

Patient Follow-up in an Urban Resident Continuity Clinic: An Initiative to Improve Scheduling Practices

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Abstract

Introduction Failure to schedule timely follow-up appointments may impair continuity and quality of care, especially for patients with low health literacy and unstable living situations. Resident continuity clinics face particular challenges in scheduling patient follow-up because of residents' complex schedules and limited time in clinic.

Methods As part of a structured quality-improvement curriculum, residents initiated discussions with clinical supervisors and clerical staff to evaluate and improve scheduling practices in an urban continuity clinic. The problem-solving process emphasized feasibility (rapid implementation/evaluation cycle, low time/resource burden) and measurable outcomes. These discussions led to design of a new scheduling form. We evaluated the short-term impact of awareness raising by comparing scheduling rates before (month 1) versus after (months 2–3) implementation, and of the form itself by randomly

selecting 2 afternoon clinics to implement the new form, with a third serving as control.

Results We analyzed all patient encounters over a 3-month period ($n = 910$), excluding patients with a recommended follow-up interval of greater than 4 months. The proportion of appointments “never scheduled” (at 1 month after provider-requested follow-up date) declined from 18.8% (95% confidence interval [CI], 14.5%–23.9%) in month 1 to 11.4% (CI, 8.1%–15.5%) in month 3. This proportion was significantly higher before than after implementation of the form (multivariable relative risk, 1.49; 95% CI, 1.08–2.03; $P = .02$), both in clinics that used and did not use the form ($P = .93$ for difference).

Conclusions We describe a model resident-led, team-based intervention that addressed core competencies in graduate medical education while improving outpatient scheduling practices.

Editor's Note: The online version of this article contains a Figure: Depicting the Impact of a New Form on Scheduling Workflow in an Urban Resident Continuity Clinic, a sample appointment request form, and the study design.

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Introduction

Missed follow-up appointments (“no-shows”) in primary care are a well-studied problem, with demonstrated negative clinical impact,^{1–3} patient-level risk factors,^{4–7} and effective systemic interventions.^{8–16} By contrast, never-scheduled follow-up appointments remain poorly described. Scheduling effectiveness has been evaluated in specialty clinics,¹⁷ but rates of recommended but never-scheduled follow-up appointments in primary care have not been documented. Scheduling follow-up is particularly difficult for resident-run clinics serving disadvantaged populations. Resident schedules may not be available in advance, patients may lack stable contact information, and underresourced clinics may have unreliable scheduling systems. Unlike patient no-shows, never-scheduled follow-up appointments may not come to providers' attention. Failure to schedule follow-up appointments may therefore have serious consequences for patient health, provider continuity, and health care usage. Improvement of scheduling practices in resident continuity clinics provides a unique opportunity to improve a poorly studied and clinically important process while addressing the Accreditation Council for Graduate Medical Education (ACGME) core competencies of practice-based learning and improvement, interpersonal and communications skills, and systems-based practice.

Methods

Setting

The General Medicine Clinic of San Francisco General Hospital is a safety-net primary care clinic exclusively serving uninsured or publicly insured patients. We evaluated all patients seen by second- or third-year residents in their primary continuity clinics over a 3-month period (October to December 2009). Thirty-two internal medicine resident providers (15 second-year and 17 third-year) were included; each provider's continuity clinic occurs on one afternoon (Monday, Tuesday, or Thursday) per week.

Because open-access scheduling for residents leads to panel discontinuity, patients are scheduled using set appointments only. Follow-up appointments are scheduled using handwritten 8.5×4-inch slips with provider-specified follow-up requests (eg, "return to clinic 2–3 months"). After completing their clinical encounters, patients take these slips to the front desk for scheduling by clerical staff. If the provider's schedule is open through the requested follow-up time (generally 2 to 3 months, depending on inpatient scheduling), the patient is given a follow-up appointment immediately. If the resident's schedule is not open, the scheduler keeps the slip until the provider's schedule becomes available from the residency program (online supplementary FIGURE 1).

Program Design

Resident providers at the General Medicine Clinic participate in a quality improvement (QI) curriculum based on the American Board of Internal Medicine's Practice Improvement Modules, consisting of four 1-hour sessions per year. During these sessions, residents learn the principles of QI (eg, plan-do-study-act cycles, process diagramming, team-based problem solving) and are provided structure and support for individual or joint clinic-based QI projects. When residents discussed potential QI targets, clinic patients never receiving follow-up appointments emerged as a leading theme. After speaking with clinic leadership, one resident (D.W.D.) solicited informal input from other residents and organized a joint meeting of the clinic's medical directors, nurse manager, clerical supervisor, and members of the clerical staff. This meeting took the form of group brainstorming and consensus building, with all parties suggesting ideas for process improvement and holding veto power over proposals that posed a disproportionate burden on their constituency. Discussions emphasized feasibility for a resident-led project (including a rapid implementation/evaluation cycle and a low time/resource burden), fairness, and measurable outcomes. Consensus was reached on replacing the current blank 8.5×4-inch scheduling slip with a new appointment request form (online supplementary FIGURE 2). This form aimed to increase providers' scheduling efficiency, reduce illegible instructions, and minimize misplacement (online supplementary FIGURE 1), with minimal alteration to the

clinic's existing workflow. The lead resident designed the draft form, which was modified by all participants before finalization.

Program Evaluation

Our primary endpoint was the proportion of patient encounters with never-scheduled follow-up, defined as no primary care follow-up appointment with a medical provider (physician or nurse practitioner) scheduled at 1 month after the latest provider-requested follow-up date. We structured our analysis to simultaneously evaluate 2 components of the intervention. To evaluate clinic-wide awareness raising, our primary analysis compared never-scheduled follow-up during the postintervention period versus the preintervention period (online supplementary FIGURE 3). To evaluate the form itself, our secondary analysis compared 2 clinics in which the form was implemented to 1 clinic in which it was not (online supplementary FIGURE 3). Statistical significance was determined using the Fisher exact test, Wilcoxon rank-sum test, or logistic regression as appropriate. Multivariable analyses simultaneously adjusted for all measured variables. We calculated relative risks and associated confidence intervals using log-binomial regression.¹⁸ Significance of monthly trends was evaluated with the Cuzick nonparametric test. Variance estimates were inflated to account for clustering of multiple visits by individual patients.

Ethics and Conflict of Interest

This study was approved by the joint Institutional Review Board of the University of California, San Francisco, and San Francisco General Hospital and was funded by internal quality-improvement funds.

Results

Program Implementation

Beginning in October 2009 (month 1), schedulers saved all appointment requests for analysis. On November 1, 2009, the clinic launched the program, using new scheduling request forms for Monday and Thursday clinics (new-form arm) and continuing handwritten slips on Tuesdays (blank-slip arm). All providers participated in brief interactive discussions highlighting never-scheduled appointments; Monday and Thursday providers were also oriented to the new forms.

Population Characteristics

Over 3 months, residents had 1138 encounters with 1017 patients, requesting 4-month (or closer) follow-up for 910 (798 patients). More than 80% of patients were nonwhite, and 46% were nonnative English speakers (TABLE 1). There were no significant patient demographic differences in the preintervention versus postintervention periods, but because of resident block scheduling, the postintervention period included more third-year and categorical residents (TABLE 1). The

TABLE 1	CHARACTERISTICS OF PATIENTS, PROVIDERS, AND FOLLOW-UP REQUESTS ^a				
Variable	Preintervention % (No.)	Postintervention % (No.)		Total (n = 910) % (No.)	P Value, Difference ^b
	Month 1 (n = 292)	Month 2 (n = 303)	Month 3 (n = 315)		
Patients					
Age	58 (49–66)	57 (47–65)	58 (48–66)	58 (48–66)	.42
Female sex	158 (54)	157 (52)	156 (50)	471 (52)	.36
Race					.28
Hispanic	106 (36)	117 (39)	83 (26)	306 (34)	
Asian	66 (23)	74 (24)	109 (35)	249 (27)	
Black	57 (20)	57 (19)	57 (18)	171 (19)	
White	51 (18)	42 (14)	55 (17)	148 (16)	
Other	11 (4)	13 (4)	11 (3)	35 (4)	
English as primary language	163 (56)	162 (53)	168 (53)	493 (54)	.48
Resides in same ZIP code as clinic	50 (17)	57 (19)	44 (14)	151 (17)	.78
No phone number	9 (3)	9 (3)	8 (3)	26 (3)	.83
Providers					
Third-year resident	121 (41)	160 (53)	171 (54)	452 (50)	.001
Primary care resident	123 (42)	88 (29)	97 (31)	308 (34)	< .001
Follow-up requests					
Requested follow-up <2 mo	84 (29)	57 (19)	88 (28)	229 (25)	.09
Request form available for audit	146 (50)	155 (51)	149 (47)	450 (49)	1

^a Presented as number of patients (%) except for age, which is presented as median (interquartile range).
^b Comparing preintervention to postintervention.

requested follow-up period was between 2 and 4 months for 75% of analyzed encounters.

Program Impact

The proportion of never-scheduled appointments was 18.8% (95% confidence interval [CI], 14.5%–23.9%) in month 1, 15.2% (11.3%–19.8%) in month 2, and 11.4% (8.1%–15.5%) in month 3. Never-scheduled follow-up was significantly higher in the preintervention than postintervention period (relative risk [RR], 1.49 for month 1 versus months 2–3; 95% CI, 1.08–2.03; *P* = .02), with no postintervention difference between the 2 arms (*P* = .93). Patients with less frequent follow-up (RR for ≥2 months in the new-form arm, 2.83; 95% CI, 1.46–5.46; *P* = .002) and unavailable request forms (RR, 1.81; 95% CI, 1.20–2.71; *P* = .004) were significantly more likely to have never-scheduled follow-up (TABLE 2). The new-form, but not blank-slip, arm demonstrated a significant month-over-

month decline in never-scheduled appointments (multivariable RR [95% CI] 0.70 per month [0.55–0.89]; *P* = .003; versus 0.84 [0.57–1.22]; *P* = .35; FIGURE).

Discussion

Among 910 patient encounters in an urban resident-run clinic, the proportion of never-scheduled appointments dropped from 18.8% to 11.4% over 3 months during a resident-facilitated quality-improvement initiative. This team-based intervention addressed core competencies in graduate medical education while also improving scheduling practices. Given that scheduling rates improved postintervention (primary analysis), but not between new-form versus blank-slip arms (secondary analysis), we hypothesize that the quality-improvement process had greater impact than the scheduling form’s content. This process involved physicians, scheduling staff, and clinic leadership in joint brainstorming

TABLE 2 RELATIVE RISK (95% CONFIDENCE INTERVAL) OF NEVER-SCHEDULED APPOINTMENTS^a

Variable	New-Form Arm		Blank-Slip Arm	
	Univariable	Multivariable ^b	Univariable	Multivariable ^b
Time: preintervention	1.52 (1.02–2.25) ^c	1.53 (1.03–2.27)	1.27 (0.74–2.18)	1.63 (0.90–2.93)
Patients				
Age (per 10 y)	0.99 (0.84–1.16)	0.97 (0.81–1.16)	0.80 (0.66–0.96) ^c	0.72 (0.57–0.91) ^c
Female sex	1.16 (0.79–1.72)	1.16 (0.78–1.72)	0.83 (0.49–1.41)	0.82 (0.47–1.41)
Race				
Hispanic	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)
Asian	1.14 (0.69–1.87)	1.12 (0.70–1.78)	1.21 (0.61–2.39)	2.02 (0.92–4.42)
Black	0.86 (0.47–1.58)	0.73 (0.41–1.27)	1.20 (0.55–2.59)	2.12 (0.87–5.16)
White	1.48 (0.88–2.50)	...	1.30 (0.60–2.81)	2.38 (0.88–6.39)
Other	0.35 (0.05–2.44)	...	1.05 (0.26–4.18)	1.43 (0.35–5.82)
English as primary language	0.98 (0.66–1.45)	1.09 (0.73–1.61)	0.92 (0.54–1.56)	0.77 (0.44–1.32)
Same ZIP code as clinic	1.08 (0.65–1.78)	1.13 (0.68–1.87)	1.20 (0.61–2.33)	1.60 (0.74–3.41)
No phone number	0.96 (0.29–3.16)	...	1.14 (0.29–4.34)	0.67 (0.15–2.93)
Providers				
Third-year resident	1.36 (0.92–1.99)	1.26 (0.86–1.84)	0.90 (0.52–1.56)	0.85 (0.42–1.72)
Primary-care resident	1.50 (1.01–2.22) ^c	1.39 (0.93–2.06)	1.43 (0.66–3.10)	0.85 (0.32–2.19)
Follow-up requests				
Requested follow-up ≥2 mo	2.53 (1.30–4.91) ^c	2.83 (1.46–5.46) ^c	1.62 (0.84–3.13)	2.20 (1.15–4.19) ^c
Request form available for audit	1.77 (1.18–2.65) ^c	1.81 (1.20–2.71) ^c	2.57 (1.35–4.87) ^c	3.50 (1.76–6.98) ^c

^aEllipsis indicates entry was excluded from multivariable analysis because of small numbers, to allow for model convergence.

^bAdjusted for all other variables listed in the Table.

^c $P < .05$.

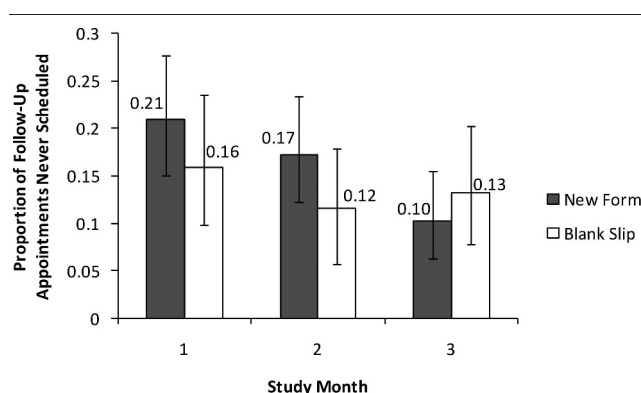


FIGURE PROPORTION OF NEVER-SCHEDULED APPOINTMENTS, BY MONTH AND STUDY ARM

The study intervention was implemented at the beginning of month 2. Error bars denote 95% confidence intervals using a binomial distribution.

and consensus building, which likely increased awareness and communication among all parties.

This resident-led project may serve as an exemplar for addressing the ACGME core competencies of practice-based learning and improvement, interpersonal and communications skills, and systems-based practice. In contrast to inpatient rotations, continuity clinics offer an opportunity to learn systems of practice, develop team-based solutions, and evaluate process-based interventions over multiple years. Residency programs should consider dedicating more time and funding to resident-led quality initiatives in continuity clinics.

This study has key limitations. First, in this nonblinded temporal analysis, the observed reduction in never-scheduled appointments may have been caused by unmeasured confounders or secular time trends, rather than the intervention itself. Second, although relevant to resident

clinics serving the urban poor, our study may not generalize to other primary care settings or to patients followed less frequently than every 4 months. Third, to complete the project (conceptualization, organization, form development, ethics approval, implementation, analysis, and dissemination) in the course of a resident QI curriculum, we limited our sample size and duration of analysis. Demonstration of long-term impact, process sustainability, and small statistical effect is challenging in resident-led initiatives, and future studies should evaluate “handoffs” of QI projects between residents to evaluate these important outcomes.

Conclusions

Failure to schedule follow-up appointments is a potential problem of underrecognized importance in primary care clinics. We describe a model resident-led, team-based scheduling intervention, during which the proportion of patients with never-scheduled follow-up dropped from 18.8% to 11.4%. This initiative may serve as a model for addressing core competencies of practice-based learning, communication, and systems-based practice in graduate medical education through resident-led, team-based projects based in resident continuity clinics.

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