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General Pediatrician-Staffed Behavioral/Developmental Access Clinic Decreases Time to Evaluation of Early Childhood Developmental Disorders

Meghan Harrison, DO^{*,†}, Persephone Jones, MD, MPH^{*}, Iman Sharif, MD, MPH[†], and Matthew D. Di Guglielmo, MD, PhD[‡]

^{*} Department of General Pediatrics, Division of Developmental Medicine, Nemours/Alfred I. DuPont Hospital for Children, Wilmington, DE

[†] Department of General Pediatrics, Division of General Pediatrics, Nemours/Alfred I. DuPont Hospital for Children, Wilmington, DE

[‡] Department of General Pediatrics, Division of Gastroenterology, Nemours/Alfred I. DuPont Hospital for Children, Wilmington, DE.

Abstract

Objective: To describe and evaluate the effectiveness of a quality improvement project to decrease wait time to evaluation for children referred to Developmental Behavioral Pediatricians (DBPs).

Methods: The authors created a Behavioral/Developmental Access Clinic (BDAC) staffed by a general pediatrician (GP) and pediatric psychologist. Clinicians in the BDAC provided comprehensive developmental evaluations for children in a discrete age range (<5 yr old). We describe the establishment of the BDAC along with referrals, diagnoses, and recommended follow-up for patients seen by the GP. We used 2-tailed *t* tests to compare the mean time with initial evaluation for patients seen in BDAC versus a DBP.

Results: Sixty-three children were seen in BDAC over 6 months. Referrals from the BDAC included: physical/occupational/speech therapy (71%), psychology (35%), audiology (25%), genetics (14%), and neurology (8%). Five patients (8%) were diagnosed with autism spectrum disorder (ASD). Compared with time to appointment with a DBP (327 d), mean time to developmental assessment was shorter for the 45 patients who accepted earlier appointments in the BDAC (159 d), and for the 18 children seen in the BDAC as new referrals (11 d), *p* < .001. Follow-up with a DBP was recommended for 9 (50%) of the new patient referrals evaluated in BDAC.

Conclusion: The BDAC allowed for earlier developmental assessment of young children, with potential for earlier diagnosis and treatment of developmental disorders, including ASD.

Address for reprints: Meghan Harrison, DO, Division of Developmental Medicine, Nemours/Al DuPont Hospital for Children, 1600 Rockland Rd, Wilmington, DE 19803; meghan.harrison@nemours.org.

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Opportunity for initial evaluation in BDAC decreased the number of patients requiring evaluation by DBPs, improving access to this subspecialty in our institution.

Keywords

developmental evaluation; access to care; autism spectrum disorder

Patients often endure long wait times for evaluation with pediatric subspecialists.^{1,2} Barriers to access subspecialty care include limited number of specialists, uneven distribution of specialists, and increased numbers of patients seeking subspecialty evaluation.^{1,3} At our institution (a tertiary care children's hospital serving as a large referral center for the Northeast), patients seeking evaluation by a Developmental Behavioral Pediatrician (DBP) were one such group facing long wait times (nearly 12 mo) for new patient appointments.

The American Academy of Pediatrics' clinical practice guideline recommends early and regular assessment of developmental disorders in young children; developmental surveillance and screening within the medical home is a key component of the guideline's diagnostic algorithm.⁴ Through appropriate developmental surveillance/screening in the medical home, many children are referred to DBPs for comprehensive diagnostic evaluation and assistance with treatment planning. Abundant evidence exists demonstrating that earlier entry into appropriate therapy services is associated with improved developmental outcomes including language, IQ scores, adaptive functioning, and social skills.⁵⁻⁹ Despite this knowledge, comprehensive developmental evaluations and diagnoses of certain developmental disorders are often delayed.¹⁰ For example, data from the Autism and Developmental Disabilities Monitoring Network reveals that although autism spectrum disorder (ASD) can be reliably diagnosed before 24 months of age, the average age at diagnosis is nearly 2.5 years later (53 mo).¹¹ Additionally, while a developmental concern is documented in early health records for nearly 89% of children with ASD, 36% do not have a comprehensive evaluation until after 48 months of age.¹¹ Long wait time for evaluation with DBPs is one potential barrier to early diagnosis and treatment of many developmental disorders including ASD.^{10,11}

Long wait time for evaluation is a recognized barrier to access many other pediatric subspecialties.^{2,12-14} Institutions have tried various strategies to improve access to subspecialty care including embedding nurse practitioners and general pediatricians (GPs) within subspecialty clinics.¹²⁻¹⁵ Previously conducted surveys indicate that specialists feel 20 to 40% of their new patient evaluations could be managed by a GP.¹² However, visit length and access to specialist consultation have been cited as barriers to management of these conditions within the GP's office.¹³

At our institution, wait for an evaluation with a DBP was close to 12 months. New patients calling for evaluation were put on a wait list or scheduled for appointments far in the future. Identifying long wait time to evaluation with DBPs as a potential barrier to early assessment and diagnosis of developmental disorders, our institution searched for a solution. Prior studies at our institution evaluated the use of a "generalist as specialist/access" model within gastroenterology, neurology, genetics, and behavioral health clinics.¹²⁻¹⁶ Clinicians involved in creation of the access clinics identified specific conditions that they felt could be

appropriately evaluated and managed by a GP. Results revealed more timely new patient evaluations while maintaining high rates of patient satisfaction; 95% of completed surveys indicated that families were “completely satisfied.”¹³ Referring primary care physicians also reported satisfaction with evaluations completed by the access clinicians.¹⁶ Recognizing the potential wide variety of early developmental concerns and complex presentations of early developmental disorders, the current study describes our institution’s quality improvement (QI) initiative to adapt a “generalist as specialist/access” model for children seeking evaluation by a DBP.

METHODS

Setting

This study took place at a free-standing tertiary care children’s hospital in the Northeast. This institution is a referral center for 4 neighboring states.

Overview

To address the long wait time for evaluation by a Developmental Behavioral Pediatrician (DBP), members of the Division of Developmental Medicine, Division of Psychology, and Department of General Pediatrics identified the opportunity for creation of a Behavioral/Developmental Access Clinic (BDAC). The BDAC was created in July 2014 and staffed by a dedicated team including a general pediatrician (GP), pediatric psychologist, and social worker. It was decided that the BDAC would provide comprehensive developmental assessments to patients in a restricted age range (<5 yr old). This age range was selected in order to prioritize those patients with the potential to be most impacted by long wait time to evaluation and to allow the clinicians in the BDAC to develop their skill set in a discrete population. Additionally, the BDAC would serve as a primarily consultative clinic. This would allow the BDAC clinicians to maintain a high availability of new patient appointments with limited visit slots reserved for follow-ups.

The BDAC GP

The BDAC GP was a board-certified pediatrician with no additional formal training in Developmental/Behavioral Pediatrics. Prior to seeing patients in the BDAC, the BDAC GP spent time shadowing the institution’s DBPs during new patient appointments (children <5 yr old) and spent time observing the institution’s early childhood behavior clinics. The BDAC GP reviewed literature and received instruction on early childhood development and developmental disorders from the institution’s DBPs and psychologists. As the GP started seeing patients in the BDAC, the institution’s DBPs were available on-site to observe visits through a one-way mirror and discuss each case individually as needed. As the BDAC GP’s experience and expertise increased, the DBPs were no longer on-site but available for “real-time” consultation at the discretion of the BDAC GP.

Scheduling

New patients <5 years of age seeking evaluation for a developmental or behavioral concern were offered appointments in the BDAC. Patients identified with significant medical complexity, or seeking second opinions for specific developmental diagnoses (such as

autism spectrum disorder), were excluded. Patients were scheduled in the BDAC for initial evaluation with either the GP (if seeking appointment with a DBP) or the psychologist (if seeking appointment with psychology).

Patients were scheduled with the GP in one of two ways. First, patients who had future new patient appointments already scheduled with one of the institution's DBPs were identified *if* their appointment was scheduled for a date after the creation of the BDAC (July 2014). Parents of these identified patients were called and offered the option of scheduling an earlier appointment with the GP in BDAC; the preexisting appointment with the DBP was NOT canceled. Second, starting July 2014, families calling the Division of Developmental Medicine to request a new patient appointment with a DBP were offered the option of an appointment with the GP in the BDAC (Fig. 1).

Schedulers used a preset script that explained to parents that the physician in BDAC was a GP and not a specialty-trained DBP.

Scheduler's Script—"We have a new physician in Developmental Medicine who is a consulting general pediatrician with additional training and expertise in developmental issues. She is not a subspecialist, but has experience in most of the common developmental concerns you may have about your child. She works closely with the subspecialists in our division and refers to them as needed."

1. For patients who already have an appointment scheduled with a DBP:

"Would you like to schedule an appointment with this physician or would you prefer to wait for the appointment you already have scheduled?"

2. For new patient calls for initial evaluation:

"Would you like to schedule an appointment with this physician or prefer to schedule an appointment with a developmental pediatrician?"

Appointments with the GP in BDAC were 90 minutes. These comprehensive developmental evaluations included history taking, clinical observation, physical exam, and interpretation of screening or diagnostic measures. A standardized developmental screening tool (the Ages and Stages Questionnaire) was given to parents/guardians of all patients at the beginning of the visit. Other developmental screening tools (Modified Checklist for Autism in Toddlers), rating scales (Autism Spectrum Rating Scale), and diagnostic tools (Childhood Autism Rating Scale) were completed during or after the visit based on patient age and the caregiver's or clinician's primary concerns.

Objective

The objective of this QI study was to (1) characterize the patients seen in the BDAC (age, sex, diagnoses, etc.); (2) determine the type of medical referrals made from BDAC; (3) determine the rate of referral from BDAC to DBPs; and (4) determine the degree to which the BDAC could decrease wait time to initial comprehensive developmental evaluation.

Chart Abstraction Data

We completed a chart review using the electronic medical record to abstract data from all patients seen by the GP in the BDAC from July to December 2014. We recorded: age, date of scheduling phone call, date of appointment in BDAC, date of appointment with DBP (for patients with previously scheduled appointments), diagnoses given, medical referrals recommended, and number of patients referred to DBP from BDAC, among other variables.

Analyses

First, we used descriptive statistics to characterize the patients seen in BDAC and the rate of referral from BDAC to a DBP. To evaluate the ability of the BDAC to decrease wait time to initial developmental evaluation we calculated the number of days between the initial scheduling phone call and appointment in BDAC (for both groups) and days between the initial scheduling phone call and the patient's originally scheduled appointment with a DBP (for patients already scheduled). We used unpaired 2-tailed Student's *t* tests to compare wait time (days) to the initial evaluation in BDAC with the wait time to the patient's originally scheduled appointment with a DBP.

RESULTS

Patient Characteristics

A total of 63 patients were evaluated by the general pediatrician in the BDAC over the 6-month period reviewed; 45 (71%) were patients who already had appointments scheduled with a Developmental Behavioral Pediatrician (DBP) but accepted an earlier appointment in Behavioral/Developmental Access Clinic (BDAC); 18 (29%) were new patients calling for evaluation with a DBP who were instead scheduled directly in the BDAC. The majority of patients were male. The number of patients <3 years of age and ≥3 years of age was fairly equivalent (Table 1). Five patients (8%) met diagnostic criteria for autism spectrum disorder; 8 additional patients were referred for comprehensive autism evaluation with a psychologist trained in administration of the Autism Diagnostic Observation Schedule.

Referrals

Seventy-one percent of patients were referred to therapies including speech, occupational, physical, or feeding therapy; 35% were referred to psychology for further testing or behavior therapy. The most frequent medical referrals included audiology (35%), genetics (14%), and neurology (8%).

Referral to DBP

At the end of their BDAC visit, patients who also had future appointments scheduled with a DBP were given the option of keeping their scheduled appointment with the DBP. We found that 64% kept their appointment, 27% canceled the appointment, and 9% did not show up for the scheduled appointment (Fig. 2). Of the 18 new patients scheduled directly in BDAC, 50% were referred for further evaluation by a DBP and 50% were not.

Wait Time to Initial Evaluation

In the group of patients seen in BDAC who also had future appointments scheduled with a DBP, the average wait time from initial scheduling phone call to appointment with a DBP was 327 days. Accepting an earlier appointment in BDAC allowed those patients to instead be seen in an average of 159 days. This number includes the patient's elapsed wait time prior to the BDAC being established in July 2014, plus any additional wait time incurred after the BDAC was started. For the cohort of patients calling for new patient appointments after the BDAC was started (July 1, 2014) who were scheduled directly in the BDAC, the average wait time for appointment was 11 days. Accepting an appointment in BDAC led to significantly decreased wait time to initial evaluation in both groups studied, (Fig. 3, $p < .001$).

DISCUSSION

Summary

Patients under 5 years of age with a variety of developmental and behavioral concerns were evaluated by the general pediatrician (GP) in the Behavioral/Developmental Access Clinic (BDAC). Some were identified as having autism spectrum disorder while others were referred for further ASD evaluation. Many were referred to additional medical specialties and therapy services. Half of the patients for whom the initial appointment was made in BDAC were referred for subsequent evaluation with a Developmental Behavioral Pediatrician (DBP). Use of a GP-staffed BDAC allows for decreased wait time to initial comprehensive developmental evaluation.

Interpretation

Research indicates that the prevalence of children with developmental disabilities is increasing. In the period from 2006 to 2008, one or more disabilities were reported in approximately 1 in 6 children; the largest increase in prevalence was seen in ASD.¹⁷ A wealth of evidence has shown that allowing children's entry into appropriate therapeutic services earlier, and therefore when they are younger, has the potential to improve a child's long-term developmental outcome.⁵⁻⁸ Specifically looking at ASD, research continues to show that early intensive behavior therapy allows for improvement in language and overall social communication skills.⁶⁻⁸ With increasing numbers of children showing symptoms of developmental disorders and wait time for evaluation with DBPs remaining long, we need to explore alternative ways to provide children with timely comprehensive developmental assessments.

Our data shows that this model of an access clinic which provides primarily new patient consultative evaluations in a targeted age range decreases wait time to initial comprehensive developmental evaluation. This allows for earlier referral to therapeutic services, earlier referral to additional medical evaluations, and for some patients, allows for earlier diagnosis of ASD.

In our institution, the BDAC model improved access to DBPs. Although 100% of patients who already had appointments with a DBP were given the option to keep their appointment,

only 64% presented to that visit. We do not have data indicating why the other 36% did not keep the appointment; however, we speculate that possible reasons include the following: the parents' questions were answered during the BDAC visit, their child was getting appropriate services and had improved, or they had been seen by a DBP at another institution. This is an area for future study. Additionally, 50% of the patients who were scheduled directly in BDAC were not referred to DBP, effectively removing these patients from the wait list/schedule of the DBP. This allowed faster access to specialist evaluation for children needing more complex developmental and behavioral diagnostic evaluations and follow-up. Both of these effects of the BDAC decreased the number of children waiting for an appointment with a DBP.

Limitations

This study's cohort was small; thus far we have only reviewed data from the first 6 months of the program and we have not yet reviewed patients seen by the BDAC psychologist. We do not have data on the number of parents called from the wait list who refused the option of an earlier appointment in the BDAC. There is opportunity to study parent/patient satisfaction with this model. Lastly, while we looked at referrals and early entry into therapeutic services, we do not have data on long-term developmental outcomes.

CONCLUSION

In conclusion, use of a general pediatrician-staffed Behavioral/Developmental Access Clinic (BDAC) decreased time to initial comprehensive developmental evaluation for children in a targeted age range. Sustainability may be assessed through survey/study of patient (parent) satisfaction with visits in BDAC versus visits to Developmental Behavioral Pediatricians (DBPs). Future studies are warranted to determine the financial feasibility of sustaining a clinic with this model, diagnostic accuracy of the clinicians in this clinic, differences in outcomes between patients seen in the BDAC compared with a DBP, and determining characteristics of children requiring referral from the BDAC for further assessment with a DBP.

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Figure 1.

Scheduling algorithm for BDAC. Patients were scheduled with the GP in one of two ways. First, patients who had future new patient appointments already scheduled with one of the institution's DBPs were identified *if* their appointment was scheduled for a date after the creation of the BDAC (July 2014). Parents of these patients were called and offered the option of scheduling an earlier appointment with the GP in BDAC; the preexisting appointment with the DBP was NOT canceled. Second, starting July 2014, families calling the Division of Developmental Medicine to request a new patient appointment with a DBP were offered the option of an appointment with the GP in BDAC. BDAC, Behavioral/Developmental Access Clinic; DBP, Developmental Behavioral Pediatrician; GP, general pediatrician.

Figure 2.

Outcomes of previously scheduled appointments with a DBP appointment. All patients who had future appointments scheduled with a DBP but accepted earlier appointments in BDAC were advised to keep their appointment with the DBP. Sixty-four percent kept their appointment, 27% canceled the appointment, and 9% did not show up on the day of the appointment. BDAC, Behavioral/Developmental Access Clinic; DBP, Developmental Behavioral Pediatrician.

Average wait time for initial evaluation (days)

Figure 3.

Wait time (d) for initial developmental assessment. The average wait time from initial scheduling phone call to appointment with a DBP was 327 days. Accepting an earlier appointment in BDAC allowed those patients to be seen in an average of 159 days. For new patients scheduled directly in BDAC, the average wait time for appointment was 11 days. ($p < .001$ for both groups). DBP, Developmental Behavioral Pediatrician; BDAC, Behavioral/Developmental Access Clinic.

Table 1.

Demographics

Sex	n (%)
Male	50 (79)
Female	13 (21)
Age	
<3 yr	30 (48)
3 yr	33 (52)

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