Problems in Recruiting Community-based Physicians for Health Services Research

Steven Asch, MD, MPH, Sarah E. Connor, BA, Eric G. Hamilton, MS, Sarah A. Fox, EdD, MSPH

OBJECTIVE: To qualitatively determine factors that are associated with higher participation rates in community-based health services research requiring significant physician participation burden.

MEASUREMENTS: A review of the literature was undertaken using MEDLINE and the Social Science Research Index to identify health services research studies that recruited large community-based samples of individual physicians and in which the participation burden exceeded that of merely completing a survey. Two reviewers abstracted data on the recruitment methods, and first authors were contacted to supplement published information.

MAIN RESULTS: Sixteen studies were identified with participation rates from 2.5% to 91%. Almost all studies used physician recruiters to personally contact potential participants. Recruiters often knew some of the physicians to be recruited, and personal contact with these "known" physicians resulted in greater participation rates. Incentives were generally absent or modest, and at modest levels, did not appear to affect participation rates. Investigators were almost always affiliated with academic institutions, but were divided as to whether this helped or hindered recruitment. HMO-based and minority physicians were more difficult to recruit. Potential participants most often cited time pressures on staff and themselves as the study burden that caused them to decline.

CONCLUSIONS: Physician personal contact and friendship networks are powerful tools for recruitment. Participation rates might improve by including HMO and minority physicians in the recruitment process. Investigators should transfer as much of the study burden from participating physicians to project staff as possible.

KEY WORDS: physician recruitment methods; health services research.

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Community physicians' participation in health services research is essential to the advancement of the field. Adequately investigating questions regarding best practices, quality of care, or guideline implementation re-

quires soliciting the input and collaboration of physicians practicing in the community. However, the obstacles to practicing physicians' participation in research are greater than ever. Amidst ever mounting paperwork, growing concerns about patient privacy, and the fiscal pressures of managed care, community physicians may be increasingly reluctant to engage in research activity.

Difficulty in obtaining physician participation in survey research has been noted by other authors.¹⁻³ For 1991 alone, Asch et al. identified 68 distinct mailed physician surveys reported in US medical journals. The mean participation rate for these surveys was 54%.⁴ Although participation-enhancing techniques such as multiple mailings, financial incentives, handwritten solicitations, use of certified mail, and telephone reminders are frequently employed, rates of 50% to 70% are typical.³⁻⁷ Commonly cited reasons for physician nonparticipation include a lack of time, lack of interest, and insufficient office staff.^{1,8}

Studies that make even greater demands on physicians' time and resources face greater challenges in eliciting physician participation. As a result, studies that require access to the physicians' patients or patient records, or involve direct observation of physician-patient interactions rarely rely on large community samples.⁹ Time constraint difficulties are compounded when more representative, multiorganizational samples are drawn because the researchers' home organization has less claim on participating physicians' time.

As part of a recently completed 4-year study of physician-patient communication about cancer screening, the Communication in Medical Care study (CMC), we recruited dozens of primary care physicians in a southern California community. The challenges of that experience led to us to examine other investigators' methods for recruiting a generalizable sample of community physicians into a research effort that requires more than completing a survey. We were particularly interested in studies that targeted a population of physicians within a community or randomly sampled from a large population of physicians.

In this paper, we sought to qualitatively determine factors that were associated with increased participation rates in community-based health services research requiring significant physician participation burden. To do so, we examined 16 health services research studies that recruited significant numbers of community physicians and compared their contexts, strategies, and participation rates. In addition, we describe new data from our recent experience of recruiting physicians into the CMC study and discuss lessons learned.

Received from the West Los Angeles VA Medical Center, Los Angeles, Calif (SA); General Internal Medicine and Health Services Research (SAF); Department of Medicine, University of California, Los Angeles, Los Angeles, Calif (SA); RAND, Santa Monica, Calif (SA, SEC, SAF); and PacificCare Behavioral Health, Van Nuys, Calif (EGH).

Address correspondence and reprint requests to Dr. Asch: RAND, 1700 Main St., P.O. Box 2138, Santa Monica, CA 90407-2138 (e-mail: Steven_Asch@rand.org).

METHODS

The goal of our MEDLINE literature search was to find health services research studies since 1975 that sought a generalizable sample of physicians to analyze behavior at the individual physician (as opposed to the group practice) level. To that end, we sought studies that had solicited the participation of a large number (>100) of individual physicians, selected from a community at large rather than a single institution or sample of convenience, and required some effort on the part of the physician beyond merely completing an interview or survey. We focused our search by selecting English-language health services research articles that included the word "physician" anywhere in the searchable text. We then used combinations of search terms to generate lists that were manageable for manual review. These terms included response, participation, survey, questionnaire, recruit, community, and practice patterns. The 211 studies identified were manually reviewed to verify that they met our inclusion criteria and had sufficient information on participation rates and recruitment methods.

Nine articles resulted, including the CMC study. Among these articles were 3 methodology papers on recruiting physicians for health services research studies.¹⁰⁻¹² We used the Social Sciences Research Index (SSRI) to identify all articles that cited any of these 3 studies and searched this list for additional articles that might meet our criteria. We identified 3 additional articles from this source. Four other articles were identified from the reference lists of other papers obtained during the search or from interviews with the first authors of already identified studies and other experts in the field, for a total of 16.

From each of these studies, 2 reviewers independently abstracted the following: study objectives, study descriptions, primary study affiliations, clinical settings, community settings, interventions, data collections, specialties, physician sample frames, recruiters, study burdens, incentives, physician samples, physician participation rates, and patient samples. The reviewers resolved any differences through discussion. In 2 cases, we used information available in the article to calculate participation rates.^{13,14} We administered a brief, 8-item, semistructured, open-ended survey addressing the same domains to the first authors of each identified article in order to elucidate recruitment issues that the investigators might have encountered but not included in their published work.

Table 1 summarizes the key elements of the 16 studies reviewed here. The subject matter and methods varied considerably. Most focused on primary care; the most commonly studied specialties were family physicians, general practitioners, and internists. The types of data collected, and thus, the burden imposed upon the participating physicians, also varied. All but 2 of the studies^{15,16} required some type of access to patient information, 8 required actual contact with or involvement of patients (including 2 that videotaped patient visits), 10 included a

physician survey, and 8 reviewed medical records. Participation rates ranged from a low of 2.7%¹⁷ to a high of 91%.¹⁸

RESULTS

We divided the results of our literature review into the following general areas: physicians as recruiters, incentives, study affiliation, clinical setting, specialty, community setting, and study burdens. All of these are issues that could plausibly impact participation rates and for which we have at least some basic information from most of the selected articles.

Physicians as Recruiters

Personal contact from another physician or an investigator was the most common method of obtaining research participants from a community physician. Only 1 of the articles we identified attempted recruitment without some form of early personal contact (by phone or in person) with a fellow physician.^{17,19}

Investigators at RAND¹⁰ are generally credited with originating one specific form of the "physicians recruiting physicians" method.^{12,14,20} This method involves at least 2 stages: (1) investigators recruit respected and influential physicians in each target community to act as their liaisons, and (2) these liaison physicians then recruit physicians in their community to participate in the study. The original study that employed this approach achieved a 90% participation rate. Borgiel,¹³ Baldwin,¹⁷ and Stewart²¹ cited the RAND method as the basis for their recruitment strategy and report participation rates ranging from 66% to 91%. Carey's¹⁴ approach to physician recruitment was similar, and the result was a 67% participation rate.

Other researchers using similar methods have not always had the same success. The CMC study and Saver¹⁸ also based their methods on those of the RAND investigators, but each achieved a participation rate of only 39%. Hutchinson's¹⁶ approach was similar also, but resulted in a participation rate of 50%. If there is a lesson to be learned from the RAND example, it is clearly confounded by many variables.

The degree of personal contact between the investigators and the recruiters, and between the recruiters and the community physician may be important factors. Borgiel¹³ reported that candidates approached only by telephone had a 75% recruitment rate, while those who had a personal meeting with the recruiter were successfully recruited 91% of the time. The only study without any form of early personal contact had a very low participation rate (2.7%–6%).¹⁹ Both Kosecoff¹¹ and Borgiel¹³ highlighted the personal contact and in-person training that took place with their physician recruiters. Kosecoff also conducted in-person training with the recruited physicians, thereby reinforcing the importance of the study and

Table 1. Health Services Research Studies Recruiting Physicians from the Community

Study Description	Primary Study Affiliation*	Clinical Setting	Community Setting	Intervention	Data Collection	Specialties	Physician Sample Frame (Method)	Recruiters	Study Burden	Incentive	Physician Sample	Physician Participation Rate	Patient Sample
CMC, 1997 Examine physician-patient communication on cancer screening	RAND/UCLA	Primary care practices	Multicultural Southern California community	None	Physician telephone survey, medical record review, patient survey	GM, family physicians	State records, phone books, professional association lists (stratified random sample)	Leading physicians from same community	20-minute telephone interview, provide patient list	Recruiter-\$500 Participant-\$250 (\$50 recommended for office staff)	169	39%	904
Dobie, 1998 ²⁴ Examine whether Medicaid-insured women at low risk receive less adequate obstetrical care than privately insured women	University of Washington, Seattle	Obstetric and family practices	Washington state	None	Demographic and practice information on participating physicians, a complete roster of all obstetrical patients, chart abstraction of prenatal and intrapartum records of participating patients	Obstetricians, family physicians, and certified nurse-midwives	Lists provided by professional organizations of providers practicing obstetrics	Local obstetrically active clinicians	Telephone survey to determine eligibility, provide patient roster, provide patient charts for abstraction	None reported	2,036	90.6%	2,054
Hutchinson, 1998 ¹⁶ Examine the relationship between physician characteristics and the provision of preventive care	McMaster University, Ontario	Family practices	Family practices within 1-hour drive of Hamilton, Ontario, Canada	None	Unannounced standardized patient visits	Family physicians	100% of prior survey respondents (original survey 100% local sample, based on professional association)	Community physicians	See 4 simulated patients, in blinded manner	Recruiter-"small honorarium" Participant-4 hours continuing medical education credit, feedback promised	125 (2nd stage)	50%	none
Saver, 1997 ¹⁸ Assess the utility of physician survey self-reports in predicting actual mammography ordering behavior	University of Washington, Seattle	Primary care practices	5 counties in the state of Washington	Computerized program to improve mammography rates	Physician surveys, medical record review, patient surveys	Family and GP	Professional association lists (100% sample)	Community family and physicians	Complete up to 3 surveys, provide access to a large number of medical records, provide patient lists	None reported	357	39%	13,998
Rosenblatt, 1997 ²⁵ Examine the differences among obstetrical provider specialties in the patterns of obstetric care	University of Washington, Seattle	Obstetric and family practices	Washington state	None	Telephone survey and abstraction of participating patients charts	Obstetricians, family physicians, and certified nurse-midwives	Rosters maintained by relevant professional organizations in Washington state	Local obstetrically active clinicians	Telephone survey, Office staff-small providing nonmonetary gifts (e.g., boxes of donuts)		177	85%	1,513
Coleman, 1996 ²² Study how general practitioners approach the topic of smoking cessation with patients	University of Leicester, United Kingdom	General practices	Leicester, United Kingdom	None	Videotaping of visits	GP	Stratified random sample of prior survey respondents (original survey 100% local sample, based on professional list)	GP principal investigator	Allow videotaping, complete encounter sheets	Participants-£50	123	43%	Not reported
Hart, 1996 ¹⁵ Explore rural vs urban obstetrical utilization	University of Washington, Seattle	Obstetric and family practices	Urban and rural areas of Washington state	None	Telephone survey, medical record abstraction	Obstetricians and family physicians	Rosters maintained by relevant professional organizations in Washington state	Local obstetrically active clinicians	Brief telephone eligibility survey, providing charts for abstraction	None reported	235	89%	1,942

(Continued)

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Study Description	Primary Study Affiliation*	Clinical Setting	Community Setting	Intervention	Data Collection	Specialties	Physician Sample Frame (Method)	Recruiters	Study Burden	Incentive	Physician Sample	Physician Participation Rate	Patient Sample
Carey. Examine the cost and outcomes of care for acute low back pain by type of practitioner	University of North Carolina, Chapel Hill	Primary care practices	Urban and rural areas of North Carolina	None	Complete enrollment forms for patients	Varied (included chiropractors)	State licensing files (stratified random sample)	Physician investigators of similar specialty as physician/chiropractor	Complete enrollment forms for patients and obtain patient consent	Recruiter—none reported Participant—\$200 plus \$25 per enrolled patient Office staff—small gifts	281	67%	1,633
Baldwin. Assess adherence to ACOG guidelines for low-risk obstetric care	University of Washington, Seattle	Obstetric and family practices	Urban and rural communities in Washington state	None	Physician survey, medical record abstraction	Obstetrics and family practice	Professional association and licensing lists (stratified random sample)	"Network of respected obstetric providers" (including certified nurse-midwives)	Complete patient lists, complete questionnaire with telephone follow-up, allow medical record access	Recruiter—meals Office staff—small gifts	235, plus 43 certified nurse-midwives	91%	2,357
Hirsch. Demonstration project to explore the efficacy of preventive health screening and health education	UCLA	Primary care practices	Los Angeles (within 45-minute drive from UCLA)	Screening and education	Collect contact information on elderly patients	Varied	UCLA clinical faculty association members in private practice (100% sample)	Physicians affiliated with research project, principal investigator headed UCLA clinical faculty association	Select 50 patients for study participation, have office staff facilitate access to patient information, let researchers contact patients	None reported	472	24%	5,594
Stewart. Medical Outcomes RAND Study measured the outcomes and costs of health services for tracer conditions	RAND	HMOs, multispecialty groups, and solo/small group practices	Selected cities in the United States	None	Telephone interviews of providers and patients, written reports of patient encounters	Family medicine, GIM, cardiology, endocrinology, psychiatry, clinical psychology	Lists from the Interstudy HMO Census, Medical Group Management Association, the AMA Masterfile, and specialty associations	Solo/small group practices: prominent physicians at each site; HMOs and group managers and field representatives; both categories of recruiters nominated by advisory committees of nationally prominent physicians	Completion of Initial Screening Forms for each patient, self-administered questionnaires, and telephone surveys, access to patients	Nonmonetary gifts (e.g., coffee mugs, pads of note paper, paper clip holders, and pens with the Medical Outcomes Study name and logo)	789	66% (varied by practice type from 61% to 87%)	22,462
Kotlike. Study the effectiveness of smoking cessation interventions, compared 3 physician recruitment strategies	University of Minnesota and Minnesota, Academy of Family Physicians, Mayo Clinic	Primary care practices	Minnesota	Training doctors to encourage smokers to quit	Lists of patients seen on specific days, patients interviewed by telephone	(1) Family, (2) GIM and cardiologists, (3) primary care physicians (practices were the target of recruitment efforts)	Professional association lists	Study arms 1 and 2: none (initial contact by mail only); study arm 3: physician and nurses recruited at physician group level from previous wave participants	(1 and 2) Report patients seen, and deliver intervention for 1 month (1) or 1 year (2); (3) deliver intervention for 18 months and reply to surveys	None	(1) 1,110; (2) 1,108; (3) 142	(1) 6.0%; (2) 1 Not reported; (3) 2.7%; (3) 58% participated; (3) 142 ing at 6 months	(1) Not reported; (2) not reported; (3) 13,460
Borgel. Examine the relationship between postgraduate training and continuing medical education on quality of care	College of Family Physicians of Canada	Primary care practices	Southern Ontario (outside metropolitan Toronto)	None	Physician survey, medical record review, patient survey	Family practice	Canadian Medical Directory (stratified random sample)	Physician recruiters from the community	Complete survey, facilitate access to patient information, letter asking patients' permission	Recruiters—nominal payment per recruit Participant—none reported	142	85%	Records—25 per physician Survey—60 per physician

(Continued)

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Study Description	Primary Study Affiliation*	Clinical Setting	Community Setting	Intervention	Data Collection	Specialties	Physician Sample Frame (Method)	Recruiters	Study Burden	Incentive	Physician Sample	Physician Participation Rate	Patient Sample
Cockburn, 1988 ¹² Examine the relationship between doctor-patient interaction and various outcomes	University of Newcastle, New South Wales, Australia	Primary care practices	Hunter Valley, New South Wales, Australia	None	Video taping of visits, physician survey	GP	Not reported (stratified random sample)	Academic general practitioners	Permit consultations to be recorded	None reported	108	52%	Not reported
Kosecoff, 1987 ¹¹ Assess the appropriateness of coronary angiography, carotid endarterectomy, and gastrointestinal tract endoscopy in community practice	RAND/UCLA Hospitals and community practices	Hospitals and community practices	Multiple regions (US)	None	Medical record review	Varied	Medicare Part B claims data (random sample based on patients)	Physicians from same community nominated by board of national medical organization representatives	Provide access to records, sign letter to hospital to allow access to their records	None	913	90%	5411
Mendenhall, 1979 ²⁰ Examine the types of care provided by specialists in general internal medicine, and 10 subspecialties of internal medicine	University of Southern California	Varied	US	None	3-day log-diary	Internal medicine	AMA Masterfile	Specialty society representatives	Complete diary of activities	None	5983	65% (varied by specialty from 53% to 82%)	None

*Primary study affiliation was assumed to be the first author's institution, unless otherwise indicated in the article. UCLA, University of California, Los Angeles; GIM, general internal medicine; GP, general practice.

strengthening physicians' commitment to see the project through. The participation rate in that study was 90%.

In contrast, most communication in the majority of studies took place by telephone and mail. In the CMC study, the primary training of physician recruiters occurred via teleconference due to the study's large geographic area. Initial recruitment took place almost exclusively by telephone. A more personal approach was not feasible because of scheduling difficulties and resource constraints.

The quasi experiments conducted by Kottke et al.¹⁹ further highlighted the significance of personal contact in the recruitment process. These investigators solicited physician participation by mail (with telephone follow-up for responders) in 2 of 3 study arms, with dismal results (6.0% and 2.7% participation rates). When they switched to a method involving intensive personal contact with medical directors at targeted clinics, they were able to obtain a continuing physician participation rate 6 months after initial contact (based on self-reports) of 58%. The target clinics in this study were all part of a Blue Cross/Blue Shield of Minnesota managed care plan, and one of the study investigators was that plan's medical director for quality assurance.

Mendenhall et al.²⁰ used only mail recruitment and yet achieved a 65% participation rate. However, this study may have been less burdensome than others reported here, with participating physicians being asked to simply complete a log-diary of their encounters for 3 days. Furthermore, this is the oldest of our reported studies, and as noted earlier, we suspect that participation rates have declined due to changes in the health care industry.

One of the benefits asserted for the physician liaison approach is that it takes advantage of the formal and informal network of relationships between the liaisons and the physicians in their community.¹¹ This benefit manifested itself in the CMC study. Even though the sample was random and representative of a specific geographic area, recruiters personally knew about one fifth of the physicians on their recruiting lists. Moreover, 59% of eligible physicians who were personally known to their recruiters were successfully recruited, compared with only 26% of the physicians who were not known by their recruiter ($P = .020$). The result after conducting a logistic regression that controlled for ethnicity and specialty was comparable.

Actual friendship appears to be even more influential than acquaintance. Borgiel¹³ reported virtually no difference in recruitment rates among candidates who are hospital acquaintances with their recruiters (77%) versus those with no relationship (79%). However, candidates who were friends with their recruiters were successfully recruited 95% of the time.

Incentives for Recruiters and Participants

Only 5 studies reported paying their recruiters (either in cash or with gifts such as meals), and in only 1 of these

cases¹² was the “nominal” payment on a “per recruit” basis. Three studies noted some form of reimbursement to participating community physicians, while one other study provided a nonfinancial incentive to participants (continuing medical education credit and performance feedback).¹⁵ We could not discern any relationship between these modest incentives and participation rates. Consistent with this, Asch’s⁴ analysis of mailed survey participation rates by physicians revealed no significant relationship between the presence or amount of incentive and participation rates. Our own experience shows that even fairly substantial participant incentives (\$250), do not guarantee high participation rates, although several respondents suggested higher incentives might have helped. None of the studies reached incentive levels comparable to those often used in pharmaceutical clinical trials. Three studies reported gifts to office staff involved in facilitating participation (with participation rates from 67% to 91%), and 2 of the authors of these articles reported these might have been the most effective incentives.^{14,17,19}

Affiliation

Given physicians’ increasingly tight organizational affiliations, it is not surprising that most of the reviewed studies used those affiliations to enhance recruitment. Although studies conducted solely within 1 institution were excluded on generalizability grounds, most of the studies used preexisting affiliations in the sampled population as part of the physician recruitment process. Only 1 of the studies¹² was affiliated primarily with a professional association rather than a research university. Among such a homogeneous group, it is difficult to attribute participation rate differences to differences in affiliation.

Kottke and colleagues¹⁹ did attempt a small experiment related to affiliation as part of their work. In their physician recruitment phase, they tested the impact of using University of Minnesota letterhead versus that of the Minnesota Academy of Family Physicians. Even though their sample frame was the membership of the Minnesota Academy of Family Physicians, they detected no appreciable difference between initial participation rates (10% and 9.2%, respectively). In this interventional smoking cessation study, physicians were asked to provide a list of patients seen on a specific day for project staff to interview.

Although it is generally assumed that affiliation with a highly respected research institution is an advantage, Hirsch et al.²³ encountered a significant level of suspicion among candidate physicians who were concerned that their study had a covert aim of diverting their patients to the University of California, Los Angeles for care. As major academic medical centers expand their clinical networks and become competitors in the community, this type of concern could become more commonplace. The CMC study, also affiliated with the University of California, Los

Angeles and at a time of rapid university expansion into the community, did not overtly encounter this difficulty.

Clinical Setting

The details of the clinical setting, such as practice size and type, and primary revenue source (fee-for-service vs capitation), generally were not reported in the selected studies. For the CMC study, we did examine the relationship between participation and type of practice. We found that staff-model HMO physicians and solo practice physicians had the lowest participation rates (38% and 35%, respectively), while physicians in private groups with more than 2 physicians and those in hospital-based groups had the highest rates (45% and 67%, respectively). However, our recruiters were selected partly based on their affiliation with a hospital or a large group practice, which certainly influenced this result. Many HMO physicians indicated that they were not permitted to participate in outside research studies. Carey¹⁴ also reported difficulty negotiating HMO physician participation.

Specialty

Several of the articles discussed here and the CMC study provide some insight into how specialty influences participation rates. In their study of the costs and outcomes of acute low back pain care, Carey and colleagues¹⁴ observed that primary care physicians had notably lower participation rates than other specialties. While primary care physicians consented to participate 65% of the time, 78% of chiropractors and 87% of orthopedic and neurologic surgeons responded affirmatively. Similarly, in a study that involved a log-diary of activities, Mendenhall et al.²⁰ observed that among internal medicine physicians of all specialties, general internists had the lowest participation rates (53% vs an average of 65% for all specialties). Among primary care practitioners, the data are more mixed. Saver¹⁸ reported lower participation rates for general practitioners than family practitioners in a study that involved medical record access and patient and provider surveys. In the CMC study, internists had a participation rate of 45%, while family and general practitioners had a rate of 55%. Both Borgiel¹³ and Baldwin,¹⁷ two studies with higher participation rates, noted the importance of matching the specialty of recruiters to that of the candidates.

Community Setting

The influence of community context on the recruitment of physicians became very apparent to us in the course of the CMC recruitment effort. We deliberately selected a multicultural community, where physicians and patients would have a variety of backgrounds. However, we encountered difficulty in recruiting minority physicians to the study. Every minority group was underrepresented

in our final sample relative to the population of eligible physicians. While the participation rate was 51% for non-Hispanic white physicians, it varied from 12% to 40% for nonwhite physicians.

Cultural and language gaps between our recruiters and community physicians may have contributed to this problem. In attempting to find influential and respected physicians to act as our liaisons to the community, we may have inadvertently selected individuals who were less than ideally suited to making the type of personal contact needed to elicit participation from physicians with certain ethnic backgrounds. While we attempted to make our committee of physician recruiters diverse, our efforts were only partly successful. Only 3 of our 11 recruiters were minorities (2 Asian and 1 Latino). Although more than a third of the eligible physicians were of Asian/Pacific Islander descent, only 2 of our recruiters were.

The participation rates reported by Baldwin et al.¹⁷ suggest that urban settings may also have lower participation rates relative to rural settings. They report participation rates for urban obstetricians of 77% versus 88% for rural obstetricians, and 92% for urban family physicians versus 99% for rural family physicians.

Other regional issues may play a role in participation rates as well. For example, there may be regions of the country where physicians are less frequently solicited to participate in research and are therefore more inclined to be research participants when asked. During their recruitment efforts, Borgiel et al.¹³ observed the negative effect of oversolicitation in one region of Canada. Several of the candidate physicians in that region declined to participate because they had recently taken part in one or more other research studies.

Study Burden

Before agreeing to participate in a research study, physicians must be concerned with the disruption of their office routine and may also be protective of their patients when researchers seek contact with them as well.¹² Because many physicians are reluctant to burden their staffs with any additional tasks, the CMC study had to send its own research assistants to many offices to collect the names and contact information for recent patients. In some offices, collecting such information was a matter of a simple computer query; in others, it was a time-consuming manual task for which the project's \$250 honorarium may not have been adequate reimbursement.

There may also be a psychological burden that goes along with participation in research studies. The evaluative element in many community-based health services research studies may also be stressful for physician participants. Of the studies reported here, the 2 involving videotaping of office visits^{11,16} and the 1 with unannounced standardized patient visits were the most directly evaluative in nature and also had relatively low participation rates (43%, 52%, and 50%, respectively).

Lack of time was most commonly cited by physicians as the reason for nonparticipation,^{12,22} followed by potential adverse effects on the physician-patient relationship. For both Hirsch²³ and the CMC study, lack of time accounted for a quarter of refusals. One physician approached by the CMC investigators exclaimed, "If I need to do one more thing, I'm just going to have to cash it all in!"

DISCUSSION

Explaining participation rates from published reports of community-based studies of physicians is a difficult task. Our own experience with CMC recruitment revealed that this is an endeavor in which the details matter, and these details are often not published. These include the number of phone calls and letters as well as other more subtle characteristics, such as how tactfully the letters are written or the charisma of the recruiters. Nonetheless, the studies reviewed here provide a wealth of experience for investigators to draw upon in their efforts to recruit physicians into community-based health services research efforts.

First, personal contact and friendship networks are two of the most powerful tools for improving participation; however, making personal contact with every candidate in a large community is very expensive. Moreover, relying heavily on recruiter friendships may exacerbate differences between the eligible population and participating physicians leading to sample bias.

Researchers face a trade-off between achieving a high participation rate and introducing a sample bias through the use of physician recruiters who know their recruits. While some studies recruit convenience samples of physicians solely on the basis of their association with an institution or recruiter and are thus susceptible to sample bias, we only reviewed studies where the sample to be recruited was drawn from a broader community. Even in such samples, if recruiters happen to know a significant portion of the sample and preferentially recruit those "known" physicians, there is a risk that the "known" physicians will differ from others in a characteristic relevant to the hypotheses being tested, potentially biasing the results of the study. This is a particular problem if participation rates are low.

Second, some groups of physicians are particularly difficult to recruit. African-American and Hispanic physicians, particularly in the primary care specialties, present the greatest challenges. Increased efforts to match the characteristics of recruiters to those of candidates may be one way to ameliorate this problem, though the evidence for such an approach is scant.

Third, the community and organizational context may affect participation rates as well. Physicians in medical marketplaces with high managed care penetration may be more reluctant to engage in one more evaluative activity beyond what is already required, potentially explaining low participation rates in such areas. One potential

solution is to shift the frame of analysis from individual physician behavior to the group and recruit group practices rather than individual physicians. As physician group integration progresses, studies of practice behavior must increasingly focus on organizational change. Group recruitment will not only allow targeting of organizational improvement but might ease recruiting difficulties as well.

Academic physicians may be more inclined to participate because of a commitment to research, but their predominantly urban, nonacademic neighbors lack that commitment and feel overinvestigated by their academic colleagues. We found little effect of the investigators' affiliation on participation rates. Perhaps a comparison of university research affiliation to pharmaceutical companies or other commercially based research organizations would have shown a more distinct relationship.

Last, the burden on the participating physicians greatly affects the probability of recruitment, particularly as data collection techniques expand beyond brief physician surveys. Researchers must make every effort to minimize demands on the time of physicians and their office staff, and to show their appreciation for the value of any time commitment that is expected. This may include supplying staff for administrative tasks and small gifts to office staff involved in facilitating participation. Burdens can be psychological as well. Physicians may shy away from studies on sensitive topics or on dimensions of care on which they suspect they are not performing as well as they should. Ameliorating fears of individual evaluation and potential adverse effects of participation may reduce the psychological burden of participation.

While our review shows that low participation rates for community-based health services studies of physicians are not inevitable, investigators must plan for the possibility. Participating physicians are always going to differ in some ways from nonparticipants. Collecting even minimal data (e.g., demographics, practice size) on nonparticipants becomes crucial for estimating the direction and magnitude of the potential resulting biases. Only some of the studies reviewed here did this, and none used more sophisticated logistic modeling of predictors of nonparticipation.

Given the heterogeneity of the projects, our comparisons are necessarily qualitative and we were unable to use any quantitative data integration techniques like meta-analysis or meta-regression. However, future health services research might integrate randomized controlled trials of methods of recruiting community physicians, using the Kottke trials as a model.¹⁹ In particular, it would be useful to evaluate higher levels of reimbursement than were used in the reviewed trials and different methods for choosing recruiters. Research quantifying any potential sample bias induced by physician recruiters known to the target sample would guide the future use of this promising technique. Community-based health services studies of physician practices address questions that cannot be answered in any other way. To ensure the generalizability

of such studies' results, techniques for eliciting physician participation in research need to be further refined. In particular, further attention must be paid to the effect of managed care on research participation and to ways to promote greater diversity among research participants.

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