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Recruitment of Rural Physicians in a Diabetes Internet Intervention Study: Overcoming Challenges and Barriers

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Abstract

Purpose—This paper highlights a descriptive study of the challenges and lessons learned in the recruitment of rural primary care physicians into a randomized clinical trial using an Internet-based approach.

Methods—A multidisciplinary/multi-institutional research team used a multilayered recruitment approach, including generalized mailings and personalized strategies such as personal office visits, letters, and faxes to specific contacts. Continuous assessment of recruitment strategies was used throughout study in order to readjust strategies that were not successful.

Results—We recruited 205 primary care physicians from 11 states. The 205 lead physicians who enrolled in the study were randomized, and the overall recruitment yield was 1.8% (205/11 231). In addition, 8 physicians from the same practices participated and 12 nonphysicians participated. The earlier participants logged on to the study Web site, the greater yield of participation. Most of the study participants had logged on within 10 weeks of the study.

Conclusion—Despite successful recruitment, the 2 major challenges in recruitment in this study included defining a standardized definition of *rurality* and the high cost of chart abstractions. Because many of the patients of study recruits were African American, the potential implications of this study on the field of health disparities in diabetes are important.

Keywords

recruitment; physicians; diabetes; Internet intervention

INTRODUCTION

Limited primary care services in rural areas translate to limited access to health care services, health insurance, or specialty care,¹ all of which are manifested by poorer health status² and greater health disparities among rural residents.¹ These issues, in combination with the rapidly increasing incidence and prevalence of type 2 diabetes in the southern United States, particularly among African Americans,^{3–5} highlight the need for studies that

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evaluate the practice patterns and challenges of physicians who treat diabetics in the rural south, where there are high African American populations.

Rural physicians often practice in isolated settings, which can impede their access to continuing education opportunities that provide clinical updates and guidance.⁶ Educational interventions delivered via the Internet have been shown to be effective⁷ and provide a flexible, convenient, and highly accessible mode for continuing education offerings, particularly in rural settings. Similar technology is now widely employed to engage community practitioners in research. However, recruitment of physicians for office-based research can be challenging and includes barriers such as concern about office disruption, respondent burden, fear of evaluation, and lack of experience and investment in research.⁸

A few studies have begun to focus on the mechanics of how to successfully recruit physicians into clinical research.^{9–11} These studies cite use of friendship networks and physicians recruiting physicians as critical factors in success of recruiting physicians into clinical studies. Several studies have also reviewed recruitment of physicians into Internet-based approaches;^{12–14} however, very few have focused on recruitment of physicians practicing in rural areas, particularly those practicing in the south.

Identifying strategies to successfully recruit physicians in rural areas is desirable. The Rural Diabetes Online Care (RDOC) Project was developed to evaluate the effectiveness of a multifaceted, professional development Internet-based intervention for rural primary care physicians.^{15–18} This paper summarizes the methods employed in the recruitment of rural physicians into the RDOC study and gives an in-depth descriptive analysis of the recruitment process, particularly as it relates to physicians practicing in rural areas predominately in the southern United States.

Box. Rural Diabetes Online Care Recruitment Timeline

Date	Activity
Prerecruitment/prelaunch	
February 2006	<ul style="list-style-type: none"> Principal investigator and recruitment leader held preliminary meeting with research team to discuss recruitment issues regarding the study, including potential barriers and challenges to participation.
July-August 2006	<ul style="list-style-type: none"> Personalized invitation letter mailed to physicians in the Alabama Practice-Based Research Network (APBRN). Special e-mail sent to targeted Alabama physicians (eg, Alabama Family Medicine Society, residency directors of Alabama primary care programs) soliciting their assistance with study recruitment.
(Summer 2006)	<ul style="list-style-type: none"> RDOC launch date
September-November 2006	<ul style="list-style-type: none"> Wave 1: Alabama, Mississippi, Georgia, Tennessee, Florida, Arkansas, Kentucky. Facsimile “blast” was sent at 2- to 4-week intervals to 700 potential participants (recent family medicine residency graduates, members of the APBRN, and family practice preceptors).
September-December 2006	<ul style="list-style-type: none"> Series of 4 recruitment letters, including FAQs, were mailed, in 1-month intervals, to wave 1 physicians inviting their participation for both practice enrichment and continuing medical education (CME) credit.

Date	Activity
January 2007	<ul style="list-style-type: none"> Physician staff members invited to view modules for continuing education unit credit. Letter sent to enrolled physicians to request referrals of colleagues for potential recruitment into study (snowball strategy). Approximately 5 replies were received.
February 2007	<ul style="list-style-type: none"> Recruitment leader conducted face-to-face visits at potential rural physician practices in Selma, AL. There were few physician contacts; most contacts occurred with front office or nursing staff. No physicians were recruited.
January-February 2007	<ul style="list-style-type: none"> Recruitment team conducted a pilot test of follow-up calls (approximately 150-180 calls) to wave 1 physician offices. Targeted number of calls was 1300. This resulted in a low yield due to: (1) busy signals, (2) inability to speak directly to physicians, (3) lack of Internet service at physician practice, (4) perceived lack of benefit from participation, (5) physicians not interested or do not participate in study, (6) physicians had not received/read recruitment letter.
March-May 2007	<ul style="list-style-type: none"> Recruitment efforts targeted the nurse/office managers of wave 1 physicians and waves 1 and 2 alumni of the Tuscaloosa FM Residency Program (TFMRP) 30 of the 300 letters mailed were personally signed by the program director of the TFMRP and chair of family medicine department at The University of Alabama School of Medicine, Tuscaloosa campus.
April 2007	<ul style="list-style-type: none"> Poster display of RDOC study was placed at the Eighth Annual Rural Health Conference at The University of Alabama in Tuscaloosa to facilitate additional physician recruitment.
June-August 2007	<ul style="list-style-type: none"> Wave 2: additional states (North Carolina, South Carolina, West Virginia, and Missouri) Series of 3 recruitment letters were mailed to wave 2 physicians inviting them and their staff to participate in the study. Each mailing ranged from 2700 to 3700 pieces.
June 2008	<ul style="list-style-type: none"> Recruitment is completed and efforts focus on retention efforts.

METHODS

Overall Recruitment Plan

Before the study began, institutional review board approval was obtained at The University of Alabama medical campus in both Tuscaloosa and Birmingham. Consent was received after successful login of participants. The general recruitment plan was based on several factors. First, we obtained extensive input in the design and implementation of the study from rural Alabama physicians through surveys, focus groups, in-depth interviews, and pilot testing. This approach allowed us to obtain more buy-in, overcome access barriers, and refine and customize the intervention. Second, we capitalized upon ongoing, long-term and long-standing relationships believed to have good credibility and reputation through the Alabama Practice-Based Research Network (APBRN) of 359 primary care physicians, The University of Alabama Family Medicine Residency Program alumni, and faculty and leadership at The University of Alabama Family Residency Program. The University of Alabama Family Medicine Residency Program is located in Tuscaloosa, Alabama, as one of

the branch campuses of The University of Alabama School of Medicine in Birmingham, Alabama. Third, we emphasized incentives gained from the study, including continuing medical education (CME) and continuing education units (CEUs) for office staff, personalized performance feedback in real time with an objective, data-driven benchmark and peer performance comparisons, and financial incentives.

We initially found that providing on-the-job training and certification via Internet was desirable, as many office staff had limited time available for the CEU certification process. Finally, we built upon the research team's previous research experience with rural physician practices involving quality improvement/guideline adherence. For example, because many of the research team members had already conducted outcomes research with rural physicians, this experience was leveraged in the planning and implementation of this study.

Recruitment was facilitated through mailings, faxes, telephone calls, presentations/recruitment at professional meetings, and on-site visits. We found it helpful to succinctly outline the benefits of participating in the study. During the recruitment phase, having a frequently asked questions (FAQ) sheet facilitated the transmission of information. The overall recruitment period lasted slightly more than 1 year. A summary of the study's recruitment efforts and the time devoted to each is provided (Box).

Description of Intervention and Control Groups

The RDOC study was a randomized, controlled study of 205 rural physician offices to an intervention or comparison group in an 18-month online intervention. The intervention consisted of interactive learning modules that provided case-based education, performance feedback measures, and benchmarks as a model for improving physician adherence to guidelines for diabetes management. To enroll, a primary care physician had to access the study Internet site and review the online consent material.

Randomization occurred online immediately after consent. The first physician from an office to enroll was designated as the lead physician. Subsequent physicians or office personnel participating in the study were assigned to the same study arm as the lead physician. The intervention Web site, which was developed with input from rural primary physicians, contained (1) tips and tools to help practitioners save time during the office visit, (2) a summary of diabetes control guidelines and goals, (3) case-based continuing education, and (4) patient education materials.

Lead physicians received feedback about areas for practice improvement based on medical record review. Those in the intervention group also received feedback from interactive case vignettes that allowed them to compare their performance with that of their peers. The control Web site contained traditional test-based CME and links to national diabetes resources. Participants were eligible to receive CME credit for completing sections from the Web site. The main outcomes of the study were control of diabetes process of care measures (A₁C control, lipid control, blood pressure control, medication intensification). Data were obtained covering physician practice patterns by chart abstraction.

Inclusion/Exclusion Criteria for Study

The study targeted family medicine, internal medicine, and general practice physicians. Additionally, the inclusion criteria were based on the rurality of practice definitions. There are several different taxonomies for "rurality" that vary based on criteria such as population size, density, proximity or degree of urbanization, adjacency and relationship to a metropolitan area, principal economic activity, economic and trade relationships, and work commutes.¹⁹ We used a combination of rural definitions in different phases of the study in order to increase the potential recruitment area in a standardized way. We initially targeted

rural physician practices located in 7 southeastern states: Alabama, Mississippi, Georgia, Tennessee, Florida, Arkansas, and Kentucky (wave 1). Our aim was to recruit practices within a 400-mile area of the study's main site in Birmingham to more easily facilitate on-site chart abstraction if necessary.

A subsequent modification of the inclusion criteria resulted in a second recruitment, which included some deletion as well as addition of counties to wave 1 counties and the addition of 4 states and their rural counties: North Carolina, South Carolina, West Virginia, and Missouri (wave 2). These modifications were conducted in order to better standardize our rural definition as well as to add to the recruitment pool. The 4 states selected in wave 2 included southern as well as nonsouthern counties that contained rural populations which we felt were compatible in a variety of ways with our wave 1 populations (ie, population size, geographic distribution, ethnic/racial composition, socioeconomic composition, and cultural factors; see Table 1 for a summary of criteria used to define rurality in recruitment of physicians and the states that were targeted for recruitment).

Physician recruitment lists were obtained from 4 sources: (1) Phoenix ESI International Co, a marketing and data management company utilized by the American Medical Association; (2) state licensure data; (3) the alumni database of the Tuscaloosa Family Medicine Residency Program at The University of Alabama School of Medicine, Tuscaloosa Campus; and (4) the alumni database of the Tuscaloosa Family Medicine Residency Program; and (4) the APBRN.

Measures

This study was designed to be descriptive in nature, so no hypotheses were formulated. During the recruitment period, we recorded the number of lead physicians and other health care providers participating in the study, location of practice, registration date, number of registration failures, number of successful registrations, number of withdrawals from study, and frequency of logins. We also used standard descriptive statistics and SPSS software 16.0 for analysis and Excel software for plotting graphs (Microsoft, Redmond, Washington).

RESULTS FROM RECRUITMENT

Rural primary care physicians practicing in 11 states participated. The 205 lead physicians who enrolled in the study were randomized and the overall recruitment yield was 1.8% (205/11 231). In addition, 8 physicians from the same practices participated and 12 nonphysicians participated.

Most of the successful registrations for the study occurred during the first 10 weeks of the study (Figure 1). Importantly, 60.3% of those who logged on enrolled. The reasons for failure to enroll varied: (1) the user closed the browser, (2) no entry was entered which allowed an empty field, (3) a non-MD tried first or no job title was entered by the user, (4) the participant did not consent, or (5) the geographical county entered was ineligible for the rural definition of study. Enrollment after week 10 declined steadily. However, enrollment after week 30 increased due to efforts from the wave 2 recruitment initiative. The cumulative number of physicians enrolled (Figure 2) demonstrating an inflection in the curve at week 40.

Study participation rates were highest in Alabama (29.8%), followed by Mississippi (12.4%), Georgia (11.2%), and Kentucky and North Carolina (both at 10.7%). Most participants had Internet access within their practices (95.7%). The intervention group logged onto the site an average of 5.2 times (SD = 1.3), compared to the control group at 1.8 times (SD = 1.3). Sixty-five (29%) participants withdrew from the study at baseline.

Reasons for withdrawal included (1) the physician was too overwhelmed or busy to participate, (2) the physician was retired or was leaving the practice, (3) it was too time-consuming to copy the charts, (4) the physician was hesitant because of Health Insurance Portability and Accountability Act regulations, and (5) the physician was no longer interested in participating.

Most participants preferred to mail their records to the research team compared to receiving in-house chart abstractions (47.3%), while approximately 25.4% of participants did not indicate their preference for medical record abstraction.

DISCUSSION

Although we were able to successfully recruit our target number, there were several challenges encountered that may be unique to recruitment of this special population. Although previous studies suggested that personalized strategies work best,^{9–11} our ability to recruit in a face-to-face or direct manner was hampered by our large geographical target area. Therefore, we used a multilayered/multiteam approach to recruitment.

We used targeted and personalized mailings and e-mails, faxes, a small number of office visits, and recruitment at meetings to meet our recruitment goal. The recruitment team was large and consisted of members from multiple academic institutions and various backgrounds. We also relied on the assistance of people currently in practice and in contact with rural physicians to plan and implement this project. In addition, the team members each had different tasks assigned to them with frequent collaborative meetings to follow-up and troubleshoot during the project. This multilayered and multiteam approach, along with clear timelines, consistent follow-up, and clear outcomes contributed greatly to the success of recruitment of rural physicians and health care providers into this study.

Our highest yield for recruitment came from the use of large physician lists with mailings, which contradicts previous studies where direct recruitment to clinical studies occurred through either friendship or nonfriendship physician networks. However, although personalized strategies such as the use of personalized letters to alumni or use of physician research networks did not yield high recruitment, it is believed that such strategies may be important for recruitment in future studies. The timeliness of recruitment has also been an important issue in the successful recruitment of physicians for Internet-based interventions. Typically, the earlier the physician completes the intervention, the better the completion success rate. Additionally, the timing of the intervention around holidays, vacation time, or other recruitment events plays an important role in this process.^{20,21} We found this to be true in this study, where the number of successful registrations were often clustered around recruitment activities.

Perhaps one of our challenges that is not unique to this study was how to define “rurality” of our potential recruitees. This challenge has been cited in the literature often.¹⁶ This study used a process of refinement of original definitions to eventually get one that was practical and standardized (Table 1 for summary of definition). Research that continues to standardize this definition is essential in order to conduct research of this type. Therefore, determining a consistent definition of rurality should be high priority in order to move diabetes management and health disparities research forward.

Ways to balance the costs of the study must also be considered. We initially kept the location of recruitment close to our main research site, Birmingham, Alabama, in order to limit the travel needed to conduct on-site visits for chart abstraction from study personnel. However, due to limited recruitment from the 7 initial states used for the study, we had to expand our recruitment area. One way to avoid costly travel time to conduct face-to-face

chart abstractions to far away locations was to have chart abstractions mailed, which we did for several long-distance recruits.

Another challenge for this study and others that recruit rural physicians was the heavy patient load of rural physicians.²² To complete the study, physician practices had to agree to chart abstractions, a time-intensive and burdensome process to an already busy practice. To counter this challenge, we had to carefully consider the incentives we offered for participation, as well as make adjustments as needed. Incentives to both recruit physicians into the study as well as retain them in the study during a 2-year period included providing CMEs, CEUs, compensation for time invested, as well as holiday thank you cards.

Lastly, we also emphasized the great value that study participants would have in adding to scientific knowledge in this field. We are currently conducting a follow-up survey to assess the particular reasons why rural physicians participate in this type of research. It is important to note that 7 of our targeted states for recruitment rank in the top 10 states with the highest prevalence of diabetes in the United States.^{3,4}

Many of our targeted states also have large proportions of African Americans suffering from health disparities. The ethnicity/race of the physicians gives some clues about the concordance rates between practitioner and patients who can influence overall health outcomes and, in this case, diabetes outcomes. The race of rural physicians would be helpful in attempting to see an effect on these outcomes and could also give clues about where to tailor interventions and recruitment efforts around diabetes management and outcomes. Although we did not collect this information at the onset of the study, we are now in the process of collecting and analyzing this data. Other factors that contribute to disparities in diabetes include care-seeking behaviors, access to ambulatory care rather than reliance on the emergency department, and emphasis on health promotion.^{23–26} These factors should be studied in more detail in rural settings.

This study is unique from others that have closely examined physician recruitment into Internet-based studies because very few studies have documented recruitment of a rural physician population. This paper adds to the limited knowledge of how to maximize the approach. This could be important in health disparities research, where large minority populations such as African Americans live in concentrated areas of the south and where these populations currently comprise the bulk of disparities in diseases such as diabetes. Research that better understands the practice management skills and competencies of physicians who serve this population could provide some of the answers for solving health disparities.

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Figure 1.
Frequency of Physicians Attempting Enrollments and Enrolled

Figure 2.
Cumulative Number of Physicians Enrolled (n = 205)

Table 1

Summary of Rural Definitions Used for Recruitment

Phase (Start Date)	Rurality Definition for Counties	Targeted States	Target No. of Physicians	N Recruited (%)
Wave 1 (September 2006)	City with a population of $\geq 50\,000$ inhabitants (FIPS designation = 3).	AL, MS, GA, FL, TN, AR, KY	2231	151 (73.7%)
Wave 2 (June 2007)	City with a population of $\geq 25\,000$ (FIPS designation = 5).	AL, MS, GA, FL, TN, AR, NC, SC, WV, MO	9000	54 (26.3%)
Total			11231	205 (100%)

Abbreviation: FIPS, federal information processing standard of 3 = 3 digit code unique for that state.