The role of a nurse telephone call to prevent no-shows in endoscopy CME

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Background and Aims: Preventing missed appointments, or "no-shows," is an important target in improving efficient patient care and lowering costs in gastrointestinal endoscopy practices. We aimed to investigate whether a nurse telephone call would reduce no-show rates for endoscopic appointments, and to determine if hiring and maintaining a nurse dedicated to pre-endoscopy phone calls is economically advantageous. Our secondary aim was to identify predictors of no-shows to endoscopy appointments.

Methods: We hired and trained a full-time licensed nurse to make a telephone call to patients 7 days before their scheduled upper endoscopy or colonoscopy. We compared this intervention with a previous reminder system involving mailed reminders. The effect of the intervention and impact of other predictors of no-shows were analyzed in 2 similar preintervention and postintervention patient cohorts. A mixed effects logistic regression model was used to estimate the association of the odds of being a no-show to the scheduled appointment and the characteristics of the patient and visit. An analysis of costs was performed that included the startup and maintenance costs of the intervention.

Results: We found that a nurse phone call was associated with a 33% reduction in the odds of a no-show visit (odds ratio, 0.67; 95% confidence interval, 0.50-0.91), adjusting for gender, age, partnered status, insurer type, distance from the endoscopy center, and visit type. The recovered reimbursement during the study period was $48,765, with net savings of $16,190 when accounting for the maintenance costs of the intervention; this resulted in a net revenue per annum of $43,173.

Conclusions: We found that endoscopy practices may increase revenue, improve scheduling efficiency, and maximize resource utilization by hiring a nurse to reduce no-shows. Predictors of no-shows to endoscopy included unpartnered or single patients, commercial or managed care, being scheduled for colonoscopy as opposed to upper endoscopy, and being scheduled for a screening or surveillance colonoscopy. (Gastrointest Endosc 2016;84:1010-7.)

Preventing missed appointments, or "no-shows," is an important target in improving efficient patient care and lowering costs in gastrointestinal endoscopy practices. Wasted resources (ie, the underuse of an open endoscopy room and available endoscopy staff), delayed diagnoses, and long waiting lists are among the most important problems associated with no-shows.[1-3] No-show rates vary among endoscopy practices but can range from 4% to 23%.[4,5] Data on predictors of no-shows in endoscopy are limited, but those who do not show tend to be younger, are of lower socioeconomic status, are referred by non-gastroenterologists, and have appointments on Mondays, warm season days, or after long wait times.[3,6,7] Efforts to reduce no-shows in endoscopy vary, with some suggesting overbooking patients to account for expected no-show rates, or even allowing "drop-in" endoscopy."[1,2,8] However,

Abbreviations: CI, confidence interval; ICER, incremental cost-effectiveness ratio; OR, odds ratio.

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identifying ways to prevent no-shows may provide a greater opportunity to reduce waste and uncertainty in an endoscopy practice.

There is ample literature showing that reminding patients about appointments reduces the rate of no-shows; this strategy has been proven effective in a variety of settings, including endoscopy practices.[9-11] However, little research exists on the optimal and most cost-effective ways to prevent patients scheduled for endoscopy from missing appointments. A number of previous studies have shown that interventions ranging from mailed reminders to community outreach improve adherence to colonoscopy and fecal occult blood testing but have varying incremental costs, reported as incremental cost-effectiveness ratios (ICER).[11-15] Others have looked at reducing the rate of endoscopy no-shows with telephone calls, which appear to be more effective than other types of reminders in improving attendance in endoscopy practices and ambulatory clinics.[11,16-18] No study, to our knowledge, has assessed the economic impact of a nurse telephone call to reduce no-shows in an endoscopy practice.

We aimed to investigate whether a nurse telephone call would reduce no-show rates for endoscopic appointments. Our secondary aims were to investigate whether (1) hiring and maintaining a nurse dedicated to pre-endoscopy phone calls is economically advantageous, and (2) whether we could identify predictors of no-shows to endoscopy appointments with attention to age, gender, partnered/single status, insurer, distance from hospital, and procedure indication.

METHODS

The historically controlled study was conducted at an academic ambulatory endoscopy center. The analysis was designed and performed to help measure the impact of a quality improvement project. The quality improvement intervention involved hiring and training a full-time, licensed nurse to make a telephone call to patients 7 days before their scheduled upper endoscopy or colonoscopy. The purpose of this telephone call was to remind the patient of the appointment, review logistics in getting to the appointment, review preparation instructions, and answer patient questions (Appendix, available online at www.giejournal.org). Before this intervention, all patients scheduled for endoscopy received a mailed reminder, and roughly 10% of these patients received a secretary telephone call, performed only as time permitted outside of other standard duties. The nurse manager supervising the intervention reported ~95% success rate in actually reaching patients; the other ~5% of patients received a voice mail or were not reached at all. Each patient had previously specified a preferred number in the electronic medical record, and this number was tried first; if the patient was not reached, all available alternative numbers (including work numbers) were tried.

Information was gathered from each upper endoscopy or colonoscopy appointment scheduled in the 19-week preintervention period (January 1 to May 19, 2013) and in the 19-week intervention period (May 20 to September 29, 2013); the intervention period correlated to the amount of funding available for the quality improvement project. The hospital electronic medical record system was used as the source of all data collected (Epic Systems Corporation, Verona, Wis, USA, 2013). A no-show appointment was defined as a scheduled procedure for which the patient failed to appear or which the patient cancelled less than 72 hours before the appointed time. This latter part of the definition was manually recorded by the practice manager during the study intervention and was included because finding a replacement for these cancellations was rarely successful in this hospital endoscopy practice. Information collected on the patient and scheduled visit included procedure type, procedure indication, age, gender, partnered/marital status, race, ethnicity, insurer, and zip code. The 2 sets of patients contributing scheduled visits to the preintervention and postintervention periods were compared in terms of demographic characteristics. A chi-square test was used to compare the sets of patients for each patient-level characteristic. The distribution of procedure type for the 2 sets of visits scheduled for the preintervention and postintervention periods were also compared using a chi-square test.

A mixed effects logistic regression model was carried out to estimate the association of the odds of being a no-show to the scheduled appointment and the characteristics of the patient and visit. These characteristics were included in the model because they were potential confounders of the association. Because some patients had multiple scheduled visits over the 2 periods, it was necessary to include a random effect for the patient to account for within-patient correlation of responses. QR decomposition of the random effects variance matrix was used to aid in convergence of the model. This analysis was carried out again on visits for which a colonoscopy only was scheduled; the same patient characteristics were included in this model, and the reason for the colonoscopy (for screening or surveillance) was also included. For each of the 2 models, sensitivity analyses were carried out to assess the impact of adjusting additionally for race and to explore whether the impact of partnered status differs by gender.

An analysis of costs was performed that included the startup and maintenance costs of the intervention. These costs were assessed from the payor's perspective to facilitate generalization to other practice settings. Intervention costs included personnel time (ie, that of the hired nurse and time of those training the nurse), indirect support for personnel (ie, office manager coordination and support), and additional resources required to perform