Improving Quality and Patient Satisfaction in a Pediatric Resident Continuity Clinic Through Advanced Access Scheduling

Sanjeev Y. Tuli, MD
Lindsay A. Thompson, MD, MS
Kathleen A. Ryan, MD
Ganga L. Srinivas, MD
Donald J. Fillipps, MD
Christopher M. Young, MD
Sonal S. Tuli, MD

Abstract

Objective To evaluate the impact of advanced access scheduling in a pediatric residency clinic on resident and patient satisfaction, medical education, practice quality, and efficiency.

Methods Residents were assigned to either the advanced access template (10 appointments available to patients and 2 physician overbooks) or the prior template (5 available and 8 overbooks). Outcomes included resident and patient satisfaction, appointment availability, and continuity of care and clinic costs.

Results Patient satisfaction improved in 7 areas ($P < .001$). Residents in either template did not report an impact on medical education experiences. Significant increases were realized with appointment availability and the number of patients seen. Continuity also increased as the overflow/acute visits decreased ($P < .001$). Overall costs per visit decreased 22%. Because of the significant improvements in access, continuity, and efficiency, all residents were switched to the advanced access template after completion of the study.

Conclusions Improvement in access to the primary physician has a significant impact on patient satisfaction with health care delivery. This model optimizes the limited time that residents have in continuity clinic, and it has implications for health care delivery quality improvement.

Introduction

A basic tenet of quality in health care is not just meeting, but exceeding, patient expectations. Factors that increase measures of patient satisfaction, such as improved access to a primary care physician and enhanced continuity of care, are consistently reported as evidence of quality in primary care.[1] A survey of 252 health maintenance organizations showed that 99.2% use patient satisfaction surveys as a measure of quality.[2] Additional research in nonteaching, general primary care clinics has also shown that access to primary providers is an independent aspect of quality medical care[3,4]; enhanced access can improve continuity of care, patient and physician satisfaction, and practice and patient outcomes. It can also contribute to a decrease in missed appointments.[3–6] Office-based projects of quality improvement need to address access and patient satisfaction together as important measures of influence and outcome.

Quality measures in resident continuity clinics are more difficult to achieve because of infrequent clinic sessions and large patient demands. Residency clinics consequently struggle to balance quality and continuity of care with their educational mission. Patients with chronic diseases use academic outpatient clinics more frequently and need ongoing and timely access to their providers.[7] Resident schedules may not allow for same-day or next-day urgent visits by established patients even if the resident is in clinic that day, and this lack of continuity has been cited as problematic for both resident education and quality of care.[8–10] Resident continuity clinics must also educate residents in primary care medicine and practice management, with some studies suggesting residents need ample time and didactic outpatient experiences for improved satisfaction[11] and an understanding of practice management and quality improvement.[12,13] In contrast, another study showed that residents who saw more patients in continuity clinic reported better preparedness for practice after residency.[14] The Accreditation Council for Graduate

All authors are at University of Florida. **Sanjeev Y. Tuli, MD,** is Associate Professor, at the Department of Pediatrics; **Lindsay A. Thompson, MD, MS,** is Assistant Professor, at the Department of Pediatrics and Department of Epidemiology and Health Policy; **Kathleen A. Ryan, MD,** is Assistant Professor, at the Department of Pediatrics; **Ganga L. Srinivas, MD,** is Assistant Professor, at the Department of Pediatrics; **Donald J. Fillipps, MD,** is Assistant Professor, at the Department of Pediatrics; **Christopher M. Young, MD,** is Pediatric Resident, at the Department of Pediatrics; and **Sonal S. Tuli, MD,** is Associate Professor, at the Department of Ophthalmology.

We thank Ms Heidi Saliba for her careful editorial recommendations on this manuscript.

Corresponding author: Lindsay Thompson, MD, MS, PO Box 100296, 1600 SW Archer Road, Gainesville, FL 32608, 352.334.1307, lathompson@peds.ufl.edu

Received November 09, 2009; revision received December 14, 2009; accepted January 11, 2010.

DOI: 10.4300/JGME-D-09-00087.1

Medical Education (ACGME) Residency Review Committee for Pediatrics recommends that pediatric residents see increasing numbers of continuity patients per session in clinic in their 3 years of residency.[15] Other than that, residency clinics are left without guidance as to how they might balance education with access, quality of care, and patient and resident satisfaction.

Different models of access as a means of quality improvement have been tested. The conventional model has all patients scheduled prospectively in a small number of future slots. It allows for overbooking at the physician's discretion. In contrast, in an open access model there are few or no slots available for prospective scheduling. Instead, patients call for same-day booking.[16] In the resident continuity clinic setting, open access has been adapted into a model for residents and the attending to form teams. Although the Residency Review Committee for Pediatrics requirements permit teams in continuity,[15] this approach may sacrifice continuity of care with a single provider for a patient and negatively affect patient satisfaction. A third model of advanced access (AA) offers an intermediate option in which most of the appointments are available to patients and families prospectively, whereas some are available proximally in an attempt to match supply to different demands for appointments.[17] Queuing theory is applied by minimizing visit types and using flexible visit types, such as using 2 return appointments to make an extended return/well-child check (WCC). This model requires continuous monitoring to adjust access and provide space for new or reassigned patients.[18,19] In adult practices, AA has been shown to increase continuity and quality of care while maintaining patient satisfaction.[20]

This study is the first, to our knowledge, to investigate whether AA to providers in a pediatric resident continuity clinic improves patient and resident satisfaction, no-show rates, and practice efficiency, while maintaining educational goals.

Methods

Setting and Subjects

Residents in the continuity clinic at the University of Florida in Gainesville, Florida, served as the intervention and control group for this study. This outpatient facility is the continuity clinic for 65% of the department's residents (n = 31 of 45). The pediatric residents undergo a standard, 3-year program in which they have clinic 1 half-day per week. Residents are mostly female (65.1%), non-Hispanic white (84%), and US medical school graduates (76.7%) and plan to enter primary care (55.8%). The patients who attend the resident continuity clinics are predominantly Medicaid recipients (70%), with 55% African American, 35% non-Hispanic white, and 10% Asian American or Hispanic.

Study Design

In this quasi-experimental study we prospectively randomized resident templates between March 1, 2006 and June 30, 2006. The dates were specifically chosen to capture part of the influenza and respiratory syncytial virus seasons and when interns were better adjusted to resident continuity clinics. Each faculty preceptor (n = 8) decided whether his or her assigned continuity clinic residents would change to the AA intervention group or remain on the prior template (PT), which served as the control group. Scheduling for the 2 templates differed in this manner: AA had 2 visit types and 12 appointments per session (10 available to patients who call/ask for an appointment, and 2 available for overbooking by the physician); the PT had 5 visit types and 13 appointments per session (5 for patients when they call/ask, 8 for overbooking by the physician).

The control group (PT) consisted of 12 residents (4 PGY-1, 4 PGY-2, 4 PGY-3), and the intervention group (AA) had 19 residents (7 PGY-1, 6 PGY-2, 6 PGY-3) with no statistically significant difference in PGY distribution between the 2 groups. The residents in both groups had a similar number of missed continuity sessions due to vacations or duty hour limitations (PT 24%, AA 21%, P = not significant [ns]). Because the resident clinics run concurrently with 2 attendings during every session, there were 2 sessions in which all 4 residents were on the AA template; 6 sessions occurred in which half were on the PT and half were on the AA. There was 1 session in which all were on the old template.

The residents and staff could see the scheduling templates. No other scheduling, personnel, or clinic policy changes were made during the study. To enable this change on March 1, the templates for the AA schedule were opened on February 1, 2006. Patients that were scheduled prior to this were transferred to the AA schedule with each family's consent.

Measures

Objective Quality Outcomes Objective outcomes included indicators of resident clinical productivity, continuity, patient access to providers and clinic, and measures of clinic operations and functioning. Resident clinical productivity and educational opportunities were calculated through rates of total and new patients seen per resident per session. To measure continuity, we calculated the rates of WCCs scheduled in the concurrent overflow-acute clinic because improving access with the primary resident in continuity clinic decreases the need for a WCC in this overflow-acute clinic (with a different resident and attending).

Patient access was measured in 2 ways. First, we calculated the total numbers of clinic sessions until the next available WCC and return visit for each resident. Because residents are only in clinic once a week, time to next session is at least 1 week (sometimes more with vacation and

TABLE **Resident Productivity and Continuity of Care**

	March		April		May		June	
	PT	AA	PT	AA	PT	AA	PT	AA
Mean number of patients seen per resident per session	5.0	5.4	4.7[a]	5.8[a]	4.4[a]	5.7[a]	4.3[a]	5.5[a]
Mean number of new/reassigned patients seen per resident per session	0.6[c]	1.3[c]	0.6[c]	1.3[c]	0.5[c]	1.1[c]	0.4[c]	1.0[c]
No-show rate, %	18.0[b]	27.0[b]	23.0	22.0	23.0	19.0	22.0	23.0
Well-child checks seen in acute clinic (% of all visits; prestudy rate = 4%)	1.4[c]		1.5[c]		1.4[c]		1.5[c]	

Abbreviations: AA, advanced access; PT, prior template.

[a] $P < .05$.
[b] $P < .01$.
[c] $P < .001$.

postcall clinic closing). Next, we calculated the total number of open slots per resident per session as an indicator of total clinic availability.

We examined 2 measures of clinic operations: the missed appointments (no-show) rate per resident per session by AA or PT templates and the overall clinical staff cost of clinic operation (total clinical staff salary divided by total number of visits). Because these costs are calculated for the clinic as a whole, we used the preceding 8-month period as a historical control. There were no changes to fixed costs (eg, purchasing vaccines) during the study period.

Satisfaction Outcomes We administered patient and resident surveys over time to monitor perceived effects of the scheduling change. Patient satisfaction surveys are routinely administered 4 times a year to a randomized sample of patients of all medical clinics associated with the University of Florida at Shands (n = 54 clinics). They are voluntary and anonymous and address overall satisfaction, timeliness of scheduling, length of wait time, information on delay in clinic, courtesy of staff (physicians, nurses, and front desk personnel), and clarity of any given instructions. We compared responses from before the study (January 2006; n = 66) with those gathered during (April 2006; n = 99) and after implementation (October 2006; n = 73). For the purposes of this study, we adapted responses from a 5-point Likert scale into a dichotomized variable of excellent (ie, the highest score of 5) or not excellent (all else; 1–4).

We also administered 4 sequential surveys to all residents in the study (n = 31 for the first 3 surveys, n = 20 for final survey due to resident graduation). The first survey was administered 1 week prior to the intervention (prechange survey, February 22–28); 2 were administered after the change but during the same academic calendar (postchange survey 1, April 24–28, and postchange survey 2, June 4–9), and the final survey was administered a year later (postchange survey 3, March 26–30). Although responses were deidentified, they were coded by a third party so that responses could be individually tracked over time.

Resident surveys covered resident demographics; perception of clinic functioning before, during, and after the schedule change; and effect on their education, including the impact of the scheduling change. Overall, 93.5% responded to the prechange survey (n = 29), 83.8% to the postchange survey 1 (n = 26), 93.5% to the postchange survey 2 (n = 29), and 84.0% to the postchange survey 3 (n = 16 due to survey administration after graduation).

Statistical Analyses

To measure the impact of the schedule change, we used Wilcoxon and exact tests to create rank values for each data point, using SAS version 9.1 (SAS Inc, Cary, NC). With this small sample, these nonparametric, 1-way tests decreased the variability of the data. Multivariate models used the SAS generalized linear models procedure. The patient and resident surveys were analyzed using chi-square tests in STATA SE version 8.2 (StataCorp LP, College Station, TX). The resident surveys also used factor analysis to isolate key responses and eliminate significant content overlap. For all analyses, we accepted a level of significance of 0.05. This study received exempt status from the Institutional Review Board of the University of Florida.

Results

Objective Quality Outcomes

Resident Productivity and Continuity Residents on the AA template saw more patients per session than residents on the PT template ($P < .05$) and 120% more new/reassigned patients (reassigned only due to graduating residents ($P < .001$; TABLE). Additionally, well-child visits in the overflow-acute clinic decreased 70% over the 4-month period following implementation of the AA template compared

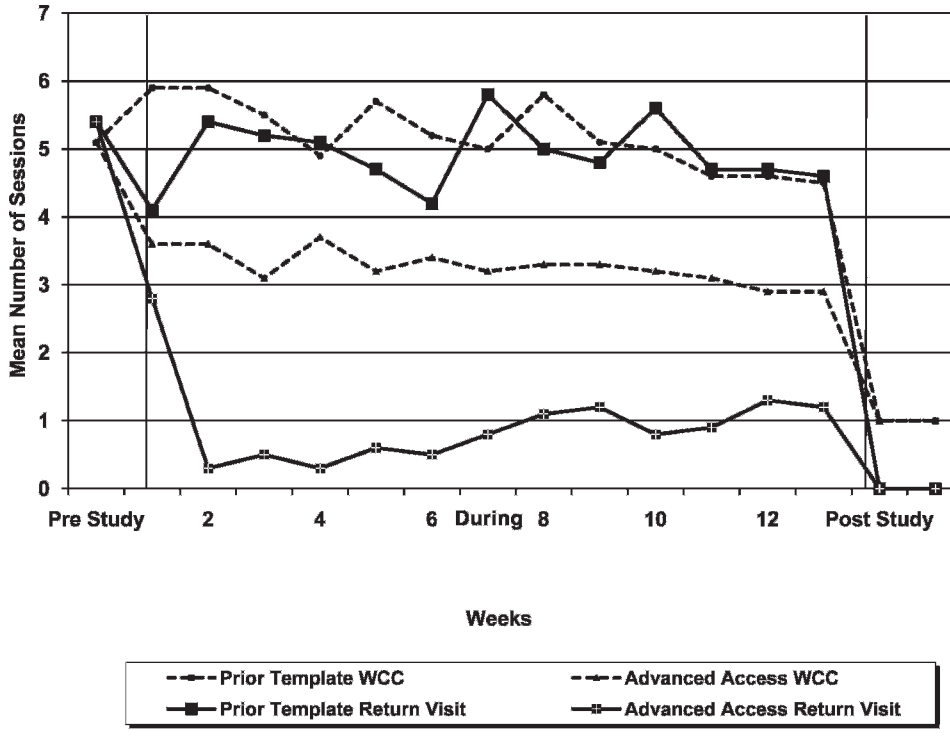

FIGURE 1 **Wait Time to Next Well-Child Check (WCC) and Return Visit Comparing Prior Template With Advanced Access**

with the 4 months before implementation (odds ratio, 0.3; 95% confidence interval, 0.2–0.5; $P < .001$), indicating increased continuity.

Measures of Clinical Operations The clinical staff costs per visit for resident continuity clinic decreased 22% from $31 ($260 958 for 8043 visits) prior to implementation of the AA template (July–February 2005) to $25 ($108 533 for 4293 visits) after implementation (March–June 2006). We found no change in the rates of missed appointments between the 2 groups.

Schedulers spent up to 2 hours per week preparing and refining the AA schedules. At $20 per hour (including benefits), the cost for the 4-month study period was $1600 or about $0.37 per visit, which was more than offset by the increase in visits and reductions in overtime costs for other staff. Eight months before the schedule change, monthly staff costs per month were $32 619 and monthly visits were 1005. Four months during the change, monthly staff costs per month were $27 533 (including $400 monthly scheduler costs per month) and monthly visits were 1073.

Patient Access There was a significant reduction in mean number of sessions (weeks) needed to wait until the next available WCC or return visit between the AA and PT templates (all differences $P < .05$, by 2 weeks into the study; FIGURE 1). Multivariate models of the number of sessions until the next available WCC or return visit affirmed the significant decrease in time to next available appointments on the AA template compared with the PT template and, as expected, also showed independent effects of year in residency and week of study (data available upon request).

To contrast individual residents' availability, we also examined total clinic availability (FIGURE 2). In this example, a randomly chosen date is highlighted to illustrate the number of WCCs and return visits available per resident per session for the subsequent 8 weeks. All residents combined on the PT template averaged 0.2 available appointments each per session for up to the next 7 weeks. In contrast, the AA template residents averaged 1.5 available appointments immediately and 6 to 7 appointments available at 6 weeks later. This pattern was seen for all weeks throughout the study, but only 1 is shown here for clarity.

Satisfaction Quality Outcomes

Patient Satisfaction Patient satisfaction during the study improved significantly in 2 areas: the ability to make a routine appointment and a reduction in wait times in the clinic (all $P < .05$; FIGURE 3). During the same period, patient satisfaction did not change in the concurrent faculty practice or the adolescent clinic despite having the same location, staff, and office hours. Patient satisfaction surveys measured at the study's end (once all residents adopted the

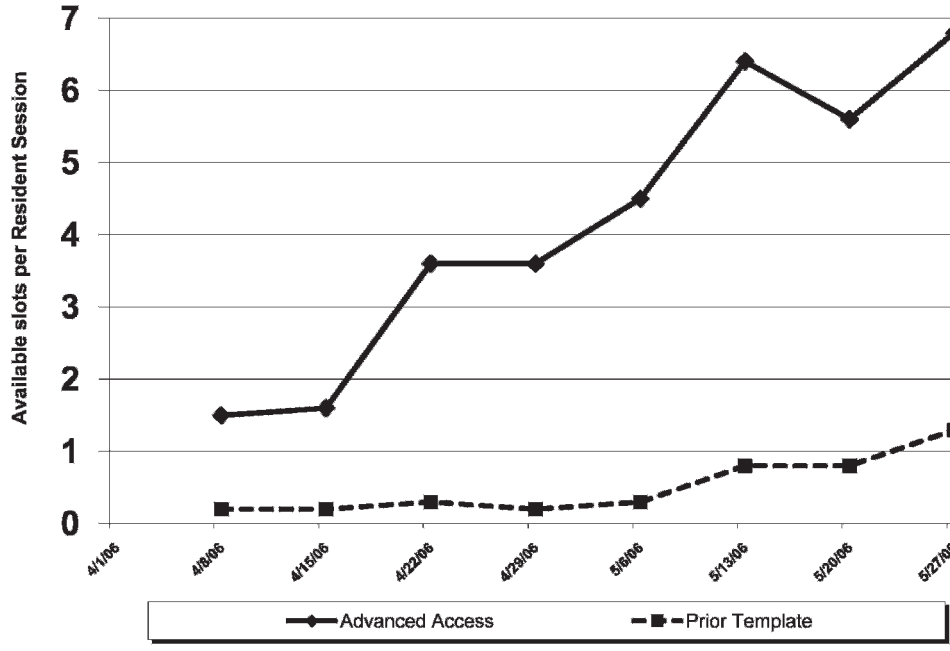

FIGURE 2 **Eight-Week Outlook for Appointment Availability Comparing Prior Template With Advanced Access Template**

AA template) showed additional improvements in overall satisfaction, the ability to make urgent appointments, reductions in the delay of information, and courtesy of staff and nurses (all $P < .001$) when compared with responses prior to the implementation.

Resident Satisfaction Residents' responses to questions about their opinions of clinical operations did not vary over time, by year in residency, by primary or subspecialty future plans, or, more importantly, whether their schedule changed. For example, when asked if scheduling issues

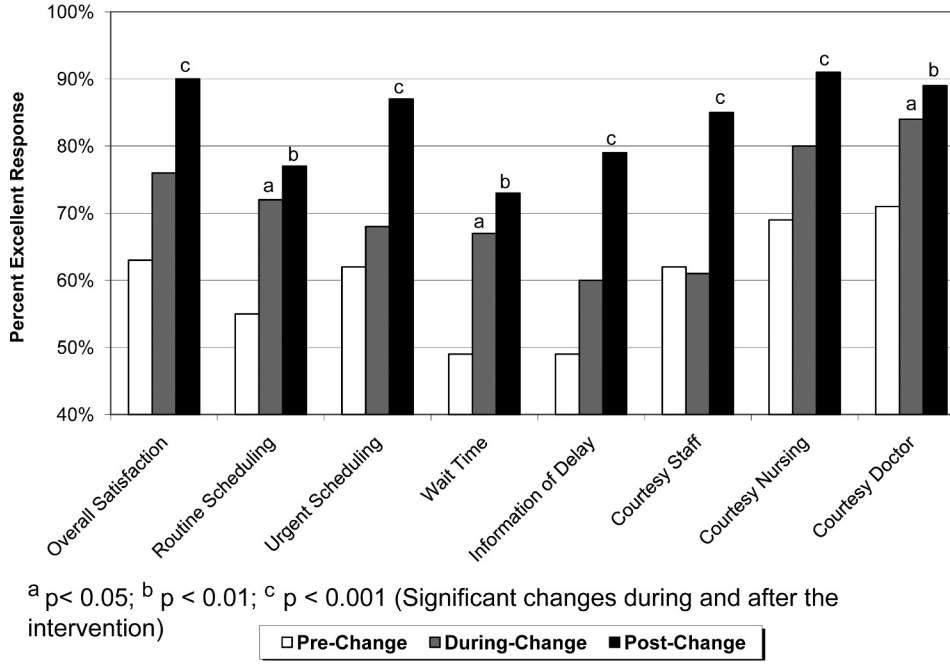

FIGURE 3 **Patient Satisfaction Surveys Before, During, and After the Study**

affected the efficiency of continuity clinic, 72.3% agreed at the prechange survey that it was influential, and 84.0%, 75.8%, and 62.5% agreed at the postchange surveys 1 to 3, respectively (P = ns). Residents were divided on their view of the scheduling change on clinic functioning. Respondents on both templates were evenly divided as to whether the change had a positive impact to clinic, with 25% to 33% reporting they found it positive and 25.0% to 37.5% reporting they thought it had a negative impact (postchange surveys 1–3; P = ns).

Questions regarding personal satisfaction with continuity clinic varied little over time or by whether their schedule changed, with 66.7% of respondents on the prechange survey indicating they were somewhat or very satisfied with their clinic schedule; and 57.6% reported this on postchange survey 1, 50.0% on postchange survey 2, and 75.0% on postchange survey 3, respectively, with that difference not reaching statistical significance. Schedule type did not influence these responses. However, on multivariate-ordered logistical models of satisfaction, residents on either schedule reported similar levels of satisfaction on postchange survey 1. By postchange survey 2, however, residents on the AA template were less satisfied than those on the PT template (odds ratio, 0.02; 95% confidence interval, 0.01–0.4; $P < .05$).

Although these models controlled for year in residency, career goals, and lag effects of satisfaction (all of which improved with each survey and time since implementation of the schedule change), they did not control for proximity to graduation nor did they control for increased clinical workload. Results from postchange survey 3 did not reveal any continued dissatisfaction with overall clinic functioning. Importantly, residents did not report an impact on their medical education experiences from the scheduling change. Although residents agreed that patient satisfaction influenced their clinical experiences (76.9%–78.6% on each survey, P = ns) and that experiences in continuity clinic influenced their career choice (55.0%–68.8% on each survey, P = ns), these responses did not vary by AA or PT. A high proportion cited the importance of practice management during residency (80.2%–86.1% on each survey, P = ns), but a smaller proportion felt comfortable with managing scheduling flow, even after implementing the change in schedules (13.7%–23.0% on each survey, P = ns). Again, these did not vary by AA or PT templates.

Discussion

Our study confirms that an AA schedule increases continuity and quality of care and maintains and increases patient satisfaction. In addition, it shows that AA increases resident productivity and preserves excellence in resident education, patient care, clinic efficiency, and satisfaction. Given the new recommendations by the American Board of Pediatrics to perform quality improvement projects for the maintenance of certification, implementing AA in other clinical settings may provide incremental benefits to patients, staff, residents, and attending alike.

The marked improvements in all aspects of patient satisfaction (even in areas not directly related to physician access) likely emerged from improved access. Residents' educational opportunities actually improved as they were able to see larger numbers of patients and, importantly, to have more patient continuity. Likely due to this increase in work, residents on the AA template temporarily reported lower satisfaction during the intervention, but this disappeared a year after implementation. Further, residents did not report any overall negative impact on their educational experience. Because of the significant improvements in access, continuity, and efficiency, all residents were switched to the AA template after completion of the study.

A primary concern with this quality improvement project was the possible impact on resident education. With the duty-hour limitations implemented in 2003 and the subsequent reduction in time available for outpatient duties, it has become increasingly difficult to provide high-quality medical education experiences in the continuity clinic setting.[20–23]

Providers schedule most of the slots in the conventional model of scheduling (PT), placing the responsibility of scheduling under residents' and attending control. It had been assumed that opening access to patients (either in an open access or AA model) would overburden residents, decrease quality of care, and decrease both resident and patient satisfaction. In contrast, conventional models of scheduling in continuity clinics are plagued by episodic care and decreased continuity as patients simply do not have access to their providers when they need them.[24,25] Although there are multiple determinants of resident satisfaction in continuity clinics,[12,26–28] it is paramount that schedules balance educational opportunities through patient interactions and didactic opportunities through faculty encounters and understanding practice management. AA seems to offer this alternative.

Monitoring and improving access allows the staff to spend more time addressing patient needs as they do not have to repeatedly look for provider permission to overbook. Even with an increased number of visits, patients perceived that their wait times had decreased. Unfortunately, the no-show rates did not significantly improve, but this may be due to other factors, such as insurance status, a known predictor of no-show rates.[29] In essence, the reduction in staff costs per visit was a combination of increased visits, a small increase in scheduler costs for monitoring, and a significant reduction in overtime.

A limitation of this study is that it was performed at a single institution using a quasi-experimental design. It is unknown if repeating this intervention in other continuity clinics would have findings as pronounced as ours.

However, the longevity of our follow-up analyses implies that the benefits of the intervention are sustainable. We chose to measure only selected outcomes of the impact of the scheduling change on clinic efficiency and resident and patient satisfaction and did not collect data on attending, nursing, and other staff satisfaction with schedule implementation. Yet, given the improvement in patient satisfaction and maintaining resident learning, we feel the project succeed in enhancing quality of care.

Increasing access in our resident continuity clinic improved patient satisfaction, reduced operational costs, and maintained resident learning, showing that resident continuity clinics can combine novel techniques of practice management while preserving their dedication to resident education. It enhanced the residents' clinical experience through an emphasis on actual patient continuity, optimizing the limited time that residents have in continuity clinic. One reason for the success of this schedule intervention was that we monitored access before, during, and after the study. We routinely monitor access and detect variances. Although labor-intensive, this allows us to make adjustments in schedules before they become a problem, and it saves time as it avoids overbooking and the need for patient rescheduling. Future studies should measure the educational value of resident involvement in continuous quality improvement regarding issues of practice management and the improvement of health care delivery.

References

1 Sans-Corrales M, Pujol-Ribera E, Gene-Badia J, Pasarin-Rua MI, Iglesias-Perez B, Casajuana-Brunet J. Family medicine attributes related to satisfaction, health and costs. *Fam Pract*. 2006;23(3):308–316.

2 Landon BE, Rosenthal MB, Normand SL, Frank RG, Epstein AM. Quality monitoring and management in commercial health plans. *Am J Manag Care*. 2008;14(6):377–386.

3 Bundy DG, Randolph GD, Murray M, Anderson J, Margolis PA. Open access in primary care: results of a North Carolina pilot project. *Pediatrics*. 2005;116(1):82–87.

4 O'Connor ME, Matthews BS, Gao D. Effect of open access scheduling on missed appointments, immunizations, and continuity of care for infant well-child care visits. *Arch Pediatr Adolesc Med*. 2006;160(9):889–893.

5 Braganza S. Implementation of advanced access in pediatric residency training. Paper presented at: Pediatric Academic Society; May 2006; San Francisco, CA.

6 Rust CT, Gallups NH, Clark WS, Jones DS, Wilcox WD. Patient appointment failures in pediatric resident continuity clinics. *Arch Pediatr Adolesc Med*. 1995;149(6):693–695.

7 Serwint JR, Kumar G. The effect of patient reassignment on future continuity in a pediatric resident continuity practice. *Arch Pediatr Adolesc Med*. 1999;153(6):581–585.

8 Hixon AL, Chapman RW, Nuovo J. Failure to keep clinic appointments: implications for residency education and productivity. *Fam Med*. 1999;31(9):627–630.

9 Morgan ED, Pasquarella M, Holman JR. Continuity of care and patient satisfaction in a family practice clinic. *J Am Board Fam Pract*. 2004;17(5):341–346.

10 Groff SL, Carlson LE, Tsang K, Potter BJ. Cancer patients' satisfaction with care in traditional and innovative ambulatory oncology clinics. *J Nurs Care Qual*. 2008;23(3):251–257.

11 Dumont-Driscoll MC, Barbian LT, Pollock BH. Pediatric residents' continuity clinics: how are we really doing? *Pediatrics*. 1995;96(4, pt 1):616–621.

12 Serwint JR, Feigelman S, Dumont-Driscoll M, Collins R, Zhan M, Kittredge D. Factors associated with resident satisfaction with their continuity experience. *Ambul Pediatr*. 2004;4(1):4–10.

13 Darden PM, Ector W, Moran C, Quattlebaum TG. Comparison of continuity in a resident versus private practice. *Pediatrics*. 2001;108(6):1263–1268.

14 Croskell SE, Young PC. How well does the continuity experience prepare residents for practice? *Ambul Pediatr*. 2002;2(5):401–405.

15 Accreditation Council for Graduate Medical Education. Program requirements for residency education in pediatrics. Available at: http://www.acgme.org/acWebsite/RRC_320/320_prIndex.asp. Accessed April 27, 2010.

16 Kennedy JG, Hsu JT. Implementation of an open access scheduling system in a residency training program. *Fam Med*. 2003;35(9):666–670.

17 Witt MJ. Advanced access works!: improved patient satisfaction, access, and P4P scores. *J Med Pract Manage*. 2006;22(2):107–111.

18 Belardi FG, Weir S, Craig FW. A controlled trial of an advanced access appointment system in a residency family medicine center. *Fam Med*. 2004;36(5):341–345.

19 Salisbury C. Does advanced access work for patients and practices? *Br J Gen Pract*. 2004;54(502):330–331.

20 Cohen-Gadol AA, Piepgras DG, Krishnamurthy S, Fessler RD. Resident duty hours reform: results of a national survey of the program directors and residents in neurosurgery training programs. *Neurosurgery*. 2005;56(2):398–403; discussion 398–403.

21 Kuo AK, Ma CT, Kamei RK. Evening continuity clinic: preserving primary care education in the face of duty hour limitations? *Ambul Pediatr*. 2004;4(4):332–335.

22 McBurney PG, Moran CM, Ector WL, Quattlebaum TG, Darden PM. Time in continuity clinic as a predictor of continuity of care for pediatric residents. *Pediatrics*. 2004;114(4):1023–1027.

23 Neher JO, Kelsberg G, Oliveira D. Improving continuity by increasing clinic frequency in a residency setting. *Fam Med*. 2001;33(10):751–755.

24 Brousseau DC, Hoffmann RG, Nattinger AB, Flores G, Zhang Y, Gorelick M. Quality of primary care and subsequent pediatric emergency department utilization. *Pediatrics*. 2007;119(6):1131–1138.

25 Christakis DA, Wright JA, Koepsell TD, Emerson S, Connell FA. Is greater continuity of care associated with less emergency department utilization? *Pediatrics*. 1999;103(4, pt 1):738–742.

26 Barnett DR, Bass PF III, Griffith CH III, Caudill TS, Wilson JF. Determinants of resident satisfaction with patients in their continuity clinic. *J Gen Intern Med*. 2004;19(5, pt 1):456–459.

27 Feigelman S, Olsson J, Drutz J, Dungy CI, Lopreiato J, Serwint JR. Changes in pediatric residents' perceptions of their continuity experience during their training: a national study. *Ambul Pediatr*. 2005;5(4):221–227.

28 Serwint JR. Multisite survey of pediatric residents' continuity experiences: their perceptions of the clinical and educational opportunities. *Pediatrics*. 2001;107(5):E78.

29 Rose MS, Chung MK. On with the show. *MGMA Connexion*. January 2003. Available at: http://findarticles.com/p/articles/mi_qa4083/is_200301/ai_n9180568/?tag=content;col1. Accessed April 27, 2010.