

Enhanced Scheduling Support to Improve Continuity of Care in a Resident Training Clinic

Nancy A. LaVine, MD
Daniel J. Coletti, PhD
Jennifer Verbsky, MD
Lauren Block, MD, MPH

ABSTRACT

Background Clinical continuity is recognized as a driver of satisfaction for patients and physicians. Greater continuity may positively affect trainee decisions to enter primary care. Maintaining clinical continuity remains a challenge in residency clinics.

Objective We determined whether enhanced scheduling support was associated with improvement in internal medicine resident continuity with patients.

Methods This study was conducted from June 2017 to December 2018. In the intervention clinic, a single scheduling staff member (ratio of 10 residents to 1 scheduler) was colocated within the clinical space, allowing the scheduler to participate in clinical discussions and direct communication with physicians regarding future appointments. In the comparison clinic, scheduling staff (19:1 ratio) were located at a remote front desk area and relied on patient reports or electronic health record orders to identify appointment needs and arrange follow-up appointments. The main outcome of the intervention was resident continuity, calculated using the continuity for physician formula.

Results During the study period, mean resident continuity was 23% (range 13%–37%) in the comparison clinic (57 residents) and 54% (range 38%–66%) in the intervention clinic (10 residents). Resident continuity was significantly higher in the intervention clinic compared with the traditional control clinic for every quarter measured ($P < .001$ for all comparisons).

Conclusions Enhancing scheduling support through colocation and a lower resident to scheduler ratios was associated with significantly higher rates of resident continuity compared with a traditional front desk model, with results sustained over 18 months.

Introduction

Continuity is considered an essential tenet of outstanding primary care, enhancing clinical quality, health outcomes, and patient satisfaction as well as decreasing cost.^{1,2} Continuity of care can also enhance the experience of physicians, adding to the “Quadruple Aim.”³ Longitudinal, continuous relationships with patients remains a central principle of internal medicine training.⁴ Nonetheless, continuity of care in residency practices can be challenging given rotational schedules and the move to block scheduling ($x + y$) to eliminate competing demands of inpatient training. The enhanced longitudinal relationships that continuity provides may enrich resident ambulatory experiences and have a positive influence on trainee expectations about general internal medicine careers,^{5,6} which is important in order to address the forecasted gap in primary care providers.⁷

A review of the literature found several initiatives to enhance resident clinic continuity, including advanced access scheduling, long block scheduling, and electronic health record (EHR) changes,¹ yet resident continuity continues to lag behind continuity

in non–trainee-based clinics.⁸ In our experience, future primary care appointments are typically discussed between the physician and the patient, and the patient is given the responsibility of arranging the subsequent visit. Few studies have examined the relationship between scheduling and resident continuity in training clinics,^{9,10} and to our knowledge, no study has examined enhancing scheduling staff.

Scheduling staff are responsible for ensuring that patients are scheduled at the appropriate times with the correct continuity resident. Traditional front-desk models rely on patient-provided information or EHR orders to identify the details of the next appointment. In an effort to enhance resident clinic continuity within the limitations of a block scheduling model ($4 + 1$), we colocated scheduling staff within the clinical space and lowered the resident to scheduler ratio in 1 residency practice. Through scheduling staff enhancements, we sought to increase communication and knowledge of scheduling needs between residents and scheduling staff, and thus improve resident physician continuity in ambulatory practice.

Methods

This study occurred in 2 ambulatory practices within 1 university-based internal medicine residency

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TABLE
 Characteristics of Intervention and Comparison Clinics (Q3 2017 through Q4 2018)

| Characteristics | IMPACcT (Intervention) | Traditional (Comparison) |
|--|------------------------|--------------------------|
| Scheduling characteristics | | |
| Resident schedule (x + y) | 4 + 1 | 4 + 1 |
| No. of residents | 10 | 57 |
| No. of scheduling staff | 1 | 3 |
| Ratio of residents to scheduling staff | 10:1 | 19:1 |
| Location of scheduling staff | Precepting room | Front desk |
| Arrived appointments Q3 2017 through Q4 2018 | 2232 | 12 840 |
| Average arrived appointments/resident Q3 2017 through Q4 2018 | 223 | 225 |
| Patient characteristics | | |
| Average age, y | 50 | 49 |
| Female, n (%) | 1421 (64) | 7563 (63) |
| Black, n (%) | 302 (14) | 1809 (15) |
| Hispanic/Latino, n (%) | 1095 (49) | 5833 (48) |
| Medicaid/Medicare, n (%) | 1255 (56) | 6676 (55) |
| Uninsured, n (%) | 815 (37) | 4437 (37) |

Abbreviation: IMPACcT, Improving Patient Access, Care, and cost through Training.

program with 102 residents from June 2017 to December 2018. The practices, located in the same building, operate on 4 + 1 block schedules and care for patient populations with similar distributions in insurance coverage, age, and race/ethnicity (TABLE). Patients are randomly assigned to one of the practices when they initiate care in the clinic. The scheduling staff members in each practice have the same responsibility (scheduling subsequent appointments for patients at discharge) but differ in proximity to the residents and the ratio of residents to scheduling staff.

The intervention clinic, IMPACcT (Improving Patient Access, Care, and cost through Training) is an interprofessional primary care clinic funded by a Health Resources and Services Administration Primary Care Training and Enhancement grant. The IMPACcT patients are served by an interprofessional team of 10 internal medicine residents, medical students, and trainees in clinical pharmacy, psychology, and physician assistant programs. The IMPACcT residents are selected by application, typically based on interest in primary or interprofessional care, with an average of 5 to 7 residents applying for 5 open positions yearly. All patient appointments are scheduled with resident physicians. In IMPACcT, a single scheduling staff member is colocated within the clinical space (precepting room) with a ratio of 10 residents per scheduler (TABLE). By the nature of colocation, the scheduling staff member participates in daily huddles and precepting discussions during the patient visit. After the visit, the resident physician communicates directly with the scheduler, identifying

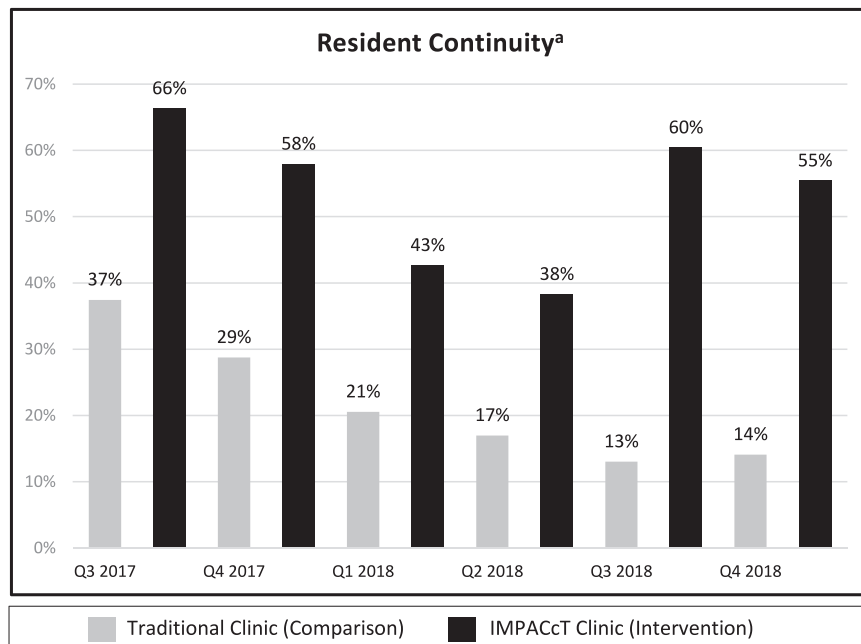
the preferred time and appropriate physician for the next appointment. The scheduling staff member then arranges the appointment as indicated and communicates details about the next appointment to the patient.

In the comparison traditional clinic with 57 residents, 3 scheduling staff members (19 residents per scheduler) are located at a separate front-desk area, remote from the clinical precepting space (TABLE). After the visit, the patient stops at the front desk for scheduling. As interactions between residents and scheduling staff are rare, scheduling staff members rely on patient reports or EHR orders to identify appointment needs and arrange follow-up appointments.

The main outcome assessed was resident continuity, calculated using the continuity for physician formula: the number of arrived appointments a physician has with his or her assigned patients divided by the physician's total number of arrived appointments.^{1,8} Assigned patients are determined by the primary care resident designation in the EHR. All arrived appointments with residents at each clinic were included in the analysis.

Resident continuity was measured quarterly (Q3 2017 through Q4 2018) using schedule data from the EHR. The proportion of arrived visits with an assigned provider in each practice was examined using chi-square tests with 2-tailed significance set at $P < .05$.

The project was reviewed and granted exemption by the Northwell Health Institutional Review Board.

**FIGURE**

Resident Continuity Defined as Number of Appointments a Physician Has With Assigned Patients Divided by Physician's Total Number of Appointments

^a $P < .001$ for all comparisons.

Results

Between Q3 2017 and Q4 2018, there were 12 840 arrived visits in the traditional clinic (57 residents) and 2232 in IMPACcT (10 residents), with similar numbers of arrived appointments per resident (TABLE). Mean resident continuity was 23% (range 13%–37%) in the traditional clinic and 54% (range 38%–66%) in IMPACcT. Resident continuity was significantly higher in IMPACcT compared with the traditional clinic for every quarter measured ($P < .001$ for all comparisons; FIGURE).

Discussion

In this study, enhancing scheduling support through a lower ratio and colocation allowed for significantly higher rates of physician continuity (54% versus 23%, $P < .001$), with results sustained over 18 months.

It is not clear whether this improvement in resident-patient continuity is due to a lower scheduler workload, enhanced communication between residents and the scheduling staff member, or improved scheduler familiarity with patients and residents through daily interactions, including huddles. All 3 aspects may have contributed to enhanced continuity.

Compared with interventions previously described,¹ overall rates of continuity in this study were low, and resident continuity in the traditional (comparison group) declined over time. This may be due to less

consistent maintenance of correct resident assignments in the EHR in traditional clinics, which has been recognized as an important component in establishing continuity.^{9,11}

Limitations of this study include the use of a single residency program, which limits generalizing to programs with different clinic settings and procedures. The interprofessional nature of IMPACcT and its small size (10 residents versus 57 residents) may have affected results. Residents in the IMPACcT practice may have more interest in primary care, which may influence continuity rates as well. In addition, as just 1 individual served as a scheduler for IMPACcT during the study, exceptional performance by that individual could account for some of the findings.

It is likely that building and maintaining resident continuity will require multiple interventions, including the robust empanelment efforts recently described by Wajnberg et al.¹¹ The role of scheduling team members through lower ratios and colocation should be studied in additional settings, with residents not selected for primary care interest, and for continuity measured by patient focus.

Conclusions

Enhancing scheduling staff through colocation and lower ratios in a resident clinic was associated with an increase in mean resident continuity, which was sustained over 18 months.

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All authors are with Zucker School of Medicine, Hofstra/Northwell Health. **Nancy A. LaVine, MD**, is Associate Chief of General Internal Medicine, Division of General Internal Medicine, and Assistant Professor of Medicine; **Daniel J. Coletti, PhD**, is Assistant Professor of Psychiatry and Medicine; **Jennifer Verbsky, MD**, is Associate Program Director, Internal Medicine Residency, and Assistant Professor of Medicine; and **Lauren Block, MD, MPH**, is Fellowship Director, Division of General Internal Medicine, and Associate Professor of Medicine.

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Corresponding author: Nancy A. LaVine, MD, Northwell Health, General Internal Medicine, 2001 Marcus Avenue, Suite S160, New Hyde Park, NY 11040, 516.519.5600, nlavine@northwell.edu

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