Facilitating Visit Attendance with Staff Reminder Calls in a Safety-Net Clinic

Miamoua Vang, BA¹, Mark Linzer, MD^{2,3}, Rebecca Freese, MS⁴, Katherine Vickery, MD^{2,3}, Nathan D. Shippee, PhD⁵, and Ellen Coffey, MD^{2,3}

¹Research Coordinator, Center for Patient and Provider Experience, Hennepin Healthcare Research Institute, Minneapolis, MN, USA; ²Department of Medicine, Hennepin Healthcare, Minneapolis, MN, USA; ³School of Medicine, University of Minnesota, Minneapolis, MN, USA; ⁴Biostatistical Design and Analysis Center, Clinical and Translational Science Institute, University of Minnesota, Minneapolis, MN, USA; ⁵School of Public Health, University of Minnesota, Minneapolis, MN, USA.

J Gen Intern Med 35(4):1317–9

DOI: 10.1007/s11606-020-05655-y

© Society of General Internal Medicine 2020

INTRODUCTION

Missed appointment (MA) rates in outpatient settings can range from 0 to 58%.¹ High rates of MAs represent a waste of resources^{2,3} and can lead to emergency department visits, gaps in care,⁴ and economic losses.⁵

While automated reminders are standard practice, staff reminder calls have reduced MAs in a family medicine residency,¹ an academic practice,³ and at a Veterans Health Administration healthcare system.⁶ Safety-net patients are disproportionately Medicaid-insured or uninsured, and are at special risk for MAs.¹ We sought to determine if staff reminder calls in a safety-net clinic could reduce MAs.

METHODS

We performed a quality improvement study in the Medicine Clinic at Hennepin Healthcare, an urban safety-net health system, whose IRB deemed this study exempt from review as research.

Intervention

Patients from all three firms of the clinic received an automated reminder call 2 days before their appointment. In addition, from September 2016 to February 2017, clinic staff conducted reminder calls to patients 1 day prior to scheduled appointments in one firm using standardized language. Attendance confirmation and other accommodations were addressed, with interpreters available as needed. These staff reminder calls expanded to all firms from February 2017 to April 2017. This project was overseen by clinic administration; grant funding supported callers' time.

Prior Presentations This work was presented at the Society of General Internal Medicine Annual Meeting in Denver CO, April 2018.

Published online January 16, 2020

Data and Sample

Patients' information was extracted from electronic records 1 day after reminder calls. To assess baseline MA rates, we used the 12 months prior to start date.

Measures

Call outcomes were either “confirmed” if the patient confirmed plans to attend, “left voicemail,” or “unavailable” if unable to be reached. Other outcomes such as canceled and rescheduled were not included. For the first 2 months, follow-up calls were made to patients who missed appointments to determine reasons for MAs.

Analysis

MAs were modeled with Generalized Estimating Equations with call status (“confirmed” as reference category) and month as predictors to determine odds of MAs associated with call outcomes. A difference in difference (DID) analysis (adjusting for race, age, and gender) compared intervention with two control firms during the first 5 months.

RESULTS

Of 7857 reminders in 3368 patients (mean age 51 years, 52% male, 53% Black), 52% of patients confirmed attendance, 36% were left a voicemail, and 12% could not be reached. MA rates were lowest in those who confirmed attendance (14.4%) and highest in those not reached (40.9%) (see Fig. 1). A relatively small number of additional calls resulted in canceled ($n = 181$) or rescheduled ($n = 163$) appointments.

Overall, the MA rate before the intervention was 23.9% compared to 21.0% during the intervention (absolute reduction 2.9%, 95% CI (2.2, 3.6), $p < 0.001$, Pearson's chi-square). Compared to those who confirmed, patients who left voicemails were more likely to have MAs (OR 1.95, 95% CIs (1.73, 2.21), $p < 0.001$), while those unable to be reached were most likely to miss appointments (OR 4.03, 95% CIs (3.34, 4.75), $p < 0.001$). The differences in the two risk differences from the DID model is -0.09 (95% CI: $(-0.17, -0.01)$),

Fig. 1 Missed appointment rate by call outcome

$p = 0.03$), confirming significantly more improvement in MAs when calling.

Most common reasons for MAs from 563 follow-up calls in 211 patients included forgetfulness ($n = 54$ calls), difficulty managing appointments ($n = 24$), transportation and life events (both $n = 21$), bad health ($n = 19$), and hospitalization ($n = 13$).

DISCUSSION

In a safety-net clinic, staff reminder calls were associated with a 2.9% absolute decrease in MAs. Patients who confirmed plans to attend by phone had higher attendance compared to those receiving voicemails and those not reached.

Live reminder calls by clinic staff allow patients to engage with clinic staff, strengthening bonds between patients and healthcare teams, as well as ensuring continuity and quality of care. The 2.9% decrease in MAs applied to 60,000 visits in our Medicine Clinic would provide 1740 additional visits annually. At a conservative estimate of \$50 earned per visit, return on investment for a caller's salary of \$30,000 plus fringe benefits would exceed 2:1.

Limitations of our analysis include unmeasured confounders (e.g., socioeconomic status, medical complexity, technology access). Strengths include a large sample size and a comparative assessment between firms. Future studies should confirm these findings in different geographic and socioeconomic settings.

Acknowledgments: We thank Sara Poplau for her review of prior drafts, and Jeremiah Menk for sharing statistical expertise during an earlier phase of the study. Dr. Vickery's time on this publication was supported by the National Institute Of Diabetes And Digestive And Kidney Diseases of the National Institutes of Health under Award Number K23DK118117. The content is solely the responsibility of the author and does not necessarily represent the official views of the National Institutes of Health.

Corresponding Author: Miamoua Vang, BA; Research Coordinator, Center for Patient and Provider Experience, Hennepin Healthcare Research Institute, Minneapolis, MN, USA (e-mail: miamoua.vang@hcmcd.org).

Funding Information This study was funded through a Hennepin Health Reinvestment Initiative project. The statistical analyses of this research was supported by the National Institutes of Health's National Center for Advancing Translational Sciences, grant UL1TR002494. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health's National Center for Advancing Translational Sciences.

Compliance with Ethical Standards:

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

REFERENCES

1. Shimotsu S, Roehr A, McCarty M, et al. Increased likelihood of missed appointments ("No Shows") for racial/ethnic minorities in a safety net health system. *J Prim Care Comm Health*. 2016; 7 (1): 38–40. <https://doi.org/10.1177/21501319155999800>
2. Hashim MJ, Franks P, Fiscella K. Effectiveness of telephone reminders in improving rate of appointments kept at an outpatient clinic: A randomized controlled trial. *J Am Board Fam Prac*. 2001; 14(3):193–196.
3. Parikh A, Gupta K, Wilson AC, Fields K, Cosgrove NM, Kostis JB. The effectiveness of outpatient appointment reminder systems in reducing no-

- show rates. *Am J Med.* 2010; 123 (6):542–548.<https://doi.org/10.1016/j.amjmed.2009.11.022>
4. **Hwang AS, Atlas SJ, Cronin P, et al.** Appointment “no-shows” are an independent predictor of subsequent quality of care and resource utilization outcomes. *J Gen Intern Med.* 2015; 30(10):1426–33.<https://doi.org/10.1007/s11606-015-3252-3>
 5. **Kheirkhah P, Feng Q, Travis LM, Tavakoli-Tabasi S, Sharafkhaneh A.** Prevalence, predictors and economic consequences of no-shows. *BMC Health Serv Res.* 2016; 16(13):1–6.<https://doi.org/10.1186/s12913-015-1243-z>
 6. **Teo AR, Forsberg CW, Marsh HE, Saha S, Dobscha SK.** No-show rates when phone appointment reminders are not directly delivered. *Psychiatric Serv.* 2017; 68 (11):1098–1100.<https://doi.org/10.1176/appi.ps.201700128>

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.