

BRIEF REPORT

Impact of Set-Day Clinic on Physician Continuity in a Family Medicine Residency Clinic

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ABSTRACT

Background and Objectives: Continuity of care between patients and their primary care providers is associated with improved patient outcomes and experience, decreased health care costs, and improved provider well-being. Strategies to enhance continuity of care in residency programs involve electronic health record, scheduling, and panel management methods. Our study compared physician-patient continuity rates (pre and post) for one family medicine residency's implementation of a set-day clinic (SDC) scheduling model.

Methods: In July 2019, Bethesda Clinic switched from a rotation-driven scheduling (RDS) model to SDC. Physicians were divided into two scheduling groups: Monday, Thursday, or Friday; or Tuesday, Wednesday, or Friday. We used visit data from two 6-month periods, October 2018 to March 2019 (RDS) and October 2021 to March 2022 (SDC), to calculate continuity using the continuity for physician formula. We used t tests to compare mean continuity rates between the RDS and SDC periods. In June 2022, faculty and residents were emailed a nine-question survey about SDC.

Results: Adherence to the SDC model ranged from 65% to 76%. Postgraduate year (PGY) 3 residents' continuity increased significantly ($P < .001$) from 44% (RDS) to 56% (SDC), while PGY2 residents' continuity increased, nonsignificantly, from 38% to 43%. Among those that completed the survey, 94% of residents and 78% of faculty were in favor of SDC.

Conclusions: We demonstrated that SDC is feasible and well received by residents and faculty alike. Continuity was highest for PGY2 and PGY3 residents during the SDC period. Predictable clinic schedules have the potential to improve continuity in family medicine residency clinics and may improve physician well-being.

INTRODUCTION

Continuity of care between patients and their primary care providers is strongly associated with improved patient outcomes, decreased health care costs, improved patient experience, and provider well-being.^{1–4} While high-performing, nonteaching primary care clinics achieve 75% to 85% continuity,⁵ primary care residents experience continuity less than 50% of the time.^{6–8} Residents expect the relationship building that comes from patient-physician continuity, and they risk burnout and dissatisfaction when frequently caring for patients they do not know.^{1,9,10} Moreover, continuity of care is a fundamental component and requirement of family medicine residency training.¹¹

Strategies to enhance continuity of care in residency programs involve electronic health record, scheduling, and panel management methods.^{6,10,12} Barriers to continuity largely include inpatient demands and rotational learning

schedules.^{13,14} Observational evidence from a pediatric residency suggests that scheduling residents for their outpatient continuity clinic on a set day improves their continuity.¹⁵ Whether set-day clinic (SDC) improves continuity for family medicine residents is unknown. In an effort to improve both resident and faculty physician-patient continuity, a SDC scheduling model was implemented in 2019 within Bethesda Family Medicine Clinic. Our study compared Bethesda Clinic's physician-patient continuity rates before and after implementation of a SDC scheduling model.

METHODS

Setting

Since 2019, Bethesda Clinic has participated in Clinic as Curriculum, a multiyear, multifaceted intervention to improve continuity of care and residency clinic functionality through scheduling innovation.¹⁶ Bethesda Clinic serves as the continu-

ity clinic for the University of Minnesota Woodwinds residency program of 10 faculty and 24 residents, and averages 18,000 visits per year.

Intervention

Prior to July 2019, the program director scheduled residents' continuity clinics according to their rotation (rotation-driven scheduling [RDS]). To create SDC, faculty and residents were divided into two groups: those scheduled on Monday, Thursday, or Friday; and those scheduled on Tuesday, Wednesday, or Friday. One rotation was unable to accommodate SDC and was discontinued. Clinic shifts scheduled outside of SDC-assigned days were templated as acute-care shifts with same-day visit slots. The program director prioritized scheduling residents for all-day clinic rather than just half days.

Time Period

We analyzed clinic visits for two 6-month periods: October 1, 2018, to March 31, 2019 (RDS); and October 1, 2021, to March 31, 2022 (SDC). We chose October through March to avoid the 3 months before and after July—key residency transition periods. We excluded faculty who were not present during both periods from the analysis.

Metrics

We used visit-level data to determine continuity. We used the continuity for physician formula (PHY), defined as a physician visit with a patient from that physician's continuity panel, as the primary outcome of interest.¹⁷ We calculated continuity individually for each physician. We excluded virtual visits (less than 5% in 2022) from the analysis.

In June 2022, we emailed a nine-question survey to faculty and residents from the post-intervention group. We asked them to indicate their level of agreement with a series of prompts on a 4-point scale, from "strongly disagree" to "strongly agree." Prompts included how SDC affected their experience in clinic, patient care, rotational learning (residents only), and teaching and scholarly activities (faculty only). Faculty also were asked which type of scheduling model they preferred.

Analysis

We analyzed patient visit data for four different physician roles (PGY1, PGY2, PGY3, and faculty) and during two different periods (2018–2019 RDS, and 2021–2022 SDC). Each patient visit during the SDC period was coded as either adherent if it occurred on a physician's SDC day, or nonadherent if it occurred on a day other than their SDC day. We calculated adherence rates for SDC scheduling for each physician at the day and visit level, and then averaged for each role.

For each physician role, we used independent sample *t* tests (residents) and paired *t* tests (faculty) to compare mean PHY continuity rates between the RDS and SDC periods. The RDC versus SDC comparison included both SDC adherent and nonadherent visits. We summarized survey data using proportions, with "strongly agree" and "agree" responses collapsed into one category and "strongly disagree" and "dis-

agree" responses into another. We conducted data analysis with SPSS version 28 (IBM Corp). The University of Minnesota Institutional Review Board deemed this project not human subject research.

RESULTS

Nine faculty were included in the continuity analysis. Pre- and postsamples included 23 and 24 residents, respectively. During the SDC period, mean adherence, the rate at which residents and faculty were scheduled for clinic visits on their set day, ranged from 65 to 76% (Table 1). PGY3 adherence was the highest and least variable. PGY3 residents' PHY continuity also increased significantly from 44% during RDS to 56% with SDC scheduling ($P < .001$; Table 2). PGY2 residents had a nonsignificant increase of 5% in PHY continuity (RDS, 38%; SDC, 43%), while faculty and PGY1 had a nonsignificant decrease.

TABLE 1. Proportion of Days and Visits During the Set-Day Clinic Scheduling Period (2021–2022) That Occurred on Physicians' Assigned Clinic Days (Adherent)

Physician role (n)	Day-level data		Visit-level data	
	Mean physician SDC adherence, % (range)	Overall SDC adherence, %	Mean physician SDC adherence, % (range)	
PGY1 (8)	62 (26–73)	65	66 (25–83)	
PGY2 (8)	63 (58–68)	72	71 (58–83)	
PGY3 (8)	64 (62–65)	76	76 (73–78)	
Faculty (9)	56 (41–68)	69	66 (50–86)	

Abbreviations: PGY, postgraduate year; SDC, set-day clinic

Sixteen residents (67%) and nine faculty (90%) completed the survey. Ninety-four percent of residents and 78% of faculty respondents were in favor of SDC, noting that it improved their clinic experience and their ability to schedule continuity patients' follow-up visits. All faculty (100%) and the majority of residents (81%) also agreed that SDC helped their continuity patients know which days they would be in clinic. Few residents (12%) and faculty (33%) reported that SDC interfered with their rotational learning and academic activities, respectively. Most faculty (67%) preferred SDC over RDS.

DISCUSSION

Compared to RDS, SDC scheduling improved PHY continuity rates for PGY3 residents. The larger impact on PGY3 continuity may be due to more robust continuity patient panels. Faculty continuity rates were higher than residents at baseline and did not improve with SDC. This may be due to their patients' established skills navigating their primary care provider's clinic availability.

Most liked SDC scheduling, and faculty preferred it over RDS. Both faculty and residents reported easier return visit scheduling and increased patient awareness of their schedules,

TABLE 2. Mean Continuity Differences Between Rotation-Driven Scheduling (2018–2019) and Set-Day Clinic Scheduling (2021–2022), by Physician Role

Physician role (n)	Schedule	Number of visits	Mean continuity (SE)	Mean continuity difference (SDC–RDS)	2-sided P value
PGY1 (8)	RDS	693	42 (2.8)	-5	.27
PGY1 (8)	SDC	721	37 (3.2)		
PGY2 (7)	RDS	2,439	38 (2.2)	+5	.36
PGY2 (8)	SDC	2,206	43 (4.2)		
PGY3 (8)	RDS	2,844	44 (1.4)	+12	<.001
PGY3 (8)	SDC	3,093	56 (1.9)		
Faculty (9)	RDS	3,506	57 (2.6)	-4	.13
Faculty (9)	SDC	3,102	53 (2.8)		

Abbreviations: PGY, postgraduate year; RDS, rotation-driven scheduling; SDC, set-day clinic

which might explain why continuity improved.

Scheduling residents predictably in their continuity clinic is difficult and complex because programs balance many competing educational experiences.¹⁸ A 2019 survey found that despite 89% of program directors endorsing the importance of clinic first, only 31% prioritized the clinic in scheduling.¹⁹ To our knowledge, this study is the first in family medicine showing that set-day scheduling is possible with a greater than 65% SDC adherence rate.

This study had several limitations. It focused on one residency program, and SDC may not be generalizable to other family medicine residencies. The study also lacked a control group and instead used a retrospective sample. Between 2018 and 2022, myriad changes occurred within the broader health care environment that could not be controlled for, including a health care system merger and the COVID-19 pandemic. However, because clinic operations were overall the same, the changes in PHY continuity were likely associated with SDC implementation.

CONCLUSIONS

Family medicine residencies embrace the value of continuity of care and relationships but struggle actualizing these values amidst competing priorities.¹⁸ In family medicine residency clinics, predictable clinic schedules have the potential to improve continuity of care, which may improve physician well-being.^{9,20,21} While our positive findings are limited to one institution, they align with another single-institution study.¹⁵ Larger scale research in other settings is needed to determine whether SDC improves continuity of care. In the meantime, we have demonstrated that SDC is feasible and well-received by residents and faculty alike.

PRESENTATIONS

Poster presentation on research in progress. NAPCRG Annual Conference, November 18–22, 2022, Phoenix, AZ.

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REFERENCES

- Blankfield RP, Kelly RB, Alemagno SA, King CM. Continuity of care in a family practice residency program: impact on physician satisfaction. *J Fam Pract.* 1990;31(1):69–73.
- Connolly MJ, Weppner WG, Fortuna RJ, Snyder ED. Continuity and health outcomes in resident clinics: a scoping review of the literature. *Cureus.* 2022;14(5):25167.
- Saultz JW, Lochner J. Interpersonal continuity of care and care outcomes: a critical review. *Ann Fam Med.* 2005;3(2):159–166.
- Saultz JW, Albedaiwi W. Interpersonal continuity of care and patient satisfaction: a critical review. *Ann Fam Med.* 2004;2(5):445–451.
- Bodenheimer T, Ghorob A, Willard-Grace R, Grumbach K. The 10 building blocks of high-performing primary care. *Ann Fam Med.* 2014;12(2):166–171.
- Fortuna RJ, Garfunkel L, Mendoza MD. Factors associated with resident continuity in ambulatory training practices. *J Grad Med Educ.* 2016;8(4):532–540.
- Osborn R, Bullis E, Fenick AM, Powers E, Banker S, Asnes A. Y scheduling in pediatric residency: continuity, handoffs, and trainee experience. *Acad Pediatr.* 2019;19(5):489–494.
- Wieland ML, Halvorsen AJ, Chaudhry R, Reed DA, McDonald FS, Thomas KG. An evaluation of internal medicine residency continuity clinic redesign to a 50/50 outpatient-inpatient model. *J Gen Intern Med.* 2013;28(8):14–15.
- Stepczynski J, Holt SR, Ellman MS, Tobin D, Doolittle BR. Factors affecting resident satisfaction in continuity clinic—a systematic review. *J Gen Intern Med.* 2018;33(8):386–387.
- Walker J, Payne B, Clemans-Taylor BL, Snyder ED. Continuity of care in resident outpatient clinics: a scoping review of the literature. *J Grad Med Educ.* 2018;10(1):16–25.
- ACGME Program Requirements for Graduate Medical Education in Family Medicine. *Accreditation Council for Graduate Medical Education.* 2022. https://www.acgme.org/globalassets/pfassets/programrequirements/120_familymedicine_2022.pdf.
- Chaudhry B, Wang J, Wu S. Systematic review: impact of health information technology on quality, efficiency, and costs of medical care. *Ann Intern Med.* 2006;144(10):742–752.
- Chaudhry SI, Balwan S, Friedman KA. Moving forward in GME reform: a 4 + 1 model of resident ambulatory training. *J Gen Intern Med.* 2013;28(8):100–101.
- Ellman MS, Tobin DG, Stepczynski J, Doolittle B. Continuity of care as an educational goal but failed reality in resident training: time to innovate. *J Grad Med Educ.* 2016;8(2):150–153.

15. Lerner CF, Chung PJ. Continuity of care in fixed-day versus variable-day resident continuity clinics. *Acad Pediatr.* 2010;10(2):119-123.
16. Adam P, Hersch D, Peek CJ. Implementing clinic first guiding actions across 4 family medicine residency clinics. *Acad Med.* 2022;97(2):233-238.
17. Darden PM, Ector W, Moran C, Quattlebaum TG. Comparison of continuity in a resident versus private practice. *Pediatrics.* 2001;108(6):263-264.
18. Bazemore A, Grunert T. Sailing the 7C's: Starfield revisited as a foundation of family medicine residency redesign. *Fam Med.* 2021;53(7):506-515.
19. Zeller TA, Ewing JA, Asif IM. Prevalence of clinic first curricula: a survey of AFMRD members. *Fam Med.* 2019;51(4):338-343.
20. Dubé K, Gupta R, Kong M, Knox M, Bodenheimer T. Continuity of care in residency teaching practices: lessons from "bright spots." *Perm J.* 2018;22(3):18-28.
21. Gupta R, Barnes K, Bodenheimer T. Clinic first: 6 actions to transform ambulatory residency training. *J Grad Med Educ.* 2016;8(4):500-503.