A New Model to Decrease Time-to-Appointment Wait for Gastroenterology Evaluation

**OBJECTIVE:** To describe the implementation and evaluation of a quality improvement intervention to increase new-patient access and decrease time-to-appointment wait for gastroenterology care.

**METHODS:** We used a new model of care for gastroenterology evaluation. For specified clinical complaints, we offered new-patient appointments that were scheduled with a general pediatrician as an alternative to a subspecialist. A nurse navigator assisted in triaging patients. We analyzed all patient encounters over an 8-month period. To verify decreased time-to-appointment wait, mystery shoppers made semimonthly calls to centralized scheduling. We surveyed parents/families after visits with the pediatrician or subspecialists regarding satisfaction.

**RESULTS:** The “access” pediatrician evaluated and treated ∼40% of all new patients presenting to the division during the study period. Approximately 10% of new patients evaluated by the pediatrician (4% overall) were referred on to the subspecialist; fewer patients were reevaluated by the pediatrician in follow-up. The pediatrician ordered a minimal number of procedures. Semimonthly sampling revealed that overall new-patient access improved from an average time-to-appointment wait of 25 days to <1 day. Parent/family satisfaction was high for the patients evaluated by the pediatrician.

**CONCLUSIONS:** Embedding a general pediatrician within a subspecialty division, and navigating patients to this provider, can increase access to treatment of new low- to moderate-complexity patients. The access pediatrician can maintain patient satisfaction, provide high-quality care, and decrease need for subspecialist evaluation. The model, in the setting of a large academic medical center, may provide a solution for barriers to patient care such as lengthy time-to-appointment wait. *Pediatrics* 2013;131:e1–e7
For patients and health care providers, access to pediatric subspecialists presents a regional and national challenge with limited solutions. Complex patients, high patient volume, academic research, educational duties, and administrative responsibilities vie for subspecialists’ time. Subspecialists indicate that many patients who fill appointment slots can be managed by a general pediatrician. Primary care providers (PCPs) identify time pressures, available resources, and parental requests as barriers to managing patients without referral. Parents/families desire easy access to specialty clinicians. Scheduling patterns illustrate additional barriers to appointments with subspecialists at academic medical centers. The volume of patients treated in pediatric subspecialties is increasing each year.

Pediatric gastroenterology (GI) is an example of a subspecialty that has a growing patient population with increasingly complex patients. In our health system, patients must travel long distances (average of 32 miles) and endure long wait times (average of 5 weeks) to see pediatric-trained GI subspecialists. PCPs often are unwilling, without subspecialist consultation, to perform time-consuming diagnostic evaluations and often prefer a comanagement option. The resulting referral of patients to pediatric subspecialists decreases available appointments; parents/families demand timely care with quick resolution. Surveys conducted by the National Association of Children’s Hospitals and Related Institutions highlight shortages in GI, prolonged vacancies in hospitals, and uneven geographic distribution of GI subspecialists nationally. Responses to these challenges include expanding training and fellowship positions, coordination with adult subspecialists, use of telemedicine, and engaging other allied health professionals. The National Association of Children’s Hospitals and Related Institutions’ survey indicates that one-third of hospitals are using the strategy of expanding the generalist pediatrician’s role.

Nemours/Alfred I. duPont Hospital for Children (AIDHC) identified time-to-appointment-wait dissatisfaction of parents/families and referring physicians (data not shown) and embarked on an access initiative.

METHODS

Setting

Nemours/AIDHC is a nonprofit, free-standing tertiary care children’s hospital and the only children’s hospital in the state of Delaware. Several subspecialty divisions within the Department of Pediatrics experience long time-to-appointment-wait for new patients.

Planning the Access Initiative

Overview

To reach self-imposed benchmarks for patient satisfaction and health outcomes, Nemours/AIDHC analyzed negative feedback from parents/families and referring providers regarding obstacles to scheduling new-patient appointments with subspecialists. Representatives from the Department of Pediatrics, Nemours/AIDHC Family Advisory Council, Nemours Children’s Clinic ancillary staff, Nemours subspecialists, and community- and hospital-based pediatricians met to identify solutions. In response, Nemours/AIDHC leadership established the Access Initiative with a primary goal of offering and scheduling new-patient appointments within 5 business days of contact with the practice.

The Access Pediatrician

One strategy involved embedding a general pediatrician within the GI division (which includes 8 other providers). Internal discussions indicated that many patients referred to GI had chief complaints that subspecialists believed could be managed by the PCP, such as the following: constipation, gastroesophageal reflux, failure to thrive, and abdominal pain. A board-certified pediatrician (M.D.D.) with no additional formal GI training was recruited for a new position as the “access pediatrician” (AP) in the GI division.

Upon joining the division in September 2011, the AP met with the subspecialists to review clinical presentations/evaluations for a variety of chief complaints. The AP developed a management plan that reflected his 4 years of primary care experience, a synthesis of evidence-based methods used by the other division members, and an updated review of the literature. The AP became familiar with appropriate use of procedures and specialized testing through observation, literature review, education conferences, and ongoing discussions with division members. The AP refined his approach to patients in a continuous fashion. By virtue of membership within the division, the AP evaluated patients alongside the subspecialists who were available for timely consultation. The location of the AP within the division allowed “curbside” consultation with GI subspecialists colleagues at a frequency of 1 to 2 patients per week. At the start of each visit, the AP introduced himself to the family as a pediatrician working in the GI division.

The Nurse Navigator

The planning team identified early on that for the initiative to work patients had to be carefully navigated to the correct provider. Seeing the AP must not delay access to the subspecialist for new patients with complex diagnoses or concerns. Algorithms were developed to guide schedulers’ triage process.
questions. To ensure success, a nurse navigator was hired to develop and refine the protocols in real time, to contact patients ahead of time when useful, and to aid in communication with PCP offices. The individual who filled this role was an RN with 5 years of experience in primary care and patient triage who holds a Bachelor of Science in Nursing.

Scheduling

The AP template was built as a 5-day access template with 40-minute slots for new patients and 20-minute slots for follow-ups. If carefully selected, patients evaluated by the AP would require only 1 consultative visit and could be referred back to the PCP; the planning team set the ratio of new to follow-up slots at 11:1. Central schedulers handled calls for the Department of Pediatrics and were trained to direct callers seeking a new-patient appointment for a specific list of GI complaints and presentations (abdominal pain, constipation, reflux, vomiting, diarrhea, failure to thrive) to a visit with the AP. Callers were informed that they would be seeing a general pediatrician who works in the GI division and who has specific expertise in their child’s condition. Parents/families that preferred evaluation by the subspecialist, were seeking a second opinion, or had previously diagnosed, ongoing complex disease were scheduled with a subspecialist. Referring PCPs were educated about the AP role and its benefits and limitations, and they had the option to direct scheduling solely to the subspecialist.

Assessment

We sought to (1) demonstrate the impact of the Access Initiative on patient access to a provider in GI, (2) analyze the demographic characteristics and outcomes of patients evaluated by the AP, and (3) assess satisfaction of parents/families evaluated via the Access Initiative. The Nemours/AIDHC Institutional Review Board classified the study as exempt research.

Measures

Time to New-Patient Appointments

Beginning in January 2011, mystery shoppers made phone calls to central scheduling 2 times per month, presented a clinical vignette, and requested a new-patient appointment. Vignettes were developed by GI subspecialists in conjunction with schedulers who described typical call scenarios. Selected diagnoses/typical complaints appropriate for the AP included the following:

- Constipation: “My 5-year-old has not had a bowel movement in almost 5 days. His belly looks big and he’s cranky. This has been going on for a year. Can you help?”
- Abdominal pain: “My 16-year-old daughter has pain in the middle of her belly. She never wakes up from sleep because of pain, and using the toilet makes it feel better. She is better on the weekends.”
- Gastroesophageal reflux: “My 4-month-old spits up all the time. We’ve changed formulas but nothing is working. His doctor doesn’t know what else to do.”
- Failure to thrive: “Our one-year-old is not gaining weight. She drinks milk but we can’t get her to grow. Her older brother had the same problem.”

Mystery shoppers recorded the number of days until the first offered appointment. Significant steps were taken to make sure these calls were not identifiable to the schedulers. Pseudonyms for patients were entered into the electronic medical record system, and insurance coverage was verified ahead of time.

Analysis

We used descriptive statistics to report the proportion of all new and follow-up patients in the GI division evaluated by providers (AP or subspecialists) in the 8

Demographic Characteristics and Outcomes of Patients Evaluated by the AP

The AP kept a log of all patient demographic characteristics, chief complaint or complaints, and referral source. For each patient, the AP also recorded any procedures ordered, subsequent visits with the subspecialist, follow-up with the AP, and/or referral to another subspecialty.
months before and after the addition of the AP. To test the hypothesis that new-patient access improved after the addition of the AP, we used the t test to compare the mean number of days to a new-patient appointment for mystery calls made during each of the 2 periods noted. For patients evaluated by the AP, we used descriptive statistics to report frequencies for demographic characteristics, chief complaint, referral source, procedures ordered, GI follow-up, referral-to-other-subspecialist rate, and follow-up with the AP. To test the hypothesis that parent/family satisfaction was similar for new patients evaluated by the AP versus by subspecialists, we used Pearson $\chi^2$ to compare responses for each after-visit survey question.

RESULTS

Outcomes

Time to New-Patient Appointments

Before the addition of the AP (January 2011 through August 2011), the GI subspecialists evaluated 4053 patients (1380 new patients). From September 2011 through April 2012, the AP evaluated 889 patients (845 new patients) and the GI subspecialists evaluated 4012 patients (1328 new patients). Overall, 95.1% of patient encounters for the AP were new patients and 4.9% were follow-up patients in contrast to 33.1% and 66.9%, respectively, for the GI subspecialists. Of all the new patients presenting to GI during this period, the AP evaluated 38.9%. The entire GI division increased total patient volume by 20.9% after the addition of the AP and increased new-patient volume by 57.4% and follow-up volume by 2.1%.

Mystery-shopper results revealed that the wait time until new-patient appointments with the GI division improved from a mean of 24.5 days (median: 20.5 days; range: 1–61 days; SD: 20.4 days) for January 2011 through August 2011 to a mean of 0.94 days (median: 1 day; range: 0–2 days; SD: 0.6 day; $P < .001$) for September 2011 through April 2012 (Fig 1). On the updated survey, parents/families were asked about days waiting until appointment. Of those surveyed who saw the AP ($n = 93$), 37% responded “less than 1 day” and 9% responded “more than 5 days”; in contrast, of those surveyed who saw the subspecialist ($n = 84$), 8% responded “less than 1 day” and 54% responded “more than 5 days” ($P < .001$).

Three patients were erroneously scheduled with the AP, not the subspecialist as intended, and were rescheduled during or after the visit. Schedulers received ongoing feedback to ensure ongoing appropriate screening and triaging of patients. Parents/families with questions about the AP’s role received additional explanations during the visit and were receptive to the model, anecdotally, due to the short wait time until an appointment.

Demographic Characteristics and Outcomes of Patients Evaluated by the AP

The new-patient population was evenly split between males and females, and approximately two-thirds were under 10 years old; more than half had private insurance (Table 1). The most frequently occurring chief complaints

![FIGURE 1](image_url)

Mystery-shopper results. Mystery shoppers presented clinical vignettes semimonthly and recorded the number of days to first-offered new-patient appointment in GI. *Start of the AP. The mean number of days to first-offered new appointment before and after addition of the AP was significant, $P < .001$. Some appointments were offered the same day.
were abdominal pain, constipation, and gastroesophageal reflux (Table 2). The majority were referred by their PCP (Table 2).

Few patients who saw the AP required referral to the GI subspecialist. The AP referred 72 patients (8.5%) to the subspecialist after initial visits and 7 patients after follow-up visits. Patients were referred on to the subspecialist after an initial visit and procedure ordered by the AP 25 times (3.0%). Five patients evaluated by the AP in follow-up underwent a procedure ordered by the AP and then were referred to GI. The AP made 16 referrals to behavioral health and 40 referrals to non-GI subspecialties. Review of patient records revealed that 30 patients returned to GI subspecialist care after evaluation by the AP without AP referral, 26 after 1 visit with the AP (3.1%). The AP ordered a procedure for 55 patients (6.2%), with a total of 64 procedures ordered (some patients underwent >1 procedure), and ordered a specialized test for 61 patients (6.9%). The procedure ordered most was esophageoduodenoscopy with biopsy (69%), and the specialized test ordered most was a hydrogen breath test (53%). Other procedures included colonoscopy (22%) and anorectal manometry (5.0%); other specialized tests included sweat chloride (28%), hepatobiliary iminodiacetic acid scan (11%), and pH-impedance probe (9%).

**Patient Satisfaction**

Visit surveys revealed that parent/family satisfaction was high for the AP versus the subspecialists: 96.3% of surveyed parents/families evaluated by the AP responded “very satisfied” \( (n = 218) \) versus 85.6% \( (n = 195) \) for the subspecialists \( (P < .001) \). Free text comments were provided for \( n = 130 \) (59.6%) of patients evaluated by the AP and \( n = 89 \) (45.6%) of patients evaluated by subspecialists. For the AP and subspecialist alike, comments addressed the following themes: general satisfaction (“visit went great,” “everything was good,” “wonderful experience,” “made my child comfortable”; \( n = 164 \)), satisfaction with wait time/spent (“short wait,” “extensive time,” “in and out in 45 minutes,” “doctor spent quality time”; \( n = 13 \)), thoroughness of the evaluation (“answered all our questions thoroughly,” “explained everything,” “doctor very thorough,” “gave specifics”; \( n = 17 \)), knowledge of the physician (“doctor was knowledgeable and informative,” “doctor was very resourceful,” “educational visit”; \( n = 12 \)), and constructive feedback (“get better robes,” “rooms too cold,” “give out lollipops”; \( n = 13 \)).

**DISCUSSION**

**Summary**

The Access Initiative at Nemours/AIDHC used a novel model of care (AP, nurse navigator) and a paradigm shift for schedulers and subspecialty providers to achieve 5-business-day new-patient access. The initiative decreased the time- to-appointment wait for new patients, improving access; many patients were offered appointments within 1 business day. The AP evaluated >800 new patients for the GI division. The nurse navigator assisted the schedulers in directing appropriate patients to the AP. The AP ordered few procedures or specialized testing; the AP referred a small number of patients on to subspecialists. Parents/families gave positive feedback about time spent with providers, comprehensiveness of the provider, and satisfaction with prompt appointments. Overall, parent/family satisfaction was increased.

**Interpretation and Relevance**

A general pediatrician can manage most low- to moderate-complexity patients referred to GI subspecialists. The volume in subspecialty clinics is high, in part because PCPs often prefer that subspecialists assume care of their patients. Alternately, PCPs may desire an initial GI evaluation, specific treatment advice, or implementation of a treatment plan before undertaking management of their patients’ clinical conditions. Factors such as time constraints, communication inefficiencies, parent/family attitudes, and financial considerations drive PCP preferences as well. The challenge of unnecessary referrals is met by subspecialists who experience increasing patient volume, which is caused by growing demand and parent/family preference. When schedules approach capacity over time, the volume of follow-up patients begins to displace the availability of GI subspecialists to evaluate new patients. Yet, referring providers depend on rapid accessibility of subspecialists; moreover, parents/families insist upon it. The Access Initiative care model serves to assist the

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**TABLE 1** New-Patient Demographic Characteristics

<table>
<thead>
<tr>
<th>Category</th>
<th>( n (%) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>427 (50.5)</td>
</tr>
<tr>
<td>Male</td>
<td>418 (49.5)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>&lt;1 y</td>
<td>164 (19.4)</td>
</tr>
<tr>
<td>1–3 y</td>
<td>137 (16.2)</td>
</tr>
<tr>
<td>4–9 y</td>
<td>230 (27.2)</td>
</tr>
<tr>
<td>10–12 y</td>
<td>138 (16.3)</td>
</tr>
<tr>
<td>13–18 y</td>
<td>176 (20.8)</td>
</tr>
<tr>
<td>Insurance type</td>
<td></td>
</tr>
<tr>
<td>Private</td>
<td>472 (55.9)</td>
</tr>
<tr>
<td>Public</td>
<td>365 (43.2)</td>
</tr>
<tr>
<td>None</td>
<td>8 (0.9)</td>
</tr>
</tbody>
</table>

**TABLE 2** New-Patient Chief Complaint and Referral Source

<table>
<thead>
<tr>
<th>Chief complaint</th>
<th>( n (%) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdominal pain</td>
<td>264 (31.2)</td>
</tr>
<tr>
<td>Constipation</td>
<td>223 (26.4)</td>
</tr>
<tr>
<td>Gastroesophageal reflux</td>
<td>198 (23.4)</td>
</tr>
<tr>
<td>Vomiting</td>
<td>57 (6.7)</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>55 (6.5)</td>
</tr>
<tr>
<td>Failure to thrive</td>
<td>16 (1.9)</td>
</tr>
<tr>
<td>Other</td>
<td>32 (3.8)</td>
</tr>
<tr>
<td>Referral source</td>
<td></td>
</tr>
<tr>
<td>Primary care provider</td>
<td>611 (72.3)</td>
</tr>
<tr>
<td>Self-referred</td>
<td>116 (13.7)</td>
</tr>
<tr>
<td>Emergency department</td>
<td>63 (7.5)</td>
</tr>
<tr>
<td>Other subspecialty</td>
<td>55 (6.5)</td>
</tr>
</tbody>
</table>
PCP and patients in obtaining specialized care quickly.

Advanced access models in adult subspecialties partner subspecialists with PCPs to establish guidelines for referral or reconfigure scheduling to synergize the needs of patient and provider. The care model described here (in which a nurse navigator triages patients and an embedded general pediatrician evaluates patients to manage, direct, or initiate care) parallels a secondary care model, which is common in other countries, in which pediatricians serve as referral consultants, intermediaries between PCPs and subspecialists. Other features of the model that contribute to the overall goal include centralized scheduling, 5-business-day time-to-appointment slots for the subspecialists built into scheduling templates, and extended hours. The Access Initiative care model in pediatric GI uses many advanced access components in a subspecialty.

The previously described concept of pediatrician-as-specialist adapts to the Access Initiative care model. The utilization and success of the AP role, uniquely combining PCP and subspecialist management styles alongside nurse navigator triage, each with subspecialty division support, is reported here for the first time to our knowledge. Although the Access Initiative model experienced its greatest effect upon the implementation of the AP, the model of care only succeeds with advanced scheduling, subspecialty support, and a nurse navigator. In addition, the model relies on the acceptance of the AP by referring PCPs. The Access Initiative also responds to the challenge set forth by the Institute of Medicine (IOM): to improve care so that it is safe, timely, effective, efficient, equitable, and patient-centered. The Access Initiative in GI provides timely care and reduces wait times for both the straightforward and complex patient. Having a general pediatrician provide evidence-based care with access to subspecialist resources achieves the effective and efficient health care goals of the IOM at Nemours/AIDHC.

Limitations

Understanding the impact of all parts of the access model, including the nurse navigator, centralized scheduling, and extended hours, is integral to an overall assessment of the new care model in GI. Our evaluation focuses on the AP and thus may discount other drivers of improved access. The current study does not focus on referral patterns and inappropriate utilization of subspecialist providers in pediatrics, a relevant topic for future analysis. Changes in patient volume may not have been causally linked to our intervention, a limitation of observational studies. The number of patients refusing the AP option was not tracked for this study. Recall bias as well as social desirability bias may influence responses to the satisfaction questionnaires; parents/families may be reluctant to give negative feedback even in anonymous surveys.

Supplier-induced demand may yield an increase in referrals to GI as the referring PCP pool awareness increases. Although the addition of the AP may induce excess PCP utilization, the trend should level off with time; the risk of any such effect is mitigated by the increased number of complex patients evaluated by the subspecialist. A cost analysis of the financial impact of the Access Initiative requires additional study. Future analysis should consider whether the new care model can incorporate features that address additional reasons for inappropriate referral (time pressures, PCP reimbursement, and demand of parents/families).

CONCLUSIONS

Embedding a general pediatrician within the GI subspecialty division increased access for new patients with low- to moderate-complexity gastrointestinal complaints. The Access Initiative model in GI improves patient access and helps manage patient volume, with high patient satisfaction. The information learned through implementation of this model may be useful to other institutions striving to meet the IOM challenge to improve the quality of health care delivery.

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We acknowledge the guidance and contribution of J. Carlton Gartner, MD, Professor of Pediatrics, Thomas Jefferson University, and Vice Chairman of the Department of Pediatrics for Nemours/AIDHC. Dr Gartner was instrumental to this work during the planning of the Access Initiative, execution of the access clinic in GI, and preparation and review of this manuscript. We thank him for his unwavering support.

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