours were delivered in person in a geographically central location, and 4 hours were delivered by televideo. The adult-learning format⁵⁴ encompassed an interactive blend of didactic and case-based material. Formal sessions were supplemented by optional bimonthly televideo case discussions. BHLC faculty comprised child and adolescent psychiatrists (CAPs), developmental and behavioral pediatricians, adolescent medicine specialists, psychologists and neuropsychologists, and clinical

social workers from the affiliated medical center.

The BHLC was designed to provide the knowledge, skills, and resources needed to safely and effectively identify, assess, and treat mild and moderate presentations of common child and adolescent psychiatric disorders, with an emphasis on anxiety, depression, ADHD, and related disorders (stress, behavior). The BHLC emphasized universal screening⁵⁵ to identify problems with anxiety, depression, and ADHD; use of symptom rating scales^{56–59} to assess problem severity and monitor response to treatment; provision of brief psychotherapy; prescription of guideline-congruent^{60–62} medications for anxiety, depression, and ADHD when indicated; and knowing which patients to refer to specialty care. Twenty category 1 continuing medical education credits were offered to physicians by the affiliated medical school; no other incentives for participation were offered.

Consultation

The BHIP consultation component provided real-time, workday, 9 AM to 5 PM telephone consultation by CAPs to PCPs. Consultation was designed to reinforce and extend the knowledge, skills, and resources acquired in the BHLC to the management of individual patients. Telephone consultations provided initial assessment and treatment suggestions and ongoing medication management support. For severe presentations, the CAP facilitated referral to specialty BH care for in-person consultation, interim treatment until stable, or ongoing treatment as indicated. To provide continuity of learning, the first 3 years of Phase-1 consultation was provided by CAP BHLC faculty; to ensure fiscal sustainability, in the subsequent 2 years, consultation was provided through a partnership between the BHIP and the

Massachusetts Child Psychiatry Access Program (MCPAP).⁶³

Integrated Practice Transformation

The BHIP practice transformation component comprised 6 operational sessions (12 hours) focusing on clinical and business workflows; revenue-cycle management; BHC hiring, contracting, and credentialing; BH crisis protocols; linkages to specialty BH services; electronic health record (EHR) documentation; and support for practice-individualized quality improvement projects. Operational sessions were supplemented by 6 to 8 hours per month of practice-based support. Clinical support for BHCs by BHIP senior social workers comprised 1 to 2 hours per month of individual telephonic supervision, 1 hour per month of televideo case conferences, and twice-yearly 6-hour in-person trainings.

Clinical BH Service

On-site clinical BH service used a stepped-care model in which each step has a clearly defined patient

population, goal, and provider and ascends in treatment intensity in accordance with the severity of the clinical presentation (Fig 1). The clinical roles of PCPs were BH screening, guided self-management, and psychopharmacology; the roles of BHCs were focused assessment and brief psychotherapy. Practice-based care coordinators assisted practitioners with referrals to specialty care as indicated.

Measures

Progress of Phase-1 practices toward full BH integration⁶⁴ was assessed at baseline and 5-year follow-up by completion of the Behavioral Health Integration Readiness Assessment (BHIRA) by BH teams in each practice. This 35-item, 10-point Likert-scale instrument, adapted from the AAP Mental Health Readiness Inventory⁶⁵ and the Maine Self-Assessment Evaluation Tool,⁶⁶ is used to measure the degree of BH integration in 8 domains; examples of BHIRA items are presented in Table 1. A total mean score was

calculated from the domain score means.

BHC use in Phase-1 practices was compiled from deidentified medical records maintained by the pediatric practice network; analysis was limited to 6 out of 13 practices using the same EHR. Use of consultation was compiled from deidentified records in an electronic database maintained by the consultation program through June 2016; after that, the consultation component merged with the MCPAP,⁶³ which maintained separate usage records.

BH service delivery in Phase-1 practices was defined as all psychotherapy visits and all ambulatory medical and hospital emergency department (ED) visits for a primary BH diagnosis (see Table 2 for billing codes) and all prescriptions for guideline-congruent (Table 3) medications for anxiety, depression, and ADHD. Total ambulatory BH costs were defined as any spending on outpatient and emergency BH visits and BH pharmacy. BH visits and costs, compiled from 2013 through the end of 2017 (the most recent complete project year), were derived from paid insurance claims from a single, large commercial insurance company that shares data with the practice network. All costs were adjusted to 2017 dollars by using the Consumer Price Index for Medical Care (Northeast region).

Provider satisfaction was assessed through anonymous electronic surveys completed by BHIP providers at 5-year follow-up. The BHC survey, addressing BH self-efficacy and professional satisfaction, was adapted from a previous survey administered to PCPs.⁶⁷

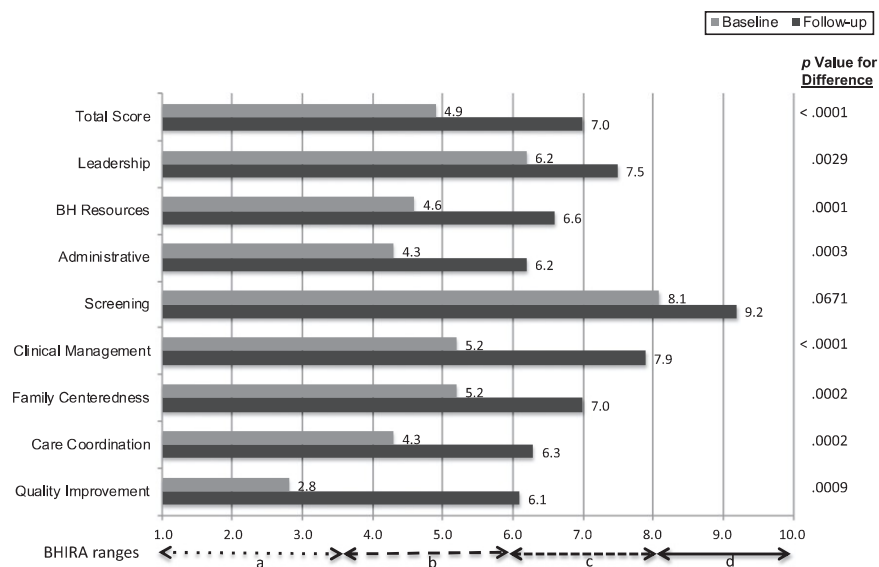


FIGURE 2 Mean BHIRA scores, baseline and 5-year follow-up ($n = 12$). Section “a”: 1.0–3.5, demonstrates this characteristic never or to a very limited degree. Section “b”: 3.6–5.9, demonstrates this characteristic to some degree. Section “c”: 6.0–7.9, demonstrates this characteristic most of the time. Section “d”: 8.0–10, demonstrates this characteristic all of the time.

Statistical Analysis

Baseline and follow-up BHIRA scores were compared by using paired-sample t tests. Interrupted time series

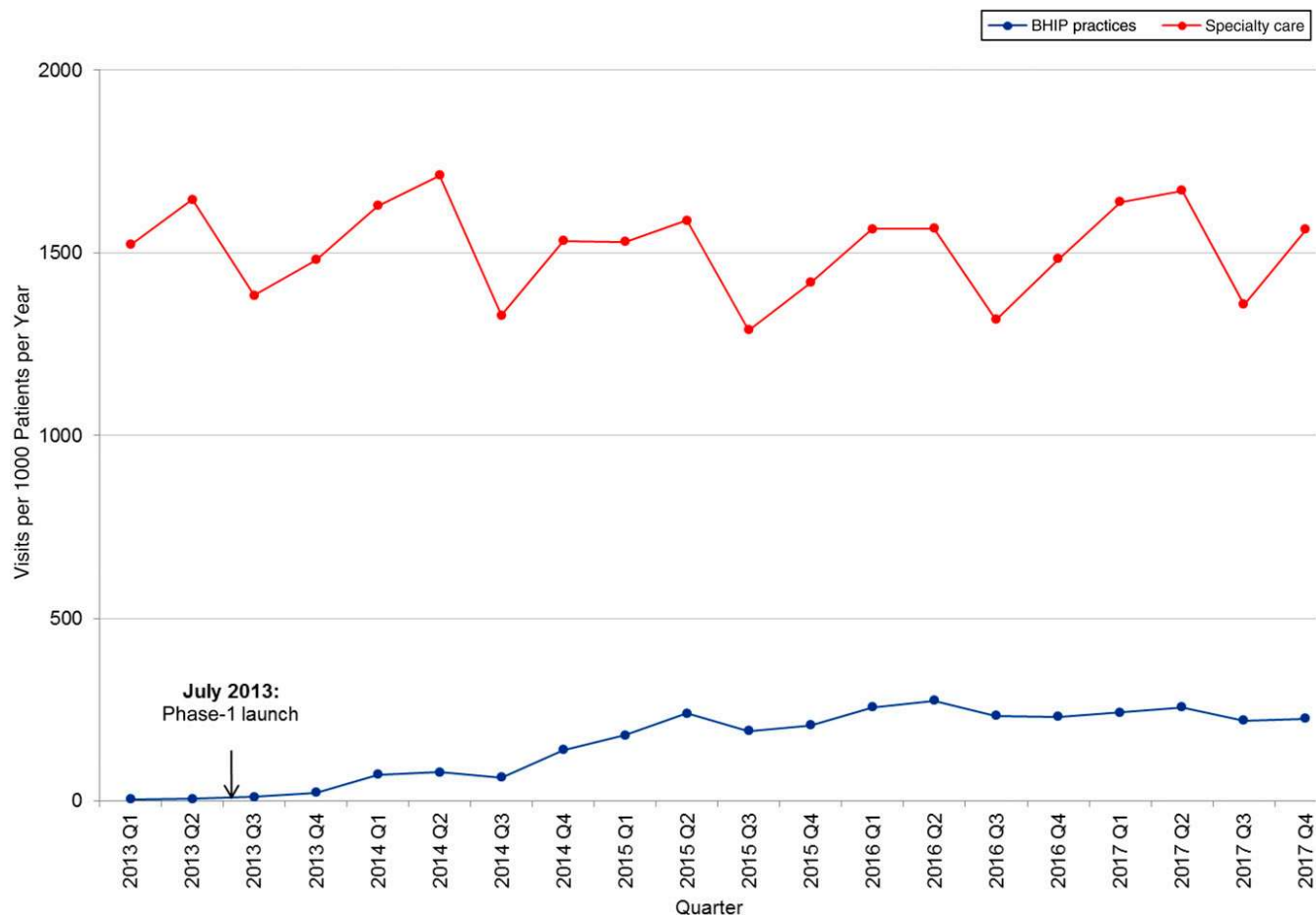


FIGURE 3 Psychotherapy by site of service. Q1, quarter 1; Q2, quarter 2; Q3, quarter 3; Q4, quarter 4.

analysis was used to assess changes in psychotherapy and medical BH visits and psychiatric prescriptions from 2013 (pre-BHLC) to 2015–2017 (post-BHLC), controlling for secular trends and postlaunch slope changes.^{68,69} Autocorrelation among data points was assessed by using the Durbin-Watson statistic; when significant autocorrelation was found, autoregressive parameters were included in the model. All analyses were completed by using SAS version 9.4 (SAS Institute, Inc, Cary, NC). Trends in ED use were assessed by using statistical process control methodology (QI Macros software; KnowWare International, Denver, CO) to determine if special cause variation coincident with BHIP implementation occurred. Ambulatory BH costs in 2013

(pre-BHLC) were compared with the average 2015–2017 costs (post-BHLC), adjusted to 2017 dollars.

RESULTS

Structure

Twelve Phase-1 practices (92%) completed the BHIRA at baseline and 5-year follow-up. The total mean BHIRA score increased from 4.9 (2013) (“some degree” of integration) to 7.0 (2018) (integration “most of the time”) ($P < .001$). Increases in 7 of the 8 domain mean scores also were statistically significant (Fig 2). At follow-up, all 8 integration readiness domains were demonstrated “most” or “all” of the time.

Process

All Phase-1 practices designated ≥ 1 PCP BH champion to enroll in the

BHLC. Twenty-nine PCPs enrolled (28% of 105 Phase-1 PCPs); of those, 23 (79%) completed continuing medical education requirements (attendance at $>70\%$ of sessions, completion of assigned quality improvement coursework).

All Phase-1 practices participated in telephone consultation. Over 30 months, consultations totaled 254 (mean: 8.5 per month; range: 0–62; mean: 19.5 per practice). The top 2 reasons for consultation pertained to medication management (52.2%) and diagnosis (13.1%); the remainder primarily pertained to level and type-of-care decisions. The top provisional postconsultation diagnoses were anxiety (26.6%), depression (22.7%), ADHD (14.8%), and behavior disorder (7.0%). Postconsultation, 67.3% of patients were mutually

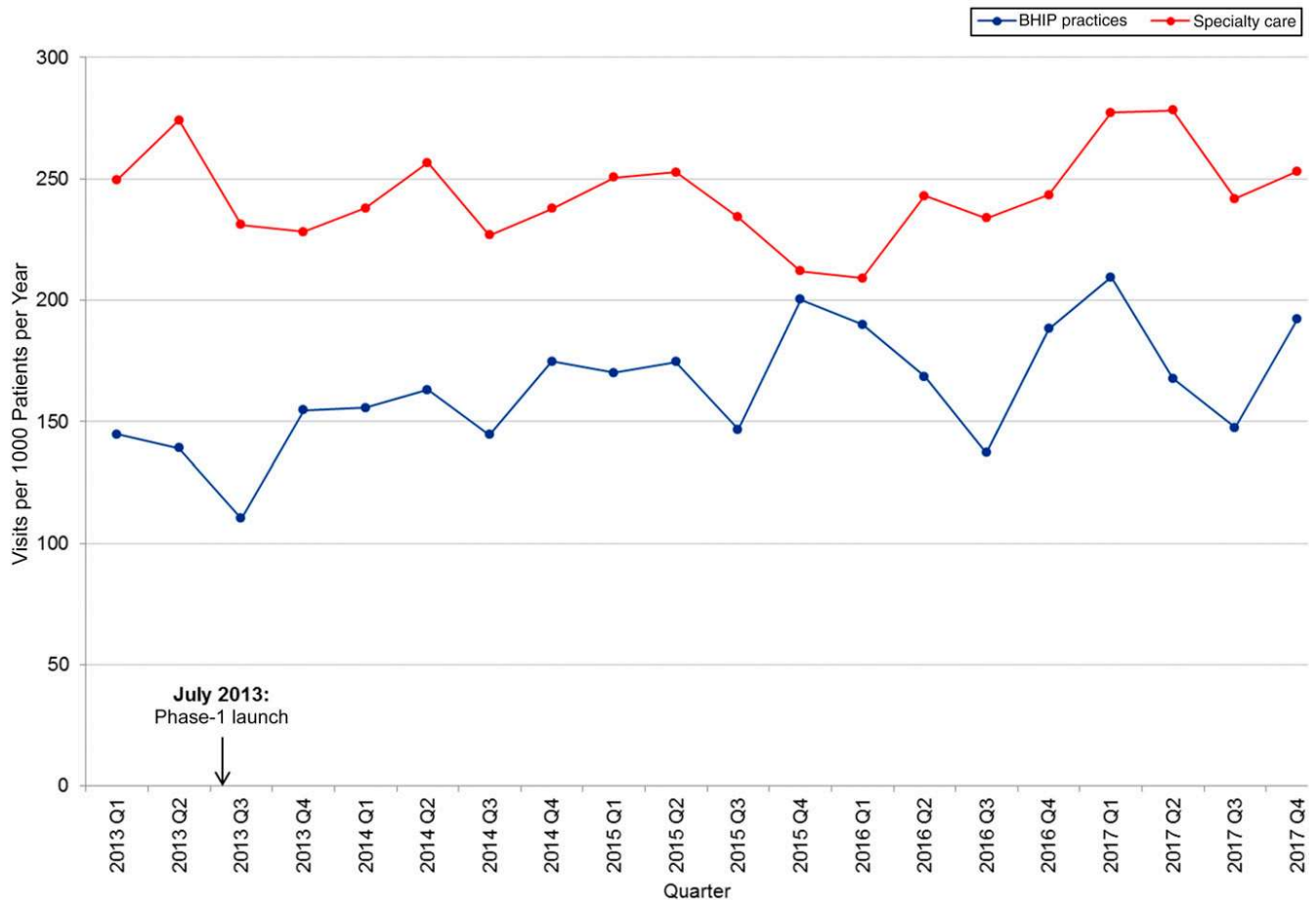


FIGURE 4 Medical BH visits by site of service. Q1, quarter 1; Q2, quarter 2; Q3, quarter 3; Q4, quarter 4.

agreed to be appropriate for PCP management, and 32.7% were referred to specialty care. As rated by the CAP consultant, the mean Children’s Global Assessment Scale score (used to measure functional impairment⁷⁰) for referred patients was 48 (moderately severe). Of referred patients, 48.6% were referred locally, 35.7% were referred to the affiliated medical center, 10.0% were referred to the state BH system for Medicaid-insured youth, and 4.1% were referred to a hospital ED.

All Phase-1 practices received integration support. Eleven practices (85%) integrated a BHC, 80% by hiring and 20% by contracting with a community agency. Seventeen BHCs were hired, ranging from 1 to 3 per practice. The median age of

BHCs’ patients was 11 years; 51.6% were boys. The median number of psychotherapy visits per patient was 3 (range: 1–40). Disorders most commonly diagnosed were stress related (40.3%), anxiety (32.4%), attention (13.0%), depressive (7.7%), and behavior (2.1%); comorbid disorders comprised 8.6%. Of all billable visits (8042), 46.6% were evaluation and 53.4% were psychotherapy; the nonbillable (telephone calls) to billable ratio was ~2:1.

Outcomes

Patient Experience (Access, Quality)

The integration of BHCs resulted in increased psychotherapy visits in Phase-1 practices from 11 out of 1000 patients per year (2013) to

230 (2015–2017) ($P < .001$; Fig 3). Psychotherapy visits in specialty settings remained unchanged (1508 [2013], 1499 [2015–2017]; $P = .53$). The proportion of total (BHIP plus specialty) psychotherapy visits delivered within BHIP practices increased from 0.7% (2013) to 13.3% (2015–2017). A marked seasonal pattern in psychotherapy visits (fewer visits in summer) observed in specialty care was not observed in BHIP practices.

Medical BH visits to Phase-1 PCPs increased from 137 out of 1000 patients per year (2013) to 174 (2015–2017) ($P = .04$; Fig 4) while remaining unchanged in specialty settings (246 [2013], 244 [2015–2017]; $P = .99$). The proportion of total medical BH visits

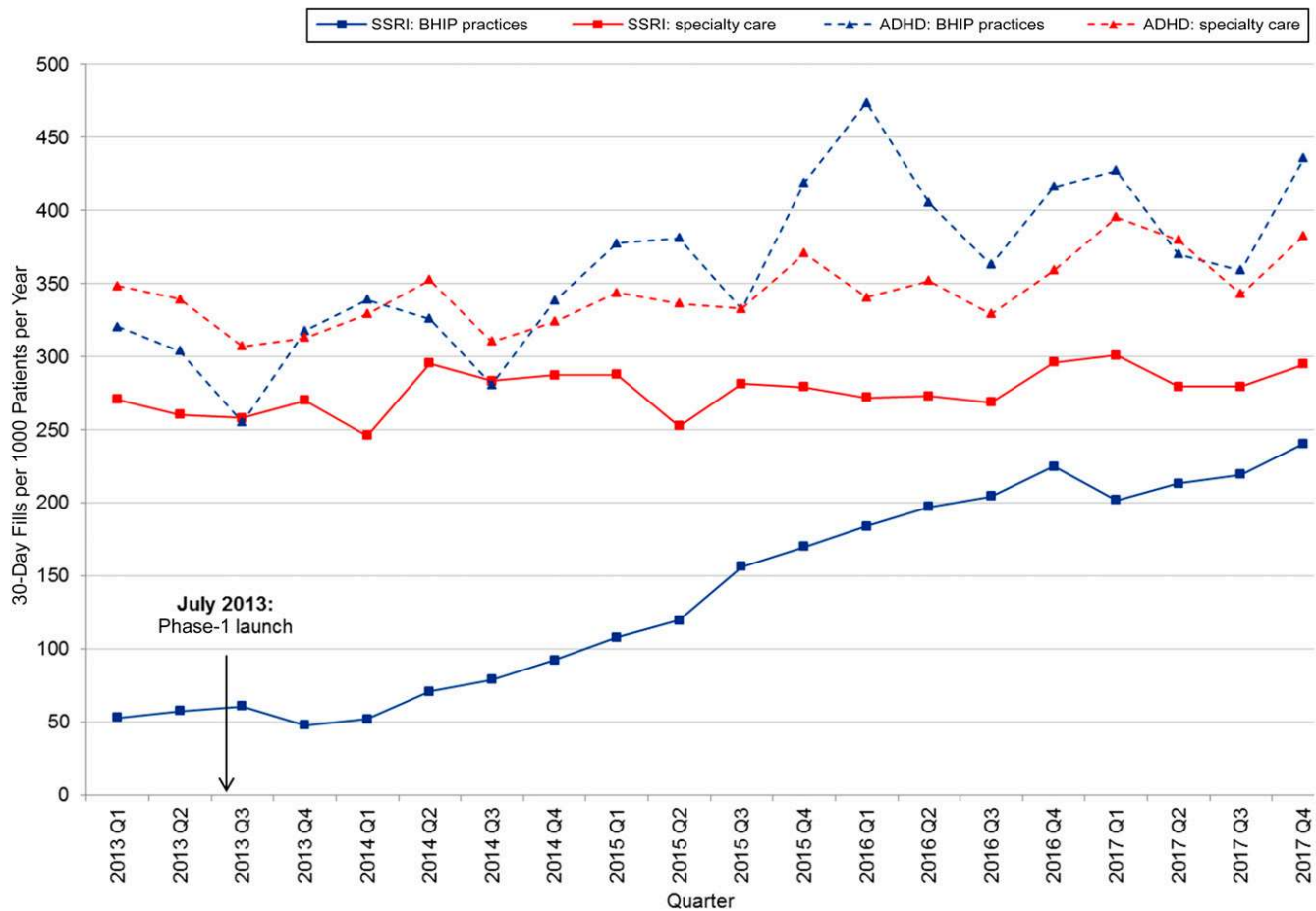


FIGURE 5 Guideline-congruent anxiety, depression, and ADHD medication prescribing by site of service. Q1, quarter 1; Q2, quarter 2; Q3, quarter 3; Q4, quarter 4.

delivered within BHIP practices increased from 35.8% (2013) to 41.6% (2015–2017).

Prescriptions for guideline-congruent anxiety and depression medications (selective serotonin reuptake inhibitors [SSRIs]) increased in BHIP practices from 55 30-day fills per 1000 patients per year (2013) to 186 (2015–2017) ($P = .05$; Fig 5). The proportion of total SSRIs prescribed within BHIP practices increased from 17% (2013) to 40% (2015–2017). Prescriptions for guideline-congruent ADHD medications (stimulants, α -agonists, atomoxetine) increased in Phase-1 practices from 299 30-day fills per 1000 patients per year (2013) to 397 (2015–2017) ($P = .05$; Fig 5). The proportion of total ADHD medications prescribed within BHIP

practices increased from 48% (2013) to 53% (2015–2017).

Beginning in 2014, ED BH visits for patients in Phase-1 practices decreased by 33.9% (18.9 visits per 1000 patients per year to 12.5) (Fig 6). However in 2017, ED visits rose to 18.5 visits per 1000 patients per year, similar to the pre-BHIP rate.

Cost

Over 5 years, total ambulatory BH costs (BHIP plus specialty) increased by 8% in constant dollars, from \$32.78 per patient per year (2013) to an average of \$35.32 (2015–2017) (Fig 7). Care within BHIP practices accounted for nearly all of the increase, with BHIP outpatient costs increasing by 123%, from \$2.06 per patient per year (2013) to an average

of \$4.60 (2015–2017) and BHIP pharmacy costs increasing by 40%, from \$3.56 per patient per year (2013) to an average of \$4.98 (2015–2017). Total BH-related emergency costs decreased by 19%, from \$1.88 per patient per year (2013) to an average of \$1.51 (2015–2017).

Provider Satisfaction

As reported from a separate study, survey responses from 66 PCPs in BHIP Phase-1 through Phase-3 (81% response rate) demonstrated high BH self-efficacy and satisfaction associated with BHIP participation.⁶⁷ Survey responses from 14 BHCs (93% response rate) in BHIP Phase-1 were similar (Fig 8). More than 90% of surveyed PCPs and BHCs believed that BHIP participation enables

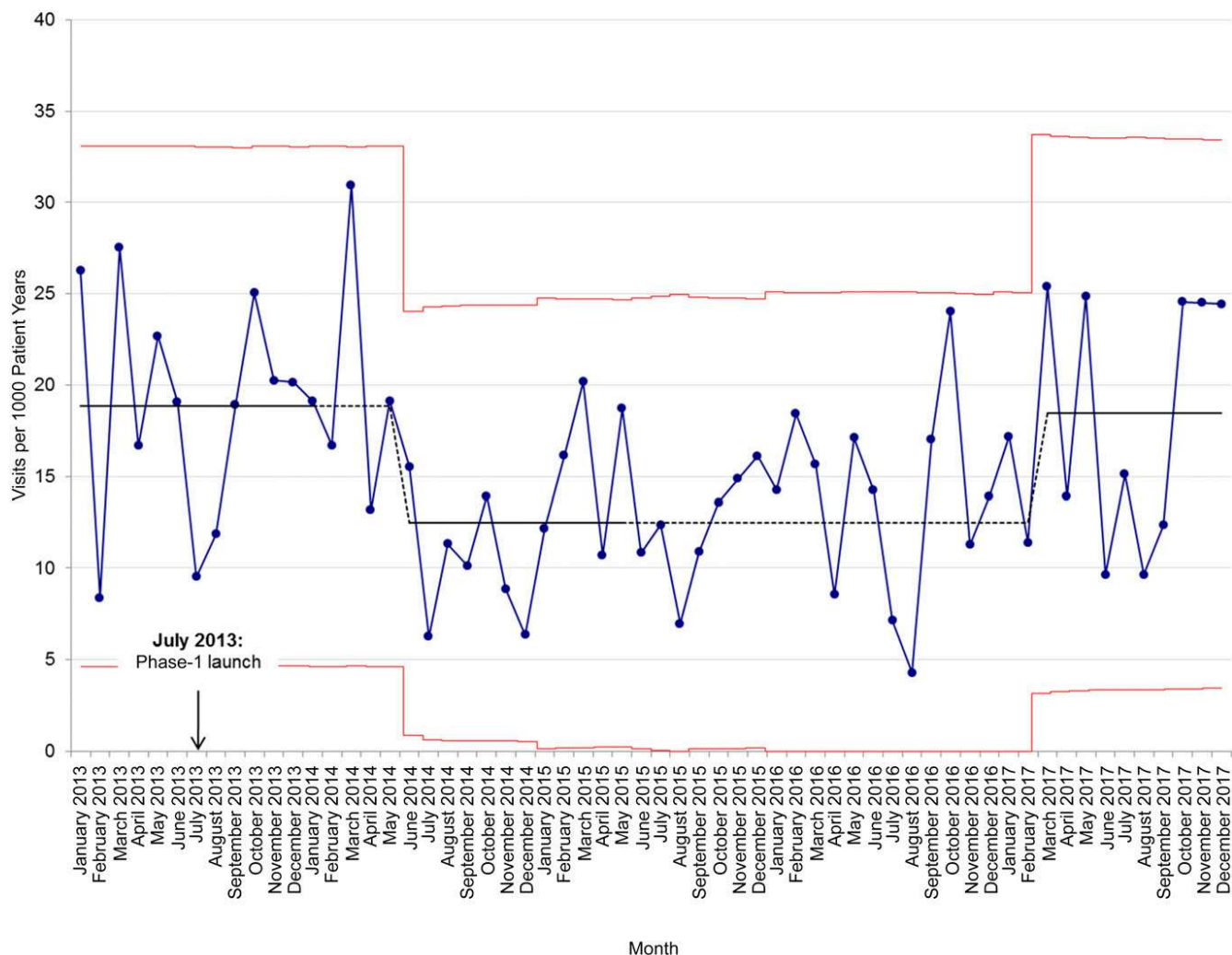


FIGURE 6
ED BH visits by patients in BHIP practices.

effective management of mild and moderate BH problems in pediatric primary care.

DISCUSSION

This study is the first to our knowledge in which researchers have examined, over an extended period, the structure, process, and outcomes of a multicomponent, transdiagnostic model of BH integration in real-world pediatric settings with diverse patient populations exercising treatment choice. In the findings, it is suggested that the BHIP was feasible to implement and successful in moving practices toward full BH integration, increased primary care BH access

while maintaining quality and averting anticipated substantial increases in BH costs, and achieved high provider BH self-efficacy and professional satisfaction. Although favorable findings have also been demonstrated in several research-based studies of collaborative pediatric BH care,⁷¹⁻⁷³ because this was a naturalistic study, the findings from the BHIP may have heightened applicability to other real-world pediatric settings and, as such, serve as a model for their development.

Over the 5-year observation period of BHIP Phase-1, clear evidence of increased BH integration⁶³ in participating practices emerged,

encompassing leadership, BH resources, administrative, clinical management, family centeredness, care coordination, and quality improvement domains. In this enabling structural context, beneficial findings were observed in patient experience, cost, and provider satisfaction.

Primary care access to both psychotherapy and medical BH visits and to anxiety, depression, and ADHD medication increased significantly over time. By the end of the observation period, BHIP BHCs provided more than one-tenth of all psychotherapy visits, and BHIP PCPs provided more than two-fifths of all



FIGURE 7 Ambulatory spending on outpatient care, pharmacy, and ED BH claims. ^aAdjusted for inflation; figures are in 2017 US dollars.

medical BH visits, two-fifths of all SSRI prescriptions, and one-half of all stimulant, α -agonist, and atomoxetine prescriptions (for comparison, in a recent national study, PCPs prescribed one-tenth of antidepressants to children and adolescents, compared with specialists⁷⁴). The access findings were congruent with ambulatory BH costs, in which shifts over time in both BH outpatient and pharmacy costs from specialty to primary care were demonstrated.

The shift in service venue from specialty to primary care (“task-shifting”⁷⁵) is a central tenet of integrated care that has substantial access advantages to patients and families, including proximity, continuity, familiarity, trust, reduced stigma, and lower cost.⁷⁶ Task-

shifting did not appear to be associated with a decrement in the quality of care, in that increases in the prescribing of anxiety, depression, and ADHD medications by BHIP PCPs adhered to guideline-congruent medications. Moreover, all patients receiving psychotherapy from BHIP BHCs had diagnoses targeted for primary care management, and the average number of therapy visits was consistent with brief primary care intervention.⁷⁷ Other BHIRA-derived quality-of-care indicators were significant increases in the extent to which BH screening, evidence-based care, and quality improvement activities occurred in BHIP practices.

Total ambulatory BH spending increased by only 8% over 5 years, suggesting that BH task-shifting to primary care with the goal of increasing access did not

substantially increase costs. In the only other collaborative pediatric BH study in which researchers examined spending,⁴⁸ ambulatory BH costs in primary care also increased during the intervention because of greater access to BH services in that setting.

Total emergency BH spending decreased by 19%, which may partially reflect decreased (albeit not sustained) ED BH usage by patients in BHIP practices. By comparison, the medical center serving as a major referral site for pediatric BH emergencies in the Greater Boston area reported an 86% increase in ED BH volume from 2013 (983 visits) to 2017 (1824 visits) (D.R. DeMaso, MD, personal communication, 2018). It may be that early identification and intervention in lower-cost primary care settings can decrease overuse

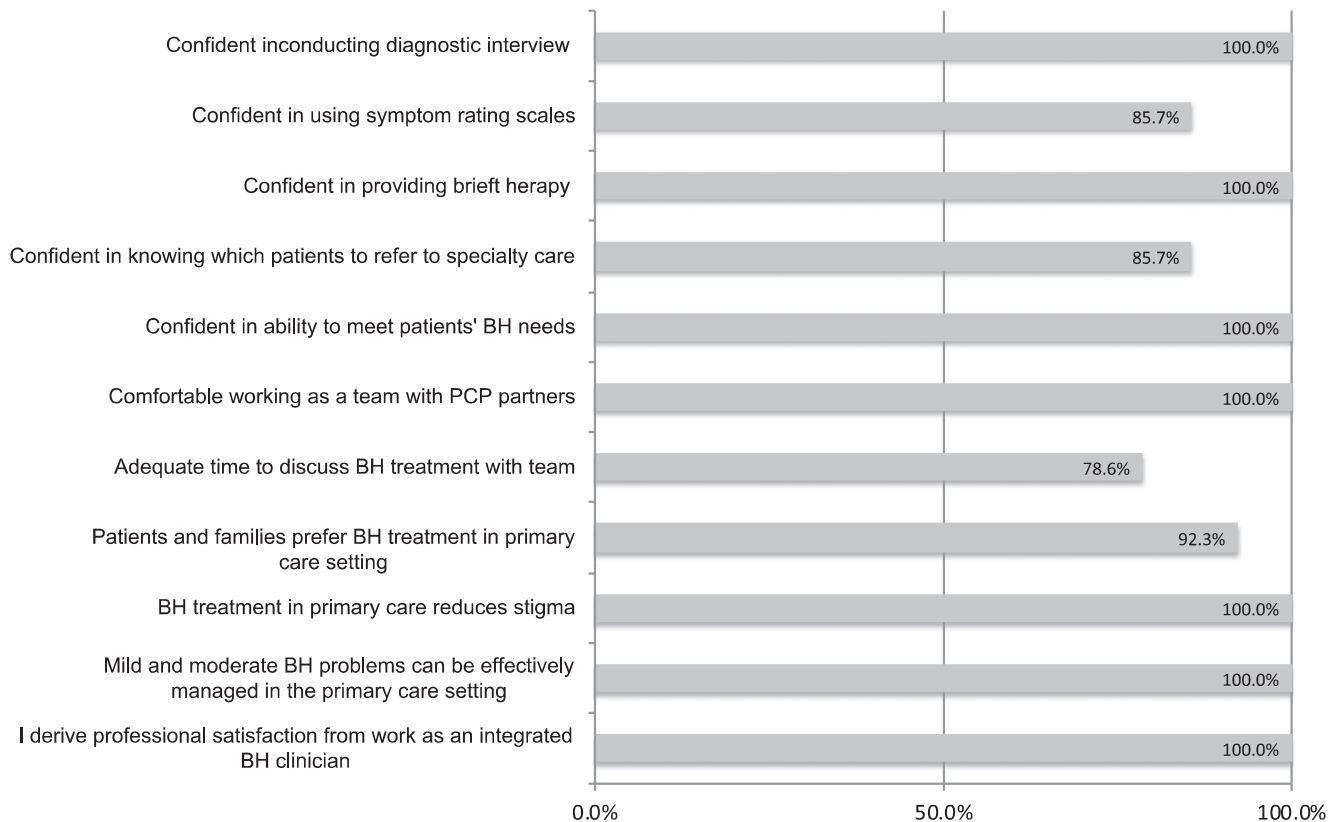


FIGURE 8
BHC self-efficacy and satisfaction ($n = 14$).

of high-cost emergency BH services, although this remains to be definitively demonstrated.

Provider burnout⁷⁸ was of interest in the BHIP because of the expansion of PCPs' and BHCs' scope of practice to include BH and primary care, respectively. In follow-up surveys, it was demonstrated that both groups of providers developed high BH self-efficacy and professional satisfaction as a result of BHIP participation, and nearly all came to believe that mild and moderate BH problems can be effectively managed in primary care.

Because subsequent phases of the BHIP are scaling up to all 84 network pediatric practices with nearly 400 PCPs, sustained expansion was a major focus from the outset. With philanthropic support, the education component is being

migrated to a free-access Web-based platform maintained by the affiliated medical center to enable on-demand PCP learning.⁷⁹ The consultation component merged with the MCPAP, which receives ongoing legislatively mandated state and commercial payer funding.^{80,81} In preliminary data, it is suggested that integrated BHCs can be revenue-neutral, despite relatively high unbillable services (J. Bromberg, PsyD, personal communication, 2018).

Strengths of this study include the large study population, high program participation rates, standardized interventions and outcome measures across all practices, a broad array of quality indicators, availability of EHR and claims data, and lengthy follow-up. As a quality initiative, findings from BHIP Phase-1

are informing program content, delivery, and support in subsequent implementation phases.

Limitations include the nonexperimental design, possibility of selection bias creating an early adopter cohort, service use and cost data limited to a single (albeit largest) commercial payer source (and as such, potentially limited applicability to higher Medicaid populations), inability to disaggregate the effects of individual program components, lack of a comprehensive cost-revenue analysis, and absence of clinical BH patient outcomes (planned for assessment in later BHIP phases after migration of all practices to a single EHR). Additionally, the BHIP benefits from implementation in a quality-driven pediatric practice network

affiliated with an academic medical center that provides grant-funded education and clinical and operational support and from participation in a state-funded CAP consultation program. As such, the BHIP model may need adaptation for other settings with different health care structures and resources.⁸²

CONCLUSIONS

In the findings from this study, it is demonstrated that the BHIP model is feasible to implement, highly valued by providers, and useful in contributing to health care's quadruple aim. If widely scaled, locally adapted, and sustainably funded, programs such as the BHIP can expand the BH workforce into pediatric primary care and in so doing, help alleviate the substantial gap between the millions of youth needing

quality BH services and those receiving them.

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ABBREVIATIONS

AAP: American Academy of Pediatrics
ADHD: attention-deficit/hyperactivity disorder
BH: behavioral health
BHC: behavioral health clinician
BHIP: Behavioral Health Integration Program
BHIRA: Behavioral Health Integration Readiness Assessment
BHLC: Behavioral Health Learning Community
CAP: child and adolescent psychiatrist
ED: emergency department
EHR: electronic health record
MCPAP: Massachusetts Child Psychiatry Access Program
PCP: primary care practitioner
SSRI: selective serotonin reuptake inhibitor

POTENTIAL CONFLICT OF INTEREST: The authors have indicated they have no potential conflicts of interest to disclose.

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