ORIGINAL RESEARCH

Evaluating the Impact of Provider Type and Patient Diagnosis on Patient No-Shows to Vascular Clinic

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ABSTRACT

Background: No-shows are a source of burden that lead to wasted resources. While prior research has established that many patient-level factors affect no-show rates, the impact of referring provider-level factors, in particular the type of referring provider and specific diagnosis, are still largely unknown.

Materials and Methods: Retrospective chart review examining new patient consults scheduled for outpatient vascular surgery clinic from August 1, 2014 through February 28, 2015 was conducted. The specialty types of the referring physicians and the reason for referral (patient diagnosis) were recorded.

Results: Of 227 new patient consults scheduled, 30% were no-shows to their appointment. No-show rates were significantly higher when the patient was referred by a primary care physician versus a specialist and differed significantly based on patient diagnosis.

Conclusions: Given that referring provider type and patient diagnosis significantly affect no-show rates, interventions that integrate the community of providers are needed to reduce no-shows.

INTRODUCTION

Health care expenditure in the United States has grown steadily over the last decade, reaching nearly 18% of our national gross domestic product (GDP) in 2017.[1] This figure amounts to roughly $10,739 spent per person, with a total of $3.5 trillion spent per year.[1] As costs continue to rise and resources become more limited, it is vital to evaluate sources of unnecessary health care expenditure and usage. Patient no-shows, or clinic cancellations, are one such problem that permeates all aspects of modern medical care

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and present a significant area of opportunity for improvement in vascular clinics. No-shows to clinics range from 4% to 80% of scheduled appointments, averaging approximately 23% of all clinic appointments and costing the overall health care system over $150 billion per year.[2,3] The United States Veterans Affairs (VA) system is the United States' largest integrated health care system, and a study in 2008 found that the average cost of no-show per patient in the VA system was $196.[4] In addition to monetary losses, no-shows lead to decreased provider productivity and wasted clinic time.[5,6] Given that providers are reserving clinic time for patients who ultimately do not show up, no-shows often lead to clinics being unnecessarily booked for long periods of time, leading to longer wait times for patients to schedule appointments and overall patient dissatisfaction.[5,6] Moreover, they can interfere with patient access to care, worsening patient outcomes.[7]

Prior research has established that patient-level factors, such as age and insurance, affect no-show rates.[2] However, the impact of referring provider specialty and patient vascular diagnosis on no-shows is still largely unknown. This study aims to provide an initial look into the impact of the referring provider's specialty and patient diagnosis on new patient no-shows to a large VA vascular surgery clinic. Referrals to a VA vascular surgery clinic were used as the subject of this investigation because the clinic is high-volume, the clinic does not typically see large variability in diagnosis among patients (allowing for more focused analysis of the impact of diagnosis type), and patient records in the VA system are well maintained.

Table 1. No-shows by Referring Provider Specialty

Referring Provider Specialty	No. of Consult Appointments (n=227)	No. and Percentage of No-shows[a] (n=68)
Primary care provider	154	54 (35%)
Nephrology	26	5 (19%)
Inpatient medicine team	19	3 (16%)
Other specialties	28	6 (21%)

[a] $P = 0.047$. Analysis groups patients referred by nephrology with those referred by other specialities.

Table 2. No-shows by Reason for Referral

Diagnosis Listed as Reason for Referral	No. of Consult Appointments (n=227)	No. and Percentage of No-shows[a] (n=68)
Carotid stenosis	30	12 (40%)
Peripheral vascular disease	99	34 (34%)
Abdominal aortic aneurysm	47	9 (19%)
End-stage renal disease	40	9 (23%)
Other	11	4 (36%)

[a] $P = 0.044$. Analysis excludes patients with "Other" diagnoses.

METHODS

This retrospective study examined new patient consults scheduled for outpatient vascular surgery clinic from August 1, 2014 through February 28, 2015 using patient electronic medical records. Appointments were classified as either no-show or completed appointment, and the specialty types of the referring physicians were recorded. We also examined the reason for referral (patient diagnosis). While demographic and other patient characteristics were not collected, all patients were treated within the VA system. All statistical analyses comparing patients referred by different specialities and patients with varying diagnoses were performed using Fischer exact tests and chi-square tests with the Freeman-Halton extension.[8] Analyses were done using GraphPad PRISM 8 (La Jolla, California), and significance was set as $P < 0.05$.

This study was granted Institutional Review Board exemption, as this was deemed a quality improvement study with fully deidentified data. No patient information or images are disclosed in the report.

RESULTS

There were 227 new patient consults scheduled for the vascular surgery clinic over the 7-month study period. This number of newly referred patients is similar to that of other no-show analyses in the literature.[9-13] A total of 30% of patients were no-shows to their appointment (n = 68). No-show rates were highest among patients referred by their primary care provider versus patients referred by specialists (including nephrologists and other specialists) or by inpatient medicine teams (35% vs 19% /21% vs 16%, respectively; $P = 0.047$) (Table 1).

There were also significant differences in rates of no-shows among patients with different referral diagnoses ($P = 0.044$). When stratified by reason for referral, no-show rates were highest among patients referred for carotid stenosis (40%). The no-show rates of patients with peripheral vascular disease, abdominal aortic aneurysm, and end-stage renal disease were 34%, 19%, and 23%, respectively (Table 2). Patients with diagnoses other than those listed above comprised only 11 total referrals, of which 4 were no-shows (36%).

DISCUSSION

Studies have demonstrated that patient-level factors, namely socioeconomic factors such as age, race, income, insurance status, and history of previously missed appointments, affect no-show rates.[2,14] Additionally, other reasons, such as lack of transportation or time, forgetting appointments, distrust in staffing, unclear scheduling protocols, or just overall fear of a new diagnosis, all have been shown to play a role in no-shows.[15,16] These and many other variables have been shown to impact patient no-shows in clinic, but few studies have looked at referring providers. Although our study does not collect patient demographic or socioeconomic data of patients, all patients were treated under the VA health care system, providing a degree of uniformity to insurance status (although this is not exactly the same across patients, as the level of copay for procedures and subspecialty consults can vary). Here, we demonstrate that the referring provider's specialty and reason for referral may both affect no-show rates, drawing attention to some of the possible complex reasons outside of socioeconomic status that may lead to increased patient hesitancy to show up for their appointments. Though this investigation was a small pilot study and conducted at a VA clinic, the variables studied apply across virtually all specialty clinic referrals, as patients visiting these clinics often have a referring provider and reason for referral.

The challenges surrounding no-shows for new patients to a specialty clinic are unique. Specialty physicians generally focus on just one aspect of a patient's care plan, and these providers may see patients less frequently than a primary care provider. This places burden on the specialty care provider to quickly build rapport with their new patients and avoid diminishing any symptoms that they cannot appropriately address as a specialist. Additionally, new specialty referrals are often made for diagnoses that are new to the patient or involve new symptoms not adequately addressed by their referring physician alone. This unfamiliarity with their diagnosis and how it has changed over time, coupled with unfamiliarity with a new specialist, may increase a patient's fear, a known factor that leads to an increase in no-show events.[15] These examples help to highlight the importance of identifying individual barriers that each patient faces with a new

referral and working to alleviate these barriers. This burden also may fall partly on physicians receiving referrals. For example, by acknowledging that certain diagnoses are more likely to result in a no-show event, physicians receiving referrals could produce targeted education materials with information on at-risk diagnoses that could be given to referring providers for distribution to patients prior to referral.

Our study found that the no-show rate for patients referred by inpatient medical teams was less than half that of patients referred by a primary care provider. A possible explanation may be that subjectively, the inpatient setting connotes a higher degree of "seriousness" for patients than a scheduled visit to their primary care physician. Inpatient care requires a significant change to a patient's daily schedule in order to stay in the hospital as compared to routine primary care visits. In this sense, the inpatient setting may better emphasize the severity of a diagnosis, especially if the new diagnosis contributed to their inpatient stay. Further research is warranted in exploring why patients referred from inpatient medicine care chose to attend their scheduled appointments.

The reason for referral (the patient's diagnosis) also correlated with differing no-show rates. The highest no-show rates were among patients referred for a diagnosis of carotid stenosis, followed by peripheral vascular disease, abdominal aortic aneurysm and, finally, end-stage renal disease. Similar findings of diagnosis being a significant factor in patient no-shows have been reported in various fields, including cardiology, endocrinology, neurosurgery, infectious disease, and psychiatry.[2,17-22] Similar to our study, these studies do not collect granular data elucidating specific reasons for why patient diagnosis correlated with no-shows, but rather, in retrospective review, found a relationship between diagnosis and no-show rates.

Many factors may contribute to differing no-show rates among diagnoses. While detailed data of patient clinical status were not collected in this study, one reason may be disease severity. For example, it is possible that a higher proportion of patients with carotid stenosis and peripheral vascular disease were, in general, asymptomatic and in stable health, leading to a higher no-show rate. This is described by Zailinawati et al, who found that patients with coronary artery disease who were asymptomatic had high no-show rates.[23] In addition, similar results were found for neurosurgery clinic by Mark et al, who found that patients with chronic subdural hematomas had higher no-show rates compared to patients with symptomatic tumors and subarachnoid hemorrhages, citing that the difference may have been because most of the patients with chronic subdural hematomas had fewer complaints.[21] Furthermore, we found that patients referred by inpatient medicine teams had lower no-show rates than those referred by primary care providers. Patients receiving inpatient hospital care may have been sicker than those referred by primary care providers, further suggesting that severity of

disease may contribute to no-show rates. Symptomatic patients or those with more severe manifestations of disease may have lower no-show rates because their referring provider may convey a greater sense of urgency, or the desire to alleviate symptoms may motivate patients to attend their appointments. Further studies more closely examining disease severity with no-shows are warranted. Given that diagnosis affects patient no-shows to vascular surgery clinic, it may be beneficial for physicians in this setting to have a more in-depth discussion of diagnosis with their patients as well as the importance of the future scheduled appointment in relation to their diagnosis.

Limitations

This pilot study has limitations. The study only examined patient referrals to 1 vascular surgery clinic in the VA system, limiting the generalizability of the findings. This is especially notable because there is no financial penalty for no-shows in the VA system, in contrast with most private health care systems. Similarly, the age, sex, and comorbidity status may be different between the VA population and the general public patient population, again limiting the generalizability of the findings. Despite these differences, we found that no-show rates overall were similar to what has been previously published for private clinics as well as within the VA system.[2] In addition, the study sample size was relatively small. The lack of measuring multiple demographic and patient-specific variables precluded the ability to perform a multivariate analysis of the data. This limited the conclusions that could be drawn when examining the impact of referring provider and patient diagnosis, leaving discussion to be primarily based on correlations observed.

CONCLUSIONS

Our results support the idea that patient no-shows and clinic cancellations are affected by multiple factors, including provider-level factors, such as specialty and reason for referral. It is likely these factors play into already studied reasons for no-shows, such as fear of the diagnosis, socioeconomic factors, or misunderstanding of a new scheduling system. However, the data shown in this study represent referring specialties and diagnoses that are particularly susceptible to no-shows, alerting physicians to at-risk patient populations. This suggests referring physicians should take time to identify and mitigate factors regarding referring provider and diagnosis that may contribute to no-show rates prior to the no-show event, if appropriate. Further study correcting for other factors and reasons that patients may have to not keep appointments could illuminate further how significant the impact diagnosis and physician specialty have on no-show rates. Understanding no-show patterns can improve future decisions and practices to decrease no-show rates and alleviate the associated economic burdens. Based on our findings, interventions to decrease no-shows at specialty clinics should take into consideration the whole com-

munity of providers involved in the patient's care, including the referring providers. Such an intervention may be accomplished through strategies such as changing the outpatient consult process to query if the reason for referral has been discussed with the patient and if the patient agrees to the consult.

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