

Terminations in Primary Care: a Retrospective Observational Study of 16 Primary Care Clinics



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BACKGROUND: The relationship between clinician and patient is the cornerstone of primary care. Breakdown and termination of this relationship are understudied yet important, undesirable outcomes.

OBJECTIVE: To better understand the nature and extent of provider and clinic termination of the primary care relationship.

DESIGN: Retrospective observational case-control study.

SUBJECTS: Adult patients in Eastern Massachusetts who received primary care at hospital- and community-based clinics and health centers participating in a practice-based research network between January 2013 and June 2017.

MAIN MEASURES: Formal termination by primary care physician (PCP), reasons for termination, independent predictors of termination based on mixed-effects logistic regression, and documentation of a new PCP after termination.

KEY RESULTS: We identified 158,192 patients who received primary care from 182 PCPs across 16 clinics. We found 536 cases of formal termination. Clinics ranged from 4 to 119 terminations per 10,000 patients (intraclass correlation coefficient [ICC]=0.21; 95% CI: 0.18–0.24). Patient age, race/ethnicity, educational attainment, relationship status, employment status, and insurance type were independent predictors of termination (e.g., compared to patients employed full-time, patients unemployed due to disability were more likely to be terminated [adjusted OR:9.26; 95% CI: 6.74–12.74]). The most common cause for termination (38%) was appointment “no-shows” with some PCPs/clinics found to enforce a policy of dismissal following three no-shows. At the time of chart review, 201 patients (38%) had no documentation of a new PCP. Among patients who re-established care within the network, 134 (25%) had a primary care visit within 6 months of termination.

CONCLUSIONS: Detailed chart review found that, unlike previous survey-based studies, dismissal was often for missed appointments based on enforcement of no-show policies. Many sociodemographic factors were associated with termination. Variability among clinics highlights the need for further research to better understand circumstances surrounding terminations, with the principal goals of improving patient-provider relationships and providing equitable care.

KEY WORDS: doctor-patient relationships; professionalism; ethics; primary care, health disparities.

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BACKGROUND

The relationship between clinician and patient is the cornerstone of primary care. Ongoing, positive relationship continuity is an important contributor to and outcome of high-quality primary care.^{1–4} On the other hand, breakdown and termination of the therapeutic relationship represent an undesirable outcome. Unfortunately, on occasion, PCPs and clinics who face challenges and strains in patient-provider relationships resort to terminating patients.^{5–9} This practice—at times referred to as “firing” patients—is a source of distress for patients, providers, and practices and warrants efforts to better understand and prevent such breakdowns.^{10–13} Given often disruptive and stressful circumstances that patient terminations represent, better understanding their occurrence and causes may prove valuable for mitigating and preventing the harm and friction from which they stem.

Most published literature on patient terminations has focused on medicolegal and/or ethical concerns. Medical societies and journals have published guidelines and legal recommendations providing advice on steps to follow in the process of termination to protect both the doctor and the patient.^{14–20} There is general agreement that, legally, any doctor may dismiss any patient for nearly any non-discriminatory reason, but there are certain steps that should be taken to protect the patient or safeguard against clinician liability for “abandonment.”^{14,21–23}

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For example, the American Medical Association (AMA) Opinion 1.1.5 states, “When considering withdrawing from a case, physicians must: (a) Notify the patient (or authorized decision maker) long enough in advance to permit the patient to secure another physician [and] (b) Facilitate transfer of care when appropriate.”¹⁴ Various ethical perspectives have been more controversial; many writers feel that terminations should only be used as a last resort.^{24–28}

In several previous studies, surveys have been sent to primary care doctors or their practice administrators to explore this topic.^{5–9} These surveys reported that patients were most commonly terminated from primary care due to inappropriate, abusive, or threatening behavior.^{5–9} The few qualitative studies that have been done have shown that there is often a disconnect between providers’ and patients’ experiences with the dismissal process and that research is needed to better understand where and how these relationships break down.^{10,11,13,29}

The aim of this study was to better understand the extent and nature of formal termination of patients in primary care, examine documentation and communication related to such terminations, and, where possible, assess whether patients were able to establish a new primary care provider after termination. In so doing, we sought to glean insights that may help others address similarly problematic situations in primary care.

METHODS

Study Design and Setting

We performed a retrospective observational case-control study of adult patients whose primary care was formally terminated between January 2013 and June 2017. Study subjects received their care at clinics associated with a practice-based research network (PBRN), a consortium of physicians and primary care practices registered with the Agency for Healthcare Research and Quality (AHRQ), in Eastern Massachusetts. This PBRN includes 16 hospital-based clinics, community-based practices, and community health centers that share a common data infrastructure and maintain a primary affiliation with an academic teaching hospital. Briefly, we identified patients and collected and classified the reasons for and circumstances surrounding their termination using multiple sources described below. We also collected self-reported sociodemographic data directly from their electronic health record (EHR). This study was approved by the Institutional Review Board for the PBRN.

Case Identification

Our outcome of interest was formal, documented termination of the primary care relationship by a PCP or primary care clinic. Lacking a comprehensive registry of such terminations, we identified cases using three methods to leverage primary

data sources: (a) logs maintained by a centralized Patient Relations (PR) department, (b) “dismissal flags” placed in patient EHRs (usually entered by clinic managers), and (c) a free-text search for termination letters in the EHR.

The clinics have the ability to engage the Patient Relations department to assist with challenging patients and termination. We were able to review the centralized logs of terminations kept by this department. Each log entry contained a dismissed patient’s name, medical record number, PCP name, primary care clinic, date of termination, and a brief summary of the interaction.

Practice administrators were also able to electronically “flag” patients in the EHR who had been dismissed from the clinic. This triggers an alert that appears when that clinic’s schedulers open a dismissed patient’s chart, advising them not to schedule an appointment. To identify patients with this flag, we queried our EHR data warehouse.

Finally, we searched the EHR for any documents whose subject included the phrase “termination,” “dismissal,” or “discharge.” Termination letters not already associated with a patient encounter in our study were then reviewed to determine if they referred to dismissals from primary care, rather than termination from other clinical practices or were letters describing other circumstances, such as discharge from the hospital. Patients terminated more than once from different PCPs during the review period were recorded as unique cases. All remaining patients were at risk for termination during this period and thus treated as controls.

Data Collection

For all patients identified via one or more of the above three methods, a 4th year medical student (AG) performed a detailed chart review from July 2017 to June 2018; any ambiguous cases were also reviewed by an experienced primary care clinician specializing in primary care quality research (GS). If corroborating evidence was not found in the chart (i.e., a lack of documentation regarding termination or documentation that the patient was not terminated), the patient was marked as “no evidence of termination” or “patient was not terminated” and excluded from the list of terminations.

We stored all data in a Microsoft Access database and performed data entry using a standardized form with pre-set, drop-down fields and a free-text box for the chart reviewer to summarize the termination process and paste free-text excerpts from the PR department log entries, termination letters, and clinical encounter notes. Data collected to detail a patient termination included patient name, primary care clinic, date of termination, PCP, the role of clinic staff member involved in conflict, and reasons for termination. We initially populated the pre-set drop-down with a list of reasons developed by the study team, then iteratively refined the list as new themes emerged from open coding.

Any clinical encounter note(s) written immediately prior to termination that referenced a disagreement between the patient

and provider regarding opioids, termination due to violation of an opioid contract, or forgery of an opioid prescription, were classified as opioid-related terminations. Additionally, if there was documentation that the patient established primary care with a new PCP after a termination, we recorded whether the new clinician worked within or outside of the same health system. When in-network, we also recorded the date of the first appointment with a new PCP if this occurred within 6 months of termination.

In addition to chart review, we extracted the following sociodemographic data from the EHR: patient age, sex, race/ethnicity, primary language, the highest level of educational attainment, relationship status, employment status, and insurance type. These data were self-reported by patients upon registration at the clinic and may not have been updated over time.

Statistical Analysis

We calculated baseline characteristics based on termination status. To compute intraclass correlation coefficients (ICCs) among clinics and model the probability of being terminated among patients, we fit mixed-effects logistic regression models treating clinic as a random effect and patient-level sociodemographics as fixed effects. For all statistical analyses, we used SAS (version 9.4, SAS Institute, Cary, NC) and considered P values < 0.05 statistically significant.

RESULTS

We identified 158,192 patients who received primary care from 182 PCPs across 16 clinics during our review period (Table 1). Patients had a mean age of 50 (standard deviation [SD]=19) and 62% were female. Most patients (60%) were White/Caucasian, 10% were Black/African American, 18% were Hispanic/Latinx, 4% were Asian/Pacific Islander, and 8% were of unknown race or ethnic origin. The majority of patients had private insurance (83%) and spoke English as a primary language (87%). Nearly half of all patients had at least a college degree (48%), were married/had a life partner (49%), and had full-time employment (42%).

Using our three methods to search for terminated patients, we identified 623 possible terminations. After further review, 47 (7.5%) cases lacked sufficient evidence of termination and 40 (6.4%) were not actually terminated. Our final sample of cases included 536 terminations conducted by 181 PCPs. PR log entries identified 263 cases, EHR-based dismissal flags detected 300 cases, and 371 cases were associated with a termination letter. There was significant overlap in cases detected from the 3 data sources (Fig. 1); however, each method identified dozens of unique patients not otherwise captured by the other approaches.

During the review period, 99% of PCPs terminated at least 1 patient (55% dismissed 1 patient, 11% dismissed 2 patients, and 33% dismissed 3 or more patients). Two PCPs who

practiced in the same clinic accounted for 18% of all terminations (48 and 49 dismissals, respectively). Clinics ranged in terminations from 4 cases per 10,000 patients to 119 cases per 10,000 patients during the review period (Fig. 2; median=25 per 10,000; IQR=16–44 per 10,000). Approximately 21% of the variability in termination was accounted for by clinic (ICC=0.21, 95% CI: 0.18–0.24).

Reasons for Termination

Over one-third (38%) of all terminations occurred as a result of appointment “no-shows” (Table 2). A no-show was usually defined as the failure to cancel a scheduled appointment or a cancellation within 24 h of the appointment. We found some PCPs and clinics observed a strict policy of dismissal following three no-shows. In most cases, we were unable to independently determine the actual number of appointments missed because the EHR does not reliably retain historical information on missed or canceled appointments. Four clinics terminated more than 45 per 10,000 patients for no-shows during the study period while others ranged from 0 to 14 per 10,000 patients.

The second most common reason cited for terminating a patient was “disrespectful/disruptive behavior” (22% of dismissals). In these cases, the chart documented the event(s) in which the patient acted inappropriately and/or noted that they were being dismissed for this reason. The problematic interaction(s) leading to termination varied; at times they involved the physician (“patient is verbally abusive towards her physician”) and at other times involved administrative staff, nursing, and/or social work (“practice is requesting...termination due to the patient’s boyfriend’s aggressive behavior towards the staff”). Among these behavior-related cases, 29% were opioid-related. Although we anticipated the possibility that physicians may have needed to terminate patients acting in a sexually threatening or harassing manner, our chart review revealed only a single instance of termination due to sexually inappropriate behavior.

A number of officially terminated patients (15%) were labeled in PR log entries as a “self-termination.” This term is distinct from patients’ not-infrequent personal choice to leave a practice or request a new provider. For these cases labeled “self-termination,” termination letters or other chart documentation explicitly stated that the patient will not be permitted to return to the practice. Like patients terminated for other reasons, these patients received termination letters outlining the terms of their dismissal and were expected to find a new provider within a specified (usually 30-day) period. By contrast, when patients decided to leave a practice without being formally dismissed for “self-termination,” they did not experience such limits and were able to return if they wished.

Remaining reasons for termination included breaking an opioid contract previously signed by the patient (4%); “non-compliance” with an established medical plan (3%; e.g., “failure to complete lab testing” or “failure to maintain medication

Table 1 Characteristics of Primary Care Patients and Estimated Odds Ratios by Termination Status

Characteristic	All patients (N = 158,192)	Terminated patients (N=536)	Patients not terminated (N=157,656)	Unadjusted OR (95% CI)	P value	Adjusted OR* (95% CI)	P value
Age, years	50 (19)	Mean (SD) 49 (14) N (%)	50 (19)	0.89 (0.85–0.94) [†]	<0.001	0.81 (0.75–0.87) [†]	<0.001
Sex							
Male	59,564 (38)	220 (41)	59,344 (38)		0.27	Reference	0.02
Female	98,628 (62)	316 (59)	98,312 (62)	Reference 0.91 (0.76–1.08)	<0.001	0.81 (0.68–0.97)	<0.001
Race/ethnicity							
White, Caucasian	94,287 (60)	278 (52)	94,009 (60)	Reference		Reference	
Black, African American	16,448 (10)	141 (26)	16,307 (10)	2.66 (2.16–3.29)		1.77 (1.41–2.21)	
Hispanic, Latinx	28,094 (18)	72 (13)	28,022 (18)	1.68 (1.27–2.23)		1.05 (0.77–1.44)	
Asian, Pacific Islander	6875 (4)	8 (1)	6867 (4)	0.39 (0.19–0.78)		0.46 (0.23–0.94)	
Unknown	12,488 (8)	37 (7)	12,451 (8)	1.04 (0.74–1.47)		0.97 (0.68–1.39)	
Educational attainment							
College or higher	75,939 (48)	165 (31)	75,774 (48)	Reference	<0.001	Reference	<0.001
High school diploma	33,763 (21)	222 (41)	33,541 (21)	3.01 (2.45–3.70)		1.90 (1.52–2.37)	
Did not complete HS	8896 (6)	45 (8)	8851 (6)	3.47 (2.47–4.87)		1.82 (1.26–2.64)	
Unknown	39,594 (25)	104 (19)	39,490 (25)	1.51 (1.18–1.93)		1.18 (0.91–1.53)	
Relationship status							
Married/life partner	77,176 (49)	146 (27)	77,030 (49)	Reference	<0.001	Reference	<0.001
Single/widowed	66,177 (42)	304 (57)	65,873 (42)	2.60 (2.13–3.18)		1.71 (1.38–2.13)	
Divorced/separated	9234 (6)	73 (14)	9161 (6)	4.10 (3.09–5.44)		2.96 (2.21–3.98)	
Unknown	5559 (4)	13 (2)	5546 (4)	Reference	<0.001	1.40 (0.79–2.51)	<0.001
Employment status							
Full-time	65,929 (42)	132 (25)	65,797 (42)	Reference		Reference	
Unemployed	19,359 (12)	139 (26)	19,220 (12)	4.50 (3.53–5.72)		3.57 (2.77–4.61)	
Retired	18,580 (12)	60 (11)	18,520 (12)	1.56 (1.15–2.12)		2.45 (1.68–3.58)	
Student	7267 (5)	4 (1)	7263 (5)	0.47 (0.17–1.27)		0.21 (0.08–0.58)	
Part-time	6979 (4)	20 (4)	6959 (4)	1.62 (1.01–2.60)		1.36 (0.84–2.19)	
Disabled	3077 (2)	81 (15)	2996 (2)	13.84 (10.41–18.40)		9.26 (6.74–12.74)	
Unknown	37,001 (23)	100 (19)	36,901 (23)	1.58 (1.22–2.06)		1.59 (1.22–2.08)	
Insurance type							
Private	131,323 (83)	379 (71)	130,944 (83)	Reference	<0.001	Reference	0.007
Medicare	17,044 (11)	91 (17)	16,953 (11)	1.78 (1.41–2.24)		1.21 (0.92–1.59)	
Medicaid	9197 (6)	58 (11)	9139 (6)	3.68 (2.76–4.92)		1.60 (1.18–2.17)	
Uninsured	628 (0)	8 (1)	620 (0)	5.34 (2.61–10.89)		3.04 (1.47–6.30)	
Language							
English	137,959 (87)	492 (92)	137,467 (87)	Reference	0.64	Reference	0.16
Other	17,413 (11)	33 (6)	17,380 (11)	0.98 (0.68–1.42)		0.70 (0.48–1.05)	
Unknown	2820 (2)	11 (2)	2809 (2)	1.33 (0.73–2.43)		1.26 (0.68–1.39)	

*Fully adjusted model included patient age (by decade), sex, race or ethnic origin, highest level of educational attainment, relationship status, employment status, insurance type, and language as fixed effects and clinic as random effect; clinic-level intraclass correlation coefficient (ICC) = 0.21 (95% CI: 0.18–0.24); adjusted ICC = 0.27 (95% CI: 0.23–0.30). After removing two PCPs who represented 18% of cases, all predictors except for sex (P=0.30) remained significant in the fully adjusted model without any substantive changes

†Age by decade

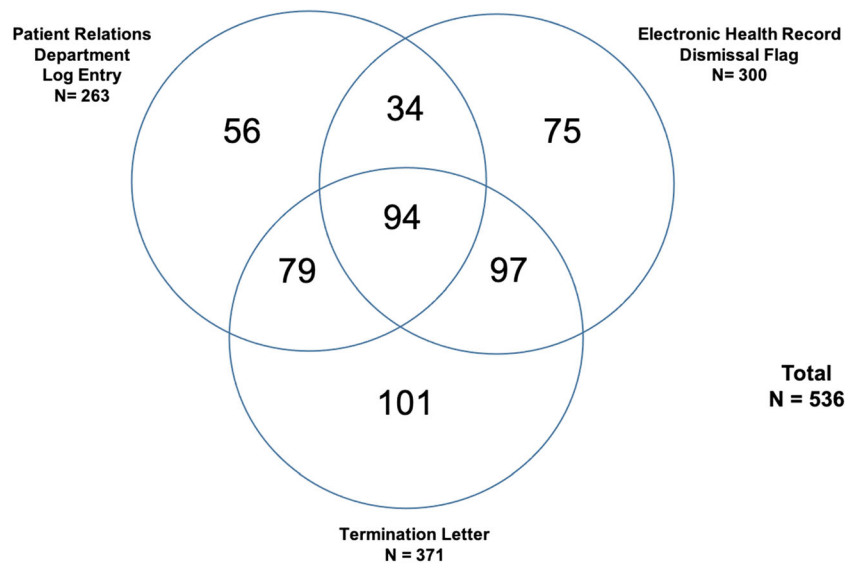


Figure 1 Case identification by data source.

adherence”); and illegal behavior (2%), such as writing/ changing a prescription or forging a doctor’s signature on a letter.

Overall, at the time of chart review, 202 (37.6%) cases had documentation of a new PCP within the network, 133 (24.8%) with a new PCP outside of the health system, and 201 (37.5%) had no documentation of a new PCP. Among patients who established care with a new PCP in the PBRN, 134 (25%) had a primary care visit within 6 months of being terminated.

Patient-Level Predictors of Termination

Patient age, race/ethnicity, educational attainment, relationship status, employment status, and insurance type were all independent predictors of termination (Table 1). For example, compared to patients employed full-time, estimated odds of being terminated were 9.26 times greater for patients unemployed due to disability and 2.45 times greater for retirees compared to patients employed full-time. Moreover, uninsured patients and those on Medicaid had estimated odds

3.04 and 1.60 times greater, respectively, than patients with private insurance. The estimated odds of being terminated were also 1.77 times greater for Black/African American patients and 0.46 times lower for Asian/Pacific Islander patients compared to White/Caucasian patients.

DISCUSSION

To our knowledge, this is the first study to investigate in detail patients who were terminated from a primary care provider or clinic, examining reasons and circumstances surrounding their dismissal. Because there was no easy way to identify such patients, we employed 3 novel sources and found that termination rates varied widely across clinics and providers. In fact, 232 of the dismissals (43% of all cases) took place at just two clinics. These sites appear to have lower thresholds for terminating primary care due to stricter enforcement of “no-show” policies.

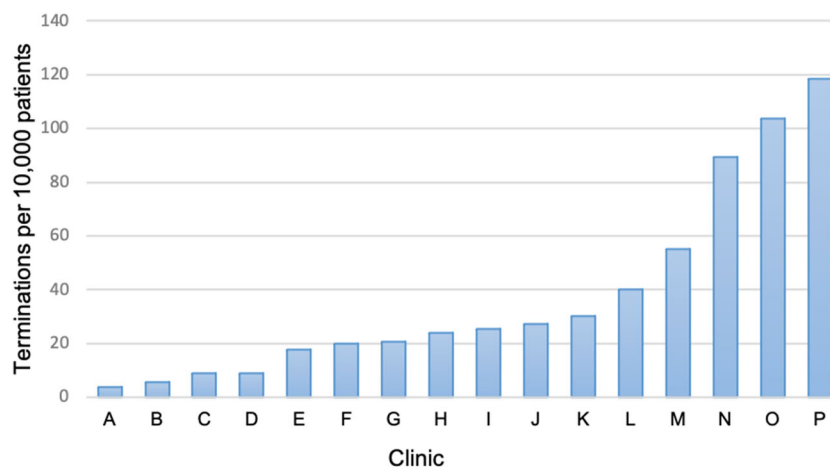


Figure 2 Terminations per 10,000 patients by clinic.

Table 2 Reasons for Termination (N=536)

Reasons	N (%)
Missed or failed to cancel appointments (“no-shows”)	205 (38)
Behavioral Issues (inappropriate, threatening, abusive, etc.)	118 (22)
Self-termination/mutual decision	78 (15)
Did not show up to first appointment	38 (7)
Violation of opioid contract/inappropriate demands	23 (4)
Patient dissatisfaction/disagreement about care plan	22 (4)
Nonadherence/noncompliance	16 (3)
Inability to contact patient	15 (3)
Illegal behavior (e.g., forged prescription)	9 (2)
Breakdown/lack of therapeutic relationship	7 (1)
Patient moved out of area	3 (1)
Patient concurrently seeing another PCP	2 (0)

Prior studies that have explored this topic used self-reported surveys to determine the number and reasons for terminations from primary care^{5–9} and midwifery.³⁰ Most of these surveys queried providers about the number of patients they had dismissed over varying time periods; two studies reported that 85% and 90% of PCPs had ever terminated patients, similar to our finding.^{5,6} While surveys offer insights regarding when and why terminations take place, they are susceptible to both recall and social desirability bias. This may lead to underreporting the number of patients terminated and/or over-reporting more socially acceptable reasons for termination such as violence or threats to staff. Using detailed chart reviews of all terminated patients, we attempted to diminish the impact of these biases using real-world data on actual terminations; nonetheless, it is still possible that social desirability bias may play a role in chart documentation.

We found that, contrary to prior survey-based studies’ findings,^{5–9,30} more than one-third of all patients in this study were terminated due to no-shows. Several of the clinics appeared to follow a strict “three strikes” policy. Although no-shows accounted for the plurality of patient terminations, they also had the least amount of supporting documentation in the chart, and in most cases, it was not possible to determine the underlying causes leading to these missed appointments.

The remainder of terminations fell under the more usual domains previously reported as leading to a breakdown in the relationship between patient and provider. This deterioration of the relationship often culminated in “bad behavior” such as disrespectful treatment of staff, contentious noncompliance (e.g., violation of an opioid contract), and/or disagreement/arguments over the care plan leading a patient to state they no longer wanted to be seen by the provider (resulting in the receipt of a termination letter in the mail).

Notably, patient terminations were not equitably distributed among sociodemographic groups examined. Patients who were unemployed and/or disabled—arguably among those most likely to face challenges to healthcare access³¹—were also more likely to have their care terminated^{32–34}. African American/Black patients were more likely to be terminated compared to Caucasian/White patients. Patients with lower levels of educa-

tional attainment were also more likely to be dismissed. These distinctions are concerning and point to an area of disparity that has not been previously reported, raising concerns that perhaps more equitable and supportive approaches are needed.

In contrast, while the opioid epidemic has been well-documented for its devastating increase in morbidity and mortality in nearly every community and is a well-known source of conflict between clinicians and patients requesting opioids, the impression that this is an issue causing frequent terminations is not supported by our data.

Overall, formal patient terminations are relatively rare; this study found that approximately 8 in 10,000 patients were terminated per year across the 16 clinics studied. However, the results indicate that there may be room to improve support for patients and physicians to prevent the circumstances that lead to termination. For example, further investigation of “no-shows” may elucidate reasons causing patients to miss appointments, or at least fail to call in advance to cancel scheduled visits. Uncovering driving factors for clinic variation in adherence to the no-show termination policy could also shed light on ways to better help patients attend scheduled appointments (e.g., transportation support, automated reminders, or making it easier for patients to communicate cancellations in advance should they be unable to attend a scheduled appointment). Patient perspectives should be sought to understand barriers to coming for scheduled visits and notifying the clinic when they are unable to attend appointments. A final concerning finding is that a sizable number of patients appear to have not re-established primary care after termination.

Limitations

We recognize the limitations of this study. There was overlap but no consensus among cases identified using our three methods. We may not have found all terminated patients if, for example, clinic managers involve PR in termination instances or use the EHR-based scheduling flag to document dismissals, termination letters were not labeled as such in the chart, or clinicians were unaware of formal mechanisms to document or adjudicate terminations. As a result, we may have underestimated terminations, their corresponding reasons, and, by extension, any as yet unidentified alternative causes for terminating a patient.

Although chart review found that opioids played a role in some cases, it is nonetheless possible that their role was underestimated due to inadequate documentation of the details of reasons for termination. Overall, the level of documentation available for a given termination varied. To minimize subjectivity and any potential bias from the chart reviewer and/or second expert clinician, whenever possible, we relied only on explicit “reasons for termination” found in clinical encounter notes and letters.

These findings provide insight into the practice of patient termination from primary care, an area that has been infrequently and incompletely studied. Although our population may not be generalizable to other geographic or demographic settings, our detailed review found that, unlike previous survey-based studies, the most common reason for dismissal was missed appointments in the context of enforcement of “no-show” policies. We lack data on details related to how such policies were enforced and, given variations we found, suspect there were varying ways and strictness in terminating a patient for this reason. We also found that patients in certain sociodemographic groups were terminated at a higher rate compared to the rest of the study population. The variability within and among practices highlights the need for further research to better understand the circumstances surrounding patient terminations and support patients and clinics, with the principal goals of improving patient-provider relationships and providing equitable care.

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Author Contribution All authors had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

Study concept and design: Groisser, Reyes Nieva, and Schiff

Acquisition, analysis, or interpretation of data: All authors

Drafting of the manuscript: Groisser, Reyes Nieva, and Schiff

Critical revision of the manuscript for important intellectual content: All authors

Statistical analysis: Reyes Nieva

Obtained funding: Reyes Nieva and Schiff

Administrative, technical, or material support: Groisser, Reyes Nieva, Wright, and Ruan

Supervision: Reyes Nieva and Schiff

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Declarations:

Conflict of Interest: The authors declare that they do not have a conflict of interest.

REFERENCES

- Hall MN. Continuity: A Central Principle of Primary Care. *J Grad Med Educ.* 2016;8(4):615-616. doi:<https://doi.org/10.4300/JGME-D-16-00390.1>
- Fortuna RJ, Garfunkel L, Mendoza MD, et al. Factors Associated With Resident Continuity in Ambulatory Training Practices. *J Grad Med Educ.* 2016;8(4):532-540. doi:<https://doi.org/10.4300/JGME-D-15-00755.1>
- Saultz JW, Lochner J. Interpersonal continuity of care and care outcomes: a critical review. *Ann Fam Med.* 2005;3(2):159-166. doi:<https://doi.org/10.1370/afm.285>
- Levine DM, Landon BE, Linder JA. Quality and Experience of Outpatient Care in the United States for Adults With or Without Primary Care. *JAMA Intern Med.* 2019;179(3):363. doi:<https://doi.org/10.1001/jamainternmed.2018.6716>
- O’Malley AS, Swankoski K, Peikes D, et al. Patient Dismissal by Primary Care Practices. *JAMA Intern Med.* 2017;177(7):1048. doi:<https://doi.org/10.1001/jamainternmed.2017.1309>
- Farber NJ, Jordan ME, Silverstein J, Collier VU, Weiner J, Boyer EG. Primary care physicians’ decisions about discharging patients from their practices. *J Gen Intern Med.* 2008;23(3):283-287. doi:<https://doi.org/10.1007/s11606-007-0495-7>
- Cummings R, Young S. Patient removals. Sitting pretty. *Health Serv J.* 2000;110(5705):26-27.
- Pickin M, Sampson F, Munro J, Nicholl J. General practitioners’ reasons for removing patients from their lists: postal survey in England and Wales. *BMJ.* 2001;322(7295):1158-1159. doi:<https://doi.org/10.1136/bmj.322.7295.1158>
- Sampson F, Munro J, Pickin M, Nicholl J. Why are patients removed from their doctors’ lists? A comparison of patients’ and doctors’ accounts of removal. *Fam Pract.* 2004;21(5):515-518. doi:<https://doi.org/10.1093/fampra/cmh507>
- Stokes T, Dixon-Woods M, McKinley RK. Breaking up is never easy: GPs’ accounts of removing patients from their lists. *Fam Pract.* 2003;20(6):628-634. doi:<https://doi.org/10.1093/fampra/cm602>
- Stokes T, Dixon-Woods M, Windridge KC, McKinley RK. Patients’ accounts of being removed from their general practitioner’s list: qualitative study. *BMJ.* 2003;326(7402):1316-1316. doi:<https://doi.org/10.1136/bmj.326.7402.1316>
- James Munro, Sampson F, Mark Pickin, Jon Nicholl. *Patient De-Registration from GP Lists: And Professional and Patient Perspectives Final Report to the Department of Health.* Medical Care Research Unit (MCRU), University of Sheffield; 2002.
- Stokes T, McKinley RK, Dixon-Woods M. Removal from a GP’s list: qualitative research is needed. *BMJ.* 2001;323(7315):754.
- American Medical Association. Code of Medical Ethics Opinion 1.1.5. Terminating a Patient-Physician Relationship. Accessed November 17, 2020. <https://www.ama-assn.org/sites/ama-assn.org/files/corp/media-browser/code-of-medical-ethics-chapter-1.pdf>
- Ohio Administrative Code. Chapter 4731-27 Termination of Physician-Patient Relationship. Accessed November 17, 2020. <http://codes.ohio.gov/oac/4731-27>
- Santalucia C, Michota FA. When and how is it appropriate to terminate the physician-patient relationship? *Cleve Clin J Med.* 2004;71(3):179, 183. doi:<https://doi.org/10.3949/ccjm.71.3.179>
- Willis DR, Zerr A. Terminating a patient: is it time to part ways? *Fam Pract Manag.* 2005;12(8):34-38.
- Crane M. How to cut loose from a troublesome patient. *Med Econ.* 2000;77(7):54, 59, 63-66 passim.
- Collins H. Begone with you. Dismissing problem patients from your practice. *MGMA Connex.* 2003;3(5):58-61, 1.
- Weiss GG. How to “fire” a patient. *Med Econ.* 2003;80(23):94-95.
- Crausman RS, Baruch JM. Abandonment in the physician-patient relationship. *Med Health R I.* 2004;87(5):154-156.
- McMullen L. Terminating the patient-physician relationship. Abandonment of the patient: what it means and how to avoid it. *J Miss State Med Assoc.* 2007;48(9):289.
- Guill TE, Cassel CK. Nonabandonment: a central obligation for physicians. *Ann Intern Med.* 1995;122(5):368-374. doi:<https://doi.org/10.7326/0003-4819-122-5-199503010-00008>
- Capozzi JD, Rhodes R, Gantsoudes G. Ethics in practice. Terminating the physician-patient relationship. *J Bone Joint Surg Am.* 2008;90(1):208-210. doi:<https://doi.org/10.2106/JBJS.G.01176>
- Eastek SE. Termination: Ethical and Legal Implications. *J Nurse Pract.* 2007;3(6):379-383. doi:<https://doi.org/10.1016/j.nurpra.2007.04.003>
- Freedman A. The physician-patient relationship and the ethic of care. *CMAJ Can Med Assoc J J Assoc Medicale Can.* 1993;148(6):1037-1043.
- Browne A, Dickson B, van der Wal R. The ethical management of the noncompliant patient. *Camb Q Healthc Ethics CQ Int J Healthc Ethics Comm.* 2003;12(3):289-299. doi:<https://doi.org/10.1017/s0963180103123122>
- Parsi K. Terminating a patient-physician relationship. *Virtual Mentor VM.* 2001;3(5). <https://doi.org/10.1001/virtualmentor.2001.3.5.hlaw1-0105>

29. **Clarke M, Whitford DL, O'Reilly F.** "Breaking up is hard to do": perspectives of general practitioners and patients towards removals from GP lists. *Ir J Med Sci.* 2007;176(3):221-224. doi:<https://doi.org/10.1007/s11845-007-0062-6>
30. **Schorn MN.** Midwives' practices and beliefs about discharging clients from their practice. *J Midwifery Womens Health.* 2007;52(5):465-472. doi:<https://doi.org/10.1016/j.jmwh.2007.03.012>
31. **Kuehn B.** Disability and Access to Care. *JAMA.* 2018;320(12):1232. doi:<https://doi.org/10.1001/jama.2018.13336>
32. **Berkowitz SA, Hulberg AC, Hong C, et al.** Addressing basic resource needs to improve primary care quality: a community collaboration programme. *BMJ Qual Saf.* 2016;25(3):164-172. doi:<https://doi.org/10.1136/bmjqs-2015-004521>
33. **Syed ST, Gerber BS, Sharp LK.** Traveling Towards Disease: Transportation Barriers to Health Care Access. *J Community Health.* 2013;38(5):976-993. doi:<https://doi.org/10.1007/s10900-013-9681-1>
34. **Silver D, Blustein J, Weitzman BC.** Transportation to Clinic: Findings from a Pilot Clinic-Based Survey of Low-Income Suburbanites. *J Immigr Minor Health.* 2012;14(2):350-355. doi:<https://doi.org/10.1007/s10903-010-9410-0>

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