Chapter 6
Maximizing Continuity in Resident Clinic

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Introduction

Continuity of care between a physician and patient is associated with improved quality and efficiency of care, improved patient and provider experience, and better overall clinical outcomes for patients [1–7]. Studies specific to resident training clinics support the assertion that higher continuity is associated with better chronic disease management, improved preventive care, lower administrative burden, and better patient and resident satisfaction [8, 9]. Maximizing continuity of care in residency practice is particularly important to provide quality care to patients and support residency education. Achieving high levels of continuity, however, is challenging in residency practices. This chapter discusses both the importance of continuity and different methods of measuring it. In addition, we will explore means to maximize continuity in teaching clinics using different schedules and models.

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Outline
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The Case for Continuity

Studies have demonstrated that continuity of care is associated with improved chronic disease management, including quality of hypertension and diabetes care [1, 4, 10, 11]. Increased continuity is also associated with better delivery of preventative care, including colorectal screening, breast cancer screening, and immunizations [1, 4].

In addition to improved clinical outcomes, continuity is associated with improved satisfaction for both physicians and patients [12, 13]. Longitudinal relationships and continuity of care form the foundation of primary care. Supporting continuity improves provider satisfaction and helps to prevent physician burnout [7, 14, 15]. Enhanced continuity also imparts increased trust of physicians by patients [12]. These influential relationships are also incredibly important to the professional development of trainees. Experiences with continuity of care throughout training can influence career choice. In fact, developing a strong relationship with patients during training is a powerful predictor for entering a primary care specialty [16].

Beyond improvements in clinical outcomes and patient-provider satisfaction, there is evidence that improved continuity is associated with reduced hospital utilization and lower costs of care [3, 17, 18]. As value-based payment structures continue to evolve, patient satisfaction and financial accountability will become increasingly important.

Types of Continuity

Continuity can be defined from both the patient and trainee perspectives [19]. From a patient perspective, the most basic continuity measure indicates the proportion of visits in which a patient is seen by their primary care physician (PCP). From a resident physician perspective, continuity indicates the proportion of a resident's visits that occur with patients from their assigned panel. Both forms of continuity are crucial to consider when developing office scheduling processes and protocols to optimize quality, patient satisfaction, and physician satisfaction in a teaching practice.

The concept of continuity can be further extended to include other members of the clinical team. Some programs include the frequency of the attending–resident precepting dyad to define continuity between a patient and the supervising

physician and trainee dyad. Some institutions follow the continuity of the resident team (i.e., supervising physician and team of residents that share a panel of patients). The Veteran Affairs (VA) includes the assigned supervising physician in measures of continuity when considering continuity among resident physicians. With the expansion of team-based care models, continuity between patients and other multidisciplinary team members who help to coordinate care is becoming increasingly important.

Continuity of care is also an important consideration with the expansion of telehealth services. Telehealth may provide valuable opportunities to increase patient-PCP continuity [20].

Measuring Continuity

Residency teaching practices should prioritize measuring and tracking continuity. As one would expect, there are a myriad of different metrics for measuring continuity of care [19]. Continuity indices that are commonly used in training clinic settings include the "Usual Provider of Care" (UPC), "Modified Continuity Index" (MCI), "Modified, Modified Continuity Index" (MMCI), and "Continuity of Care" (COC) (Fig. 6.1). There are strengths and weaknesses for each. The UPC is defined as the proportion of all visits that are with the patient's PCP. The UPC, while easier to interpret, does not take into account dispersion of care among other clinicians [21]. The UPC metric is also less reliable when there are fewer visits. The corresponding metric from the physician's perspective is the PHY ("Continuity for Physician"), which measures the proportion of visits that an individual physician sees his or her own patients in a given timeframe [22].

- Usual Provider of Care (UPC) = n/N
- Continuity of Care Index (COC) = $\sum_{i=1}^{k} n^2 - N \ (N \ N - 1)$
- Modified Continuity Index (MCI) = 1-(P/N+0.1)
- Modified Modified Continuity Index = MCI/(1-1/N+0.1)

n = number of visits to a single provider (typically assigned PCP)
N = total number of visits for a single patient to other providers
P = total number of providers seen by a single patient
i = provider rank (index), from 1 to P

Fig. 6.1 Formula for calculating commonly used continuity metrics

Measuring continuity requires sufficient data on the number of visits with health care professionals. Some continuity indices require empanelment of patients to a specific primary care provider (such as UPC), while some do not (COC, MCI, MMCI) [19]. These indices range between 0 and 1; they approach 0 if all visits are with different clinicians, and equal 1 if all visits are with the same clinician. One of the easiest continuity measures to understand is the UPC metric. This is simply the percentage of primary care visits that are with the primary care provider, defined as seen from the patient's point of view. This is commonly used for its ease of calculation and its ready interpretability. For example, a UPC of 0.78 indicates that the patient saw their designated PCP at 78% of all measured primary care (or equivalent) visits. The UPC measure is most commonly measured in the context of all primary care visits, but alternative applications have also been developed. An innovative modification of the UPC continuity measure, used by the Veterans Administration health system, may include emergency department visits inside or outside the VA in the denominator. Continuity is lower if patients visit the emergency department more often, thereby placing responsibility on the primary care team to prevent unnecessary emergency department visits. In the VA system, a stated goal is that 75% of the time, a patient will see their own clinician when they are seen the primary care office or come to the emergency department [23]. The goal is to maximize the number of appropriate visits with the PCP (numerator) while minimizing unnecessary ED utilization and visits with non-continuity providers (denominator).

The MCI and MMCI provides a sense of continuity with a single provider, but also corrects for dispersion among other clinicians [24]. There is some suggestion that the MMCI is more appropriate than UPC, COC, or MCI for resident providers, to adjust for dispersion among other clinicians [24].

How these metrics are interpreted in settings where a resident physician has a panel of patients shared with an attending or "supervising" PCP may vary. In most cases, these metrics focus on visits that occur in the primary care office. However, the type of visits that are counted may be defined in different ways. For example, in VA clinics, continuity is assessed with UPC: the numerator is the encountered visits with the associate PCP (resident) + preceptor PCP (supervising physician), and the denominator is all visits to primary care clinics, urgent care clinics, or emergency department visits. Thus, if a resident sees their own patient in continuity or episodic care clinics, this counts for continuity. If a resident sees a patient that is not their patient but precepts with the panel attending for that patient (and the attending is on the encounter form as a primary or secondary physician), then this counts for continuity.

In order to evaluate resident physician continuity, these metrics can be altered from the patient perspective to the physician perspective. While not as strongly associated with health outcomes, this can be important for the resident's experience in continuity clinic and may be associated with improved physician satisfaction. This metric is commonly evaluated in residency continuity clinic settings when scheduling changes are enacted to make sure that continuity has improved for both patients and providers.

Finally, most of these metrics are based on traditional face-to-face visits in primary care, but the measures can be extended to include telehealth visits. Historically, continuity measures have not accounted for encounters via telephone, video, secure

messaging, group visits, or affiliated members of the team, although these interactions certainly contribute to the overall relationship between a provider and patient. As telehealth expands, practices should explicitly measure continuity for both face-to-face and virtual encounters.

Maximizing Continuity

Maximizing continuity is important to support patient and physician satisfaction, as well as to improve quality of care. There are several factors associated with increased continuity of care, including the consistent use of scheduling protocols, increased faculty clinical time, and increased number of resident clinical sessions per week [4]. Several examples are presented in Table 6.1. Having clearly defined scheduling

Table 6.1 Specific approaches to improve continuity in resident teaching clinics

Processes to maximize continuity	Examples
Clinic scheduling protocols	• Make sure that patients are clearly assigned to residents ("empaneled" or clearly designated in the electronic health record banner) • Establish protocols to prioritize continuity for nonurgent follow-up and preventive care visits with the primary resident [4] • Develop processes to assess whether urgent appointments can wait for primary residents. Otherwise, prioritize visit with primary team attending or team of advanced practice providers (APPs) [4] • Advanced access (or "open access") scheduling protocols may improve continuity, but protocols to increase access may decrease UPC [26]
Rescheduling residents pulled from clinic	• Adopt policies that prioritize stable and consistent resident clinic scheduling and prevent residents being pulled from clinic to cover other clinical duties [4] • If cancelling clinics is necessary, it is required that residents are rescheduled in clinic within several days to accommodate patients. Policies should emphasize the importance of clinic time, but not penalize residents [4]
Increased resident ambulatory clinical time and/or panel size	• Examine ways to increase the amount of time spent in clinic by residents • Increasing the number of sessions will improve availability (this increases UPC, but can decrease PHY) [29] • Increasing the number of empaneled patients to a resident increases PHY, but decreases UPC [29]
Thoughtful use of practice partners or advanced practice providers	• If PCP is not available and patients need urgent appointments, schedule with a full-time team anchor clinician or practice partner so that patients see one of the two clinicians for nearly all visits • Identifying a single "anchor" attending, advanced practice provider, or practice partner may increase continuity [4], likely by decreasing dispersion through MMCI or COCI; may not affect UPC or PHY

protocols that prioritize continuity for acute, chronic, and preventive care visits is an essential component of maintaining continuity in resident practices. These scheduling protocols will be unique to each practice and must balance the need for continuity with the need for maintaining access for patients. The balance between continuity and access will be partially contingent upon the amount of time that residents are available in clinic.

Maximizing the time that residents are in clinic is also a critical component to support continuity. The Accreditation Council for Graduate Medical Education (ACGME) has established core requirements outlining requirements for longitudinal continuity experience in the outpatient setting [25]. Although this establishes the minimal requirements, the absolute number of sessions required per week is not prescribed, and the optimal number of sessions to maximize continuity is not known. However, programs with increased number of resident clinical sessions per week are typically able to provide greater availability and continuity to patients and residents.

Resident panel size also influences continuity. Panel size should be determined based on residents' availability to care for those patients. The number of sessions residents are in clinic and the number of patients seen per session should guide overall panel size. In addition to the amount of time spent in clinic and the size of resident panels, practices should consider the structure of the schedule. There is mixed evidence regarding continuity in block schedules compared with continuity in traditional schedules [26]. In the largest study of block vs. traditional vs. hybrid scheduling, UPC was highest in the block model and lowest in traditional weekly; PHY was the lowest in block model, but subject resident-perceived continuity was the highest hybrid model [27, 28].

Rescheduling clinics for residents who are pulled to support inpatient needs is another important measure to consider when developing processes to maintain resident and patient continuity [4]. This requires programmatic and institutional recognition of the importance of outpatient training and patient access to their resident physician. Rescheduling policies also discourage residents from being pulled unnecessarily from ambulatory rotations.

Thoughtful integration of advanced practice providers (APPs), who may be nurse practitioners or physician assistants, can also support patient continuity with resident physicians. APPs are important members of ambulatory teams who can help improve access to care for patients. At the same time, APP visits may also hinder direct patient continuity with their resident physician. This can be reduced by having clear scheduling protocols that prioritize scheduling with resident PCP unless the patient has a need for an urgent appointment and the PCP is not available. Individual clinics must balance the competing needs for maintaining access for patients while prioritizing continuity with residents. This balance will be different for each program. In many teaching practices, patients are seen by numerous providers when their resident or faculty PCP is not available. Having a designated full-time team anchor clinician and clear scheduling protocols that require scheduling appointments with this single alternate team provider when the PCP is not available can greatly improve the continuity experience for patients.

Conclusion

Based on a review of the available evidence, continuity of care appears closely associated with all aspects of the "quadruple aim" including improving care outcomes, enhancing patient and provider experience, and lowering costs [30]. Residency teaching practices should place a high priority on measuring and tracking continuity and implementing strategies to maximize continuity of care for their patients and trainees.

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