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The Annals of Family Medicine encourages readers to develop the learning community of those seeking to improve health care and health through enhanced primary care. You can participate by conducting a RADICAL journal club and sharing the results of your discussions in the Annals online discussion for the featured articles. RADICAL is an acronym for Read, Ask, Discuss, Inquire, Collaborate, Act, and Learn. The word radical also indicates the need to engage diverse participants in thinking critically about important issues affecting primary care and then acting on those discussions.1

**HOW IT WORKS**

In each issue, the Annals selects an article or articles and provides discussion tips and questions. We encourage you to take a RADICAL approach to these materials and to post a summary of your conversation in our online discussion. (Open the article online and click on “TRACK Comments: Submit a response.”) You can find discussion questions and more information online at: http://www.AnnFamMed.org/AJC/.

**CURRENT SELECTIONS**

**Articles for Discussion**


**Discussion Tips**

Consider these articles in the context of your own practice, of calls for practice reform, and of calls for payment reform. Because these are essays rather than research articles, it is not easy to critique the methods. It is important, however, to consider the logic of their arguments and the degree to which they are grounded in both current reality and future possibility.

**Discussion Questions**

- What are the questions addressed by these essays? Why do the questions matter?
- What changes do each propose?
- How might these changes be feasibly implemented in your practice?
- What would be the intended consequences of these changes in practice organization?
- What are the potential unintended consequences?
- What health care system changes would be needed to enable these changes?
- How could patients be engaged?
- What other changes do these proposals stimulate you to envision?
- How do these ideas relate to the Future of Family Medicine2 proposal for a New Model practice?3
- How do they relate to the idea of the Patient-Centered Medical Home recently endorsed by 4 professional organizations?4
- Do such initiatives as the TransforMED National Demonstration Project and Preparing the Personal Physician for Practice (P3)5 or the Prescription for Health6 project make such changes seem more feasible?

**References**

EDITORIAL

In This Issue: Risk and Care Management

Kurt C. Stange, MD, PhD, Editor


The articles in this issue develop 2 themes: risk assessment and care management. The risks identified in these studies relate to anger and the progression of prehypertension to hypertension and coronary heart disease, development of diabetes among young adults, suicide risk assessment among standardized patients portraying either major depression or adjustment disorder, and risk for domestic violence.

Two systematic reviews examine both risk and clinical management. One identifies racial differences in the efficacy of antihypertensive therapy. The other assesses differences in international guidelines for management of acute sore throat.

Several other studies inform our clinical management of patients. For example, Bayliss and colleagues discover barriers to self-management of chronic diseases, many of which are mutable.

Howard and colleagues find that among 1,245 patients of 36 practices in Thunder Bay, Ontario, patient satisfaction with after-hours care of an urgent problem is higher if provided by patients' own family physician or their physician's after-hours clinic, compared with a walk-in clinic, the emergency department, and telephone health advisory services. This study can inform the proliferation of less personal sources of after-hours care in many countries.

A clinical trial of a 6-hour vs 2-hour continuing education intervention finds varied effects on communication with patients with breast cancer.

Two essays propose innovative staffing models for making feasible the growing opportunities in management of chronic illness in patients. We feature these articles together in the Annals Journal Club and encourage creative discussion about health care reform at both the system and practice level that could enable these and other innovations.

With this issue, the Annals welcomes the College of Family Physicians of Canada as a new sponsoring organization. We are delighted by the CFPC's show of support for our mission of advancing knowledge essential to understanding and improving health and primary care. As always, we are honored by the many collaborative efforts that make the Annals possible.

Please share your insights by joining the Annals online discussion at http://www.AnnFamMed.org.

To read or post commentaries in response to this article, see it online at http://www.annfammed.org/cgi/content/full/5/5/386.

References

Improving Communication Between Doctors and Breast Cancer Patients

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ABSTRACT

PURPOSE We wanted to assess the effectiveness of intensive education for physicians compared with a traditional session on communicating with breast cancer patients.

METHODS A randomized controlled trial was conducted in practices in London, Hamilton, and Toronto, Canada, with 17 family physicians, 16 surgeons, and 18 oncologists, and with 102 patients of the surgeons and oncologists. Doctors were randomized to 1 of 2 continuing education approaches: a traditional 2-hour version (control group), or a new 6-hour intensive version including exploring the patients’ perspectives and reviewing videotapes and receiving feedback (intervention group). Communication behavior of the physicians was measured objectively both before and after the intervention. As well, 4 postintervention patient outcomes were measured, by design only for surgeons and oncologists: patient-centeredness of the visit, satisfaction, psychological distress, and feeling better.

RESULTS No significant differences were found on the communication score of the intervention vs the control physicians when controlling for preintervention communication scores. Intervention family physicians, however, had significantly higher communication subscores than control family physicians. Also, patients of the intervention surgeons and oncologists were significantly more satisfied (scores of 82.06 vs 77.78, \( P = .03 \)) and felt better (88.2% vs 70.6%, \( P = .02 \)) than patients of the control surgeons and oncologists when controlling for covariates and adjusting for clustering within doctor.

CONCLUSIONS The continuing medical education intervention was effective in terms of some but not all physician and patient outcomes.


INTRODUCTION

Patient-physician communication is of intense interest in our consumer age because major problems have been documented and unfavorable outcomes have been implicated, eg, patient dissatisfaction, lack of patient adherence, poorer self-reported health, physician satisfaction, and malpractice claims. Whereas programs to improve communication are common in undergraduate medical programs and residency programs, continuing medical education programs are less common. Noteable exceptions include studies that evaluate communication in terms of improved outcomes. Although research designs have evolved from nonrandomized studies with self-report outcomes to randomized trials with communication behaviors measured objectively and with patient outcome measures, only slightly more than one-half of the studies were able to show an impact on patient health outcomes. The education programs have varied in length (from 4 hours to 3 days). Few studies incorporated varied teaching approaches (despite the finding that multiple interventions are more effective), and few were based on conceptual frameworks of good communication or on the expressed needs of patients.

We therefore designed a new continuing medical education (CME)
program of feasible length (6 hours), using multiple approaches and based on expressed needs of patients and a recognized conceptual framework.19 We tested the hypothesis that the new CME would change verbal communication of surgeons, oncologists, and family physicians, and that it would also influence breast cancer patients’ perceptions of both the patient-physician interaction and their own health. We conducted a randomized controlled trial of 2 CME approaches: (1) a traditional 2-hour CME showing a videotaped consultation, which was then discussed; and (2) a new state-of-the-art 6-hour CME including the above plus 2 new elements: a discussion of the patients’ perspectives, and a videotape review with individual feedback.

METHODS

Participants

This study was approved by the Human Subjects Review Committee of The University of Western Ontario. We recruited 51 interested family physicians (n = 17), general surgeons (n = 16), and oncologists (n = 18) in Southern Ontario, Canada. Recruitment occurred through letters of information and personal telephone contact by the respective family physician, surgery, and oncology coinvestigators and was guided by the approach outlined in Borgiel et al.20 The 51 physicians were randomized to 1 of the 2 CME approaches, with each physician providing outcome data on communication. By design, only breast cancer patients of surgeons and oncologists provided patient-related outcome data, because family physicians and surgical residents care for so few eligible breast cancer patients at any time. Eligible patients were older than 18 years and within 1 year of the diagnosis of breast cancer or within 1 year of the diagnosis of a recurrence of breast cancer. Patients were excluded if they were too ill or disabled to answer the questions at the entry interview, unable to understand simple English instructions, or cognitively impaired in the opinion of the physician. Eligible patients (10 per doctor) were asked at the time of a visit to their surgeon or oncologist to participate, and consent was obtained to fill out a questionnaire immediately after the visit and mail it back.

Interventions

State-of-the-Art CME

The state-of-the-art CME program was developed on the basis of the qualitative findings from our previous study,21 our conceptual framework for patient-centered communication,22 the communication and CME literature, and the expertise of an educator (WW). The program incorporated the principles of adult education23,24 and experiential learning25-28 and contained 5 key elements: (1) literature—a description of the benefits of improved patient-physician communication for both patients and doctors; (2) physicians’ perspectives—participating physicians ventilated about barriers to and shared solutions for effective communication; (3) patients’ perspectives—first, a videotape of the findings of the qualitative study of breast cancer patients’ issues regarding communication, and second, breast cancer survivors in person talking about their own concerns; (4) video demonstration—a scripted “not-so-good” and “better” interaction between a breast cancer patient/actress and physician; and (5) practice with standardized patients and videotape review with feedback. The CME program was developed during an 18-month period that included formal pretests with evaluation29,30 and was facilitated by a communication educator and clinician. The CME program is outlined in Table 1.

Traditional CME

The control group experienced a conventional CME session on communicating with breast cancer patients, which included a 2-hour small-group discussion triggered by a videotaped encounter between a physician and a breast cancer standardized patient.

Objectives

We hypothesized that, compared with the control group, the group of physicians attending the 6-hour intervention CME session would receive higher scores on an objective communication measure controlling for preprogram communication scores. We also hypothesized that breast cancer patients of the oncologists and surgeons would have higher scores on perceptions of patient-centered communication, be more satisfied with the physician’s information-giving and interpersonal skills, experience less psychological distress, and feel

<table>
<thead>
<tr>
<th>Course Element</th>
<th>Intervention State-of-the-Art Course</th>
<th>Control Traditional Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length, hr</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Literature on the benefits of patient- physician communication</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Physicians’ perspective</td>
<td>✔</td>
<td>×</td>
</tr>
<tr>
<td>Patients’ perspective</td>
<td>✔</td>
<td>×</td>
</tr>
<tr>
<td>Video demonstration and discussion</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Two interviews with standardized patients and subsequent videotape review and feedback</td>
<td>✔</td>
<td>×</td>
</tr>
</tbody>
</table>
better after the visit with the doctor, after controlling for confounding variables and adjusting for clustering effects within doctors.

**Outcomes**

The objective Patient-Centred Communication Measure\(^{31}\) was adapted for visits regarding breast cancer. The original measure was used to code and score recorded verbal communication, was reliable (interrater agreements of 74% to 94% and intrarater correlation of 0.73) and valid (correlation with a global score, 0.85);\(^{31}\) and it had been used in 2 previous studies.\(^{32,33}\) The original measure was adapted by creating 2 subscores: 1 subscore on validation of the patients' expressed experiences, and 1 subscore on explicit support expressed by the physician. Subscores were further regrouped into the 4 major themes identified in our qualitative study (building relationships, sharing information, creating an experience of control, and mastering the whole person experience).\(^{21}\) The total score and each subscore ranged from 0 to 100.

Also, 4 patient outcomes were collected through questionnaires: (1) patient perceptions of patient-centeredness were assessed by a valid 12-item questionnaire based on Henbest et al\(^{33,34}\); (2) the patients' satisfaction with doctors' information-giving and interpersonal skills was assessed by the valid and reliable 18-item Cancer Diagnostic Interview Scale (CDIS)\(^{35}\); (3) patients' psychological distress was assessed by the 51-item Brief Symptom Inventory, which addresses 3 dimensions particularly relevant for breast cancer patients (anxiety, depression, and hostility) and correlates highly with the benchmark SCL-90 (Symptom Checklist)\(^{36}\); and (4) whether patients felt better after a visit to the doctor was assessed by a single validated item.\(^{37}\)

**Data Collection**

**Patient-Centered Communication Scores**

Before the CME session, data were collected in the physicians' offices by recording visits with 2 announced standardized patients and scored, resulting in 1 average pre-CME score per physician. After the CME session, data scores from the audiotapes of visits with 2 more announced standardized patients were averaged to create each physician's post-CME communication score.

Four different case scenarios for standardized patients were developed for use in the pre-CME and post-CME visits. Each physician saw all 4 cases, which were randomly ordered for each physician so that there was no before-after bias in the level of difficulty. Appointments were arranged through the physician's office staff during regular patient hours; a brief case history was provided, including mock biopsy, sono-gram, and mammogram reports specific to each case scenario and designed to create an aura of authenticity.

Two well-trained raters coded and scored the recorded visits. The timing of the audiotape (pre-CME or post-CME) and the group allocation of the physician were concealed from the raters.

**Patient Outcomes**

Eligible, consecutive real patients completed questionnaires after their visit with their surgeon or oncologist and mailed them back within 1 month of the intervention.

**Sample Size**

To detect a clinically significant difference of 10 points (with standard deviations at 10.1) on the objective communication score with 80% power and \(\alpha = .05\) (2-sided), 32 doctors were the minimum required.\(^{38}\) To estimate the number of patients needed for the 3 continuous patient outcomes, standardized effect sizes of 0.6 were deemed adequate. Fifty-one patients per group were required to permit analysis adjusting for clustering of patients within doctor.

**Randomization**

Randomization was done by the project coordinator. Physicians were recruited in blocks by specialty category and city. After the whole block of physicians had been recruited, the physicians were allocated using a random number table. Although the doctors and the teachers of the CME could not be masked, the audiotape coder, the standardized patients, and the real patients were masked to the doctors' allocation.

**Statistical Methods**

We used ANCOVA to test for differences between the 2 groups on the objective communication measure controlling for the corresponding baseline objective communication score, the unit of analysis was the doctor. Mixed model linear regression was used to test for differences between the patients of the 2 groups of doctors on the 3 continuous patient outcome variables. The clustering of patients within doctor was adjusted for using SAS “procedure mixed.” As well, to increase precision, 2 covariates were selected for adjustment on the basis of their potential to affect the outcome and the clinical significance of their differences between the intervention and control group: patient education level (dichotomized at secondary school completion) and medical conditions (expressed as mean number). Mixed model logistic regression was used for the one dichotomous patient outcome (feeling better), adjusting for clustering and the identical 2 covariates, using generalized estimating equations.\(^{39}\)
RESULTS
Fifty-one physicians and 102 patients participated in the study. Figure 1 shows the flow of participants: (1) family physicians, oncologists, and surgeons who were approached, entered into the trial, randomized, and completed the trial (approximately 40% of doctors approached agreed to participate, and all 51 who agreed completed both the intervention and the doctor measures); (2) patients of oncologists and surgeons who were approached and completed the questionnaire. By design, patient data were not sought for family physicians and surgical residents. The 23 surgeons and oncologists who collected patient data achieved a 44.3% patient response rate (as a result of a combination of doctors’ failure to distribute and patients’ failure to mail back the questionnaire). Responding patients were more likely from oncologists 48.7% than surgeons 36.3%, but they were almost evenly split between intervention (46.4%) and control (42.5%) group.

Baseline characteristics of the physicians are shown in Table 2. There were no substantive or significant differences between intervention and control physicians. Patient characteristics were similar in the 2 groups with respect to marital status (52% married vs 48%), mean age (58.4 vs 59.5 years), mean scores on preference for information (7.6 vs 6.9), and involvement in decisions (2.7 vs 2.6). Differences were observed with respect to education (intervention group 54% with high school or less vs 46% in the control group) and mean number of medical conditions (1.1 vs 1.4).

The postintervention objective communication scores of physicians did not differ significantly overall between the intervention group and the control group (means were 72.21 (CI = 66.14-78.29) and 70.91 (CI = 63.71-78.11), respectively, $P = .38$) after controlling for baseline objective communication scores. Further exploratory analyses showed that none of the 7 subscores on the objective communication measure were different between the intervention group and control group for oncologists and surgeons; however, 4 of the 7 were significantly higher for the intervention family physicians than for the control group family physicians (Table 3): (1) relationship building (offer-
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...was related to patient satisfaction and feeling better. Also, it did improve family physicians’ objective communication subscores but not those of the surgeons and oncologists. These seemingly contradictory results lead one to speculate about a number of alternative explanations. One explanation may be the relative appropriateness of the different parts of the CME program for the different types of doctors. Perhaps the family doctors were more accepting of and responsive to the CME program because of the greater frequency of videotape- and-feedback training in residencies in family medicine as compared with residencies in surgery and oncology. Also, perhaps the part of the program that introduced the patients’ perspective (where real patients told their story, expressed their feelings, and explained their issues) was effective in raising the oncologists’ and surgeons’ consciousness, thereby altering their visits with patients in ways that patients noticed.

DISCUSSION

The trial found that the state-of-the-art CME did not improve overall objective communication scores but...
If the latter is the correct interpretation, it is worth describing more fully the part of the CME program that addressed the patients’ perspective. The doctors were prepared for the patients’ perspective by first being invited to express their own perspective, including perceived barriers and facilitators in communicating with breast cancer patients. Next, when the physicians were ready to turn to the patients’ perspective, they viewed a video of breast cancer survivors explaining the findings of our formal qualitative study. Finally, 2 breast cancer survivors came into the seminar room and told their stories briefly and answered questions. The reality of the patients’ palpable anxiety and fear was inescapable.

There is a second explanation for why the state-of-the-art CME improved family physicians’ communication scores but not surgeons’ and oncologists’ scores. Although the family physicians did not work in the same practice, the surgeons, surgical residents and oncologists did, thereby opening the door to possible contamination, mitigating against finding differences between the state-of-the-art CME and the traditional CME group.

A third explanation for the contradictory finding that intervention group surgeons and oncologists did not change their behavior (on the objective communication measure) but their patients reported higher satisfaction and felt better is that the objective communication measure missed some crucial component of what was taught and learned. For example, this measure does not take into account nonverbal communication. A previous study by the authors suggested that patient perceptions, not the objective measure, correlated with patient health outcomes (including recovery from symptoms and SF-36 [Short Form] self-rated health), implying that patients discerned important dimensions of communication not captured by the objective measure. As well, the objective measure was developed in family medicine and, although it was adapted for this study of breast cancer patients, it might not be sensitive enough to behaviors of surgeons and oncologists.

A strength of the current study is that the objective communication measure was obtained both before and after the intervention. Communication measurement raises other issues. First, whereas audiotape studies of real patients typically use 10 patients per doctor, most studies of standardized patients analyze 1 patient per doctor, claiming that standardized patients reduce variability (of patient problem and doctor behavior). We attempted to improve reliability by using 2 patients, as did Epstein et al. Any possible misclassification will lead to a more conservative estimate. Second, if a Hawthorne effect occurred because the standardized patients were announced, it would be equal in the intervention and control groups, and thus not threaten internal validity, but it may limit the study’s generalizability to real-world patient visits. Evidence shows almost negligible Hawthorne effect, however, that is, negligible change in correlates of communication scores when doctors know they are being studied compared with when they do not. Korsch et al’s seminal study comparing doctors audiotaped with those not, and Epstein et al comparing detected and undetected standardized patients.

This study contributes to the growing body of data on the “dose-response” of communication education and indicates some impact of a shorter course than previously reported, ie, 6 hours in the current study vs 2.5 days and 3 days. Our program and these 2 longer programs included similar elements, such as physicians expressing their problems, and the video review with individual feedback. A unique element in our program was the patient perspective (videotaped findings of the qualitative study and breast cancer survivors in the seminar room).

The results of this study must be interpreted cautiously given that multiple tests were performed and some differences observed may have been due to chance. Even so, the robust magnitude of the differences somewhat weigh against this possibility. Other limitations include limited generalizability of the study (the sample of physicians was not randomly selected), fewer than one-half of the doctors approached agreed

### Table 5. Mixed Model Linear Regression of Patient Satisfaction With Doctor’s Information-Giving and Interpersonal Skills in Relation to Doctor’s Intervention Status (n = 102)

<table>
<thead>
<tr>
<th>Outcome: Satisfaction</th>
<th>Coefficient</th>
<th>SE</th>
<th>Coefficient/SE</th>
<th>P Value</th>
</tr>
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<tbody>
<tr>
<td>Group</td>
<td>-3.92</td>
<td>1.72</td>
<td>-2.28</td>
<td>.03</td>
</tr>
<tr>
<td>Education</td>
<td>0.65</td>
<td>1.39</td>
<td>0.47</td>
<td>.65</td>
</tr>
<tr>
<td>No. of medical conditions</td>
<td>0.43</td>
<td>0.56</td>
<td>0.77</td>
<td>.45</td>
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**Mean Score (SD)**

<table>
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<th>Mean level of satisfaction by group</th>
<th>Intervention</th>
<th>82.06 (5.80)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>77.78 (8.07)</td>
<td></td>
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</table>

Note: Analysis controlling for patients’ education and number of medical conditions and adjusting for clustering within doctor.
and completed the trial, and similarly, the patient sample was not representative in that only 44.3% of eligible patients completed the questionnaire. Finally, generalizability of the CME itself was limited because it was co-conducted by an experienced communication educator and highly motivated clinicians.

Breast cancer patients were more satisfied and felt better after visits with surgeons and oncologists who had participated in a 6-hour CME on communication as compared with patients of control group physicians. Despite this finding, the surgeons and oncologists did not change their communication behavior as reflected by the objective measure, although the family doctors did. These data suggest that the new intensive 6-hour CME is effective but with possibly different impact among different types of doctors.

To read or post commentaries in response to this article, see it online at http://www.annfammed.org/cgi/content/full/5/5/387.

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Key words: Breast cancer; patient-doctor relationship; communication


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Disclaimer: The views expressed in this paper are those of the authors, and do not necessarily reflect those of the Ministry of Health and Long-Term Care of Ontario.

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References


5. Stewart MA. Effective physician-patient communication and health outcomes: a review. CMAJ. 1995;152(9):1423-1433.


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Barriers to Self-Management and Quality-of-Life Outcomes in Seniors With Multimorbidities

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ABSTRACT

PURPOSE Persons with multiple chronic diseases must integrate self-management tasks for potentially interacting conditions to attain desired clinical outcomes. Our goal was to identify barriers to self-management that were associated with lower perceived health status and, secondarily, with lower reported physical functioning for a population of seniors with multimorbidities.

METHODS We conducted a cross-sectional telephone survey of 352 health maintenance organization members aged 65 years or older with, at a minimum, coexisting diagnoses of diabetes, depression, and osteoarthritis. Validated questions were based on previous qualitative interviews that had elicited potential barriers to the self-management process for persons with multimorbidities. We analyzed associations between morbidity burden, potential barriers to self-management, and the 2 outcomes using multivariate linear regression modeling.

RESULTS Our response rate was 47%. Sixty-six percent of respondents were female; 55% were aged 65 to 74 years, and 45% were aged 75 years or older. Fifty percent reported fair or poor health. On average they had 8.7 chronic diseases. In multivariate analysis, higher level of morbidity, lower level of physical functioning, less knowledge about medical conditions, less social activity, persistent depressive symptoms, greater financial constraints, and male sex were associated with lower perceived health status. Potential barriers to self-management significantly associated with lower levels of physical functioning were higher level of morbidity, greater financial constraints, greater number of compound effects of conditions, persistent depressive symptoms, higher level of patient-clinician communication, and lower income.

CONCLUSIONS In addition to morbidity burden, specific psychosocial factors are independently associated with lower reported health status and lower reported physical functioning in seniors with multimorbidities. Many factors are amenable to intervention to improve health outcomes.


INTRODUCTION

Optimal health outcomes for persons with chronic diseases depend heavily on medical self-management. This process is complex for persons with multimorbidities who must integrate self-management tasks for coexisting and often interacting diseases. Improvements in medical self-management processes correlate with improved health outcomes in studies of single diseases and studies of populations with a variety of chronic illnesses. Conversely, barriers to medical self-management negatively affect disease-specific outcomes, mortality, and quality of life. Identifying barriers is a first step in collaborating with patients to improve medical self-management.

Previous investigations of barriers to medical self-management have been...
largely disease specific.\textsuperscript{12-17} Barriers reported in these investigations have included inadequate social support, difficulties with time management, troubled emotional state, low self-efficacy, conflicting personal health beliefs, physical limitations, lack of knowledge about their medical conditions, and the presence of comorbid diseases.\textsuperscript{12,13,15,16} Barriers to self-management for persons with multiple diseases have not been well studied. Although more than 65% of persons aged 65 years or older have 2 or more diseases, few investigations have focused specifically on barriers reported by seniors.\textsuperscript{18-21}

Two qualitative investigations have explored potential barriers to self-management for persons with multiple morbidities. Participants in these studies reported insufficient awareness of resource support, transportation problems, financial constraints including lack of insurance coverage, compound effects of diseases and medications (symptoms or treatments of conditions interfere with each other), and being overwhelmed by a single illness.\textsuperscript{22,23} Several of these potential barriers—including high level of morbidity, low level of physical functioning, presence of depression, low level of health literacy, low level of self-efficacy, low level of social well-being, and certain demographic characteristics—negatively affect quality-of-life outcomes in persons with multimorbidities.\textsuperscript{3,24-35} Less is known about the effects of the other potential barriers, including financial constraints, compound effects of conditions, being overwhelmed by a single condition, and knowledge about medications and diseases.

We propose that barriers can be conceived of as negative resources found to be associated with poor health outcomes by interfering with one or more aspects of the self-management process. This model is based on reported barriers, a comprehensive definition of self-management, and the literature on patient-level resources potentially helpful for self-management.\textsuperscript{36-39}

Figure 1 illustrates how barriers may affect health outcomes.

To assess the association of potential barriers to self-management with quality-of-life outcomes, we surveyed a population of persons aged 65 years or older with the specific combination of diabetes, depression, and osteoarthritis (plus other incidental diseases). These inclusion diseases were chosen based on their high prevalence in the population, potential for interactions of symptoms and treatment between diseases, and the need for self-management to optimize successful health outcomes. We hypothesized that specific barriers to the self-management process, as well as overall level of morbidity, would be associated with lower perceived health status and physical functioning. We chose these subjective outcomes as relevant for seniors, because lower perceived health status is predictive of mortality, and low levels of physical functioning predict mortality and functional dependence.\textsuperscript{40-45}

**METHODS**

We conducted a cross-sectional survey of members of a not-for-profit health maintenance organization (HMO) who were aged 65 years or older and who had coexisting diagnoses of diabetes, depression, and osteoarthritis for the 2-year period before the study. Patients with diagnoses of diabetes and depression were drawn from diagnosis-specific registries. These registry diagnoses had been validated based on a combination of the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes, laboratory values, and specific medication use. We considered 2 ICD-9-CM diagnoses of osteoarthritis within the preceding 2 years as an indicator of osteoarthritis symptomatic enough to require medical care.\textsuperscript{46}

**Measures**

We had previously developed and completed initial validation of a survey instrument to assess potential barriers to self-management.\textsuperscript{22,47} As there is no reference standard against which to compare our measures, this process involved developing and pilot testing questions based on the existing literature and a series of qualita-
tive interviews, assessing internal consistency, and subsequently evaluating associations with quality-of-life outcomes (comparable to those used in the current investigation). For example, the questions on physician-patient communication were developed based on qualitative interviews with patients with multimorbidities, supplemented by recommendations of a team of chronic care nurse care managers, pilot tested for comprehension, and assessed for internal consistency (coefficient $\alpha = .83$). In the current investigation we expanded the construct validity of the survey instrument by proposing a mechanism by which barriers affect certain health outcomes. We additionally assessed the potential barrier of health literacy, which has been independently associated with health status in older adults. We assessed the number and severity of chronic diseases through a self-report process in which respondents reacted to a list of common chronic diseases. Respondents rated each condition on a 5-point scale from 1 (interferes with daily activities "not at all") to 5 (interferes with daily activities "a lot"). The total score representing level of morbidity (which we also refer to as disease burden) was the sum of diseases weighted by the level of interference for each condition.

As we were unable to assess disease burden for the nonrespondents, we compared the level of morbidity of respondents and nonrespondents using the ICD-9-CM–based Quan comorbidity index. Depression has fluctuating symptoms and is also amenable to long-term treatment; therefore, we assessed current depressive symptoms with a short validated screening test rather than relying on a diagnosis of depression. We assessed perceived health status using the well-validated question in which respondents describe their health as "excellent," "very good," "good," "fair," or "poor," and we assessed physical functioning using the physical function measure from the Medical Outcomes Study.

Survey Process
Prospective participants received a letter inviting participation and were contacted within 3 weeks of the letter to complete the survey instrument unless they declined participation by telephone or return mail card. The survey instrument was administered by telephone according to the general methods of Aday and required approximately 30 minutes to complete. Because of its length, participants could opt to complete the survey instrument in 2 separate telephone calls.

Sample Size
We estimated that we would need a minimum of 290 participants to have 80% power to detect an $R^2$ of 0.02 attributed to any given variable with a significance level of 0.05 and adjusted for an additional 10 independent variables.

Analysis
We used multivariate linear regression models to evaluate separately, the dependent variables of perceived health status and physical functioning as functions of level of morbidity, potential barriers to self-management, and demographic variables. Independent variables significant at $P \leq .15$ in bivariate analyses were included in multivariate models. We developed a regression model in which variables were added in the following steps: (1) simple count of diseases and demographic variables, (2) potential barriers to self-management previously shown in the literature to affect health status (depression, physical functioning, self-efficacy, and health literacy), (3) severity-adjusted level of morbidity (disease burden), and (4) the remainder of our potential barriers to self-care of interest (compound effects of conditions, being overwhelmed by 1 condition, knowledge about conditions, etc.). At each step, independent variables significant at $P \leq .05$ remained in the model. We reassessed the contributions of the independent variables by reconstructing the model, switching steps 2 and 4, and found no differences in our final model.

Although both quality-of-life outcomes met the assumptions necessary for linear regression, we decided, because of the unequal interval scales and higher degree of skewness associated with the health status outcome measure, to confirm the results of linear regression with ordinal logistic regression. Confirmation of linear models using ordinal regression has been noted previously when an ordinal scale meets the assumptions necessary for linear regression. Because of the possibility that the severity-adjusted subjective measure of disease burden could account for some of the variance of the other barriers (such as depression or social well-being) relative to the outcomes, we also assessed interactions between level of morbidity and each of the potential barriers to self-management in each model. All analyses were conducted using SAS Version 9.1 (SAS Institute, Cary, NC).

RESULTS
Of the 746 invitation letters mailed, 352 participants completed the survey instrument for a response rate of 47%. Characteristics of respondents and nonrespondents are reported in Table 1. There were slightly more female than male respondents, one-half were married, they were predominantly white, and they had a lower household income level. Twelve percent reported their health status to be excellent or very good, 38% good, 36% fair, and 14% poor. On average
they had 8.7 chronic medical diseases. Respondents were slightly younger than nonrespondents. The 2 groups did not differ on sex, level of morbidity, or duration of health plan membership.

Potential barriers to self-management are displayed in Table 2. In bivariate analyses, all potential barriers to self-management were significantly associated with perceived health status except for compound effects of medications. In multivariate linear regression, the independent variables significantly associated with lower perceived health status were higher level of morbidity, lower level of physical functioning, less knowledge about medical conditions, less social activity, persistent depressive symptoms, greater financial constraints, and male sex. $R^2$ for this model was 0.45. Results of this multivariate analysis are displayed in Table 3. None of the interaction terms between disease burden and the potential barriers to self-management were significant in the final model for this outcome. Ordinal logistic regression confirmed the results of the linear model.

We performed an additional multivariate analysis to determine the contribution of morbidity and the other sociodemographic and psychosocial factors to level of physical functioning. Potential barriers to self-management that were significantly associated with lower levels of physical functioning were higher level of morbidity, higher patient-clinician communication, greater financial constraints, greater number of compound effects of conditions, persistent depressive symptoms, and lower income. Income bracket and level of reported financial constraints (other financial obligations affected by health care expenses) were both significant and independent of each other. There were significant interactions between disease burden and 3 potential barriers to self-management: patient-clinician communication, financial constraints, and compound effects of conditions. At higher levels of morbidity, there were weaker associations between all 3 of these potential barriers and the outcome of physical function. $R^2$ for this model was 0.34. Results of this multivariate analysis are displayed in Table 4.

**DISCUSSION**

Maintaining health status for seniors with multiple medical diseases is an important goal in its own right. Furthermore, lower perceived health status predicts all-cause mortality, disease-specific morbidity, and functional status decline. Optimal care of seniors with multimorbidities should therefore include assessment of factors that contribute to decreased health status and implementation of strategies to address them. Physical functioning is a significant contributor to perceived health status and a separate and important outcome reflecting quality of life in the senior population. In addition to predicting overall health status, low levels of physical functioning in seniors are predictive of increased dependency in activities of daily living, increased use of health care resources, increased use of nursing homes, and increased mortality. The level of biomedical morbidity is known to

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**Table 1. Characteristics of Study Population, N = 352**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Respondents* N = 352</th>
<th>Nonrespondents* N = 394</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>124 (35)</td>
<td>126 (32)</td>
</tr>
<tr>
<td>Age-group, y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65-74</td>
<td>193 (55)</td>
<td>182 (46)†</td>
</tr>
<tr>
<td>75+</td>
<td>159 (45)</td>
<td>212 (54)†</td>
</tr>
<tr>
<td>Mean Quan morbidity score (SD)‡</td>
<td>4.6 (3.3)</td>
<td>4.2 (2.8)</td>
</tr>
<tr>
<td>Mean months in health plan (SD)‡</td>
<td>166 (86)</td>
<td>157 (83)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some high school or less</td>
<td>36 (10)</td>
<td></td>
</tr>
<tr>
<td>High school graduate/GED</td>
<td>124 (35)</td>
<td></td>
</tr>
<tr>
<td>Some college/2-y degree</td>
<td>109 (31)</td>
<td></td>
</tr>
<tr>
<td>4-y college graduate or more</td>
<td>78 (22)</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>187 (53)</td>
<td></td>
</tr>
<tr>
<td>Divorced/separated</td>
<td>50 (14)</td>
<td></td>
</tr>
<tr>
<td>Never married</td>
<td>6 (2)</td>
<td></td>
</tr>
<tr>
<td>Widowed</td>
<td>103 (29)</td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black/African American</td>
<td>7 (2)</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>306 (90)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>29 (8)</td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>37 (11)</td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic/Latino</td>
<td>308 (88)</td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;$45,000</td>
<td>269 (76)</td>
<td></td>
</tr>
<tr>
<td>$45,000+</td>
<td>59 (17)</td>
<td></td>
</tr>
<tr>
<td>Subjective health status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>5 (1)</td>
<td></td>
</tr>
<tr>
<td>Very good</td>
<td>39 (11)</td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>132 (38)</td>
<td></td>
</tr>
<tr>
<td>Fair</td>
<td>125 (36)</td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>51 (14)</td>
<td></td>
</tr>
</tbody>
</table>

GED = general equivalency diploma.

* Used $\chi^2$ (categorical) and Wilcoxon rank sum (continuous) tests for comparisons between respondents and nonrespondents.

† Significant at $P = .010$.

‡ Used observation period of 1 year before survey date for respondents and 1 year before median survey date for nonrespondents.
be an important predictor of perceived health status and quality of life for persons with multiple medical diseases.\textsuperscript{24-26,61,62} Our results indicate that, after accounting for the independent effect of multimorbidity, specific psychosocial factors are additionally and independently associated with lower levels of health status and lower levels of physical functioning in this population. Although several factors we identified have previously been associated with health status, we are unaware of any other investigations that have assessed the independent contributions of each of these factors in the context of other psychosocial factors that may present barriers to self-management.\textsuperscript{3,24-35}

We originally identified our independent variables of interest (potential barriers to self-management) based on qualitative interviews with members of this population.\textsuperscript{22} In considering the potential mechanism of action of these barriers on health outcomes, we postulated that barriers interfering with the self-management process can be construed as negative resources (Figure 1). This context is important because many of the factors we have identified as associated with lower health status may be amenable to intervention in the context of patient-centered and collaborative self-management support, as well as by assessing and maximizing patient resources.\textsuperscript{63-65} Potential barriers to self-care that may be amenable to intervention include identifying and treating depressive symptoms; providing individualized patient education regarding medical conditions; enhancing physical functioning through physical therapy, manual aids, and other support; resolving situations in which symptoms and treatments for separate conditions interfere with each other; and striving for collaborative care choices that take into account patients’ financial resources.

In our model, several factors associated with lower health status were also associated with lower physical functioning (such as greater disease burden, persistent depressive symptoms, and financial constraints). Greater compound effects of conditions (symptoms and/or treatments of conditions interfere with each other) and a lower income level were also associated with lower physical functioning. Our finding that higher levels of patient-clinician communication were associated with lower physical functioning through physical therapy, manual aids, and other support; resolving situations in which symptoms and treatments for separate conditions interfere with each other, and striving for collaborative care choices that take into account patients’ financial resources.

Table 2. Barriers to Self-Management Reported by Study Participants: Bivariate (Spearman) Correlations With Outcomes

<table>
<thead>
<tr>
<th>Potential Barrier to Self-Management*</th>
<th>Mean Score (SD)\textsuperscript{†}</th>
<th>Correlation Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count of diseases (no scale)</td>
<td>8.7 (2.7)</td>
<td>-0.41\textsuperscript{‡} -0.38\textsuperscript{‡}</td>
</tr>
<tr>
<td>Persistent depressive symptoms (yes/no: 0.0-1.0)</td>
<td>0.6 (0.5)</td>
<td>-0.32\textsuperscript{‡} -0.25\textsuperscript{‡}</td>
</tr>
<tr>
<td>Physical functioning</td>
<td>43.6 (27.3)</td>
<td>0.55\textsuperscript{‡} ...</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>71.6 (19.3)</td>
<td>0.31\textsuperscript{‡} 0.28\textsuperscript{‡}</td>
</tr>
<tr>
<td>Health literacy</td>
<td>74.9 (21.4)</td>
<td>0.16\textsuperscript{†} 0.12\textsuperscript{†}</td>
</tr>
<tr>
<td>Disease burden</td>
<td>19.5 (10.3)</td>
<td>-0.51\textsuperscript{‡} -0.51\textsuperscript{‡}</td>
</tr>
<tr>
<td>Compound effects of conditions</td>
<td>60.2 (15.8)</td>
<td>0.32\textsuperscript{‡} 0.23\textsuperscript{‡}</td>
</tr>
<tr>
<td>Overwhelmed by 1 condition</td>
<td>68.3 (23.4)</td>
<td>0.31\textsuperscript{‡} 0.25\textsuperscript{‡}</td>
</tr>
<tr>
<td>Knowledge about conditions</td>
<td>55.9 (27.9)</td>
<td>0.24\textsuperscript{‡} 0.07</td>
</tr>
<tr>
<td>Financial constraints</td>
<td>66.4 (26.3)</td>
<td>0.34\textsuperscript{‡} 0.32\textsuperscript{‡}</td>
</tr>
<tr>
<td>Social activity</td>
<td>71.9 (21.1)</td>
<td>0.26\textsuperscript{‡} 0.24\textsuperscript{‡}</td>
</tr>
<tr>
<td>Patient-clinician communication</td>
<td>82.5 (17.9)</td>
<td>0.23\textsuperscript{‡} 0.08</td>
</tr>
<tr>
<td>Medication knowledge</td>
<td>78.7 (16.1)</td>
<td>0.18\textsuperscript{†} 0.09</td>
</tr>
<tr>
<td>Medication adherence</td>
<td>77.8 (20.7)</td>
<td>0.17\textsuperscript{†} 0.15\textsuperscript{†}</td>
</tr>
<tr>
<td>Compound effects of medications</td>
<td>55.3 (17.4)</td>
<td>0.10 0.06</td>
</tr>
</tbody>
</table>

* Listed in order of addition to multivariate models.
† Scales 0 to 100 except as noted. Higher scores are consistent with being better off for a given domain, eg, better knowledge, fewer financial constraints, better patient-clinician communication.
‡ P ≤.001.
§ P ≤.01.
|| P ≤.05.

Table 3. Multivariate Model: Barriers to Self-Management Associated With Lower Health Status

<table>
<thead>
<tr>
<th>Health Status*</th>
<th>Coefficient</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-19.000</td>
<td>.002</td>
</tr>
<tr>
<td>Disease burden/level of morbidity (range, 1-59)</td>
<td>0.523</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Physical function</td>
<td>-0.331</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Knowledge of medical conditions</td>
<td>-0.098</td>
<td>.006</td>
</tr>
<tr>
<td>Social activity</td>
<td>-0.101</td>
<td>.033</td>
</tr>
<tr>
<td>Persistent depressive symptoms (yes/no)</td>
<td>4.451</td>
<td>.035</td>
</tr>
<tr>
<td>Financial constraints</td>
<td>-0.082</td>
<td>.046</td>
</tr>
<tr>
<td>Male sex</td>
<td>4.182</td>
<td>.045</td>
</tr>
</tbody>
</table>

* All scales 0 to 100 unless noted.
between disease burden and 3 potential barriers (communication, financial constraints, and the compound effect of conditions) in which the association of the barrier with physical functioning lessened at higher levels of morbidity. This finding suggests that the impact of certain barriers may not be constant across the entire range of morbidity. We suggest that, for the most medically ill participants, physical functioning was less a function of individual barriers to self-management than a function of overall frailty. This frailty was statistically accounted for by the subjective severity adjustment in the disease burden measure.

Several factors we explored were significantly associated with the outcomes of interest but did not contribute to the final models: self-efficacy, being overwhelmed by a single condition, and knowledge about medications. Previous investigations suggest that these factors are important for persons with multimorbidities and are amenable to existing interventions.3,6,22 Being overwhelmed by a single condition lends itself to well-developed, single-disease management programs there are equally well-developed interventions to improve self-efficacy, and patient education can improve knowledge about medications.3,6,21 Complex interactions or correlations with the other variables may explain their lack of significance in our current models. Further investigation will show whether these potential barriers to self-management are directly or indirectly associated with specific health outcomes.

Health literacy has been previously shown to affect subjective health outcomes in a multimorbid population33; however, it did not contribute to our final multivariate model. We suspect that we screened out some low-literacy respondents by the invitation letter mailed before the survey. Our sample of seniors exhibited acceptable levels of health literacy, whereas nationally 29% of seniors report less than basic levels of health literacy.66 It is notable, however, that even this relatively literate population reported substantial barriers to self-management.

Although our investigation helps to clarify the complex relationship between disease burden and psychosocial barriers to self-care for seniors with multiple diseases, several limitations should be noted. We used a cross-sectional design and therefore are unable to assess cause and effect between our potential barriers to the self-management process and health outcomes. We also had a relatively low response rate, which we attribute in part to the anticipated amount of time required to complete the survey that we mentioned in the invitation letter. Based on the comparisons we could make, respondents differed little from nonrespondents. Finally, our results are based on the responses of seniors who are accustomed to the infrastructure of an HMO. For example, despite the level of their morbidity, members of this study population did not report significant problems with medications. We suspect this result may be due to emphasis placed on education about medications within the HMO care structure. We would continue to emphasize the importance of medication management for seniors with multimorbidities.

Much of the care of persons with chronic diseases has been centered on concepts of disease management. The current standard of care that emphasizes management of individual diseases, however, may not be sufficiently comprehensive for persons with multiple chronic conditions, diseases, or disabilities. Although we selected a study population based on 3 specific diseases, its members reported more varied and a higher number of diseases than those in our inclusion criteria. Thus, we expect that our findings will be relevant to seniors with a broad spectrum of multimorbidities. Our investigation of 2 subjective, but important, health outcomes for the senior population illustrates the complex contribution of biological and psychosocial factors that affect the overall health status of persons with multiple medical diseases. Best care of this population should extend beyond management of medical diseases to address important psychosocial factors—with the goal of enhancing self-management support. The challenges for clinicians are to identify the individual needs of such patients, to have systematic approaches in place to match these needs with resources, and to be alert to the shifting priorities of this population so that there is periodic reassessment of needs.

Table 4. Multivariate Model: Barriers to Self-Management Associated With Lower Levels of Physical Functioning

<table>
<thead>
<tr>
<th>Physical Function*</th>
<th>Coefficient</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-44.406</td>
<td>.005</td>
</tr>
<tr>
<td>Disease burden</td>
<td>0.173</td>
<td>.790†</td>
</tr>
<tr>
<td>Financial constraints</td>
<td>-0.434</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Income</td>
<td>-11.437</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Patient-clinician communication</td>
<td>0.455</td>
<td>.007</td>
</tr>
<tr>
<td>Compound effects of conditions</td>
<td>-0.509</td>
<td>.009</td>
</tr>
<tr>
<td>Persistent depressive symptoms</td>
<td>6.111</td>
<td>.021</td>
</tr>
<tr>
<td>Disease burden X patient-clinician communication</td>
<td>-0.020</td>
<td>.010</td>
</tr>
<tr>
<td>Disease burden X financial constraints</td>
<td>0.018</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Disease burden X compound effects of conditions</td>
<td>0.025</td>
<td>.007</td>
</tr>
</tbody>
</table>

Note: $R^2$ for model = 0.341; n = 343.
* All scales 0 to 100 unless noted.
† Significance accounted for by interaction terms.
References


Psychosocial Factors and Progression From Prehypertension to Hypertension or Coronary Heart Disease

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ABSTRACT

PURPOSE This study explored the influence of trait anger and long-term psychological stress on progression to hypertension and incident coronary heart disease (CHD) in persons with prehypertension.

METHODS A secondary data analysis was performed using the Atherosclerosis Risk in Communities (ARIC) study, a cohort of men and women aged 45 to 64 years at enrollment. Participants with blood pressures in the prehypertension range at the second visit conducted between 1990 and 1992, free of heart disease or stroke, and observed through the end of the ARIC study (1996-1998) were included (N = 2,334). The main outcomes were progression from prehypertension to hypertension and prehypertension to CHD or CHD death.

RESULTS After adjusting for various covariates, high levels of trait anger, compared with low/moderate levels (odds ratio [OR] 1.53; 95% confidence interval [CI], 1.05-2.24), were associated with progression from prehypertension to hypertension. After stratifying on sex, trait anger was predictive for men only (OR 1.71; 95% CI 1.04-2.83). In survival analysis, trait anger was associated with progression to CHD for men (hazard ratio [HR] 1.92; 95% CI, 1.07-3.54). Long-term psychological stress was also associated with risk of incident CHD (HR 1.68; 95% CI 1.18-2.40).

CONCLUSIONS High levels of trait anger in middle-aged prehypertensive men were associated with increased risk of progressing to hypertension and incident CHD. Long-term stress was also associated with increased risk of incident CHD in both men and women.


INTRODUCTION

Hypertension affects approximately 65 million Americans,1 and is associated with myocardial infarction, stroke, and disability in thousands of persons every year.2,4 According to Healthy People 2010, prevention of hypertension is one of the most critical public health needs of the coming decade.5 Also of great public health concern is coronary heart disease (CHD), which affects approximately 13 million persons in the United States and accounted for one-fifth of all deaths in the United States in 2002.6 Of all cardiovascular events, more than one-half are due to CHD in persons younger than 75 years.6,7

Hypertension is a well-established risk factor for CHD. Recently, however, a newer blood pressure designation of prehypertension has also been suggested as a condition of future risk.8,9 Prehypertension is defined as a systolic blood pressure of 120 to 139 mm Hg or a diastolic blood pressure of 80 to 89 mm Hg.10 National estimates show that 27 million women and approximately 42 million men in the United States may have prehypertension.11,12 Evidence is growing that persons with prehypertension have higher cardiovascular risk factors13 and more cardiovascular events.
compared with those with normal blood pressure.9,14,15 Further, patients with prehypertension are more likely to progress to frank hypertension.16

The role of various psychosocial factors in cardiovascular disease has been of interest for many years. In 1976 Medalie et al showed that anxiety and psychosocial problems related to family were associated with increased risk of developing angina in adult men.17 In terms of CHD, the Veteran’s Administration’s Normative Aging Study used various scales from the Minnesota Multiphasic Personality Inventory to show that anger was associated with coronary events19 and that type A behavior and depression were associated with incident CHD.19,20 A high trait anger level has also been shown to be associated with increased risk of stroke in persons younger than 60 years.21 Still further, anger and hostility have been shown to predict the development of atrial fibrillation in the Framingham Offspring Study.22

Symptoms of anxiety and depression in the National Health and Nutrition Examination Survey follow-up study23 and hostility and depressive symptoms in the Coronary Artery Risk Development in Young Adults were shown to be associated with incident hypertension in previously normotensive persons.24,25 A study in 2000 found that middle-aged adults with high anger levels and normal blood pressure had increased risk of CHD.26

None of these studies focused exclusively on persons with blood pressures in the prehypertensive range. The objective of this study was to investigate whether psychosocial factors are associated with progression from prehypertension to hypertension and to CHD or CHD mortality after adjustments for traditional risk factors. We analyzed data from a large population-based cohort study of atherosclerosis in adults. The study was institutional review board exempt.

METHODS

Study Population
The Atherosclerosis Risk in Communities Study (ARIC) is a prospective epidemiologic study of 15,792 men and women aged 45 to 64 years that began in 1987. It was designed to investigate the origin and progression of various atherosclerotic diseases.27 Recruitment for the study was by random probability sampling from population lists and area sampling in 4 communities across the United States, including Washington County, Maryland, suburban Minneapolis, Minnesota, Forsyth County, North Carolina, and Jackson, Mississippi. The full interview and examination methodology can be found on the ARIC Web site: http://www.cscc.unc.edu/aric/pubuse/. The public use data set contains data from annual telephone interviews and 3 triennial visits (visits 2 through 4) that followed up on the cohort through the end of 1998.

Baseline measurements for this study were taken from the second clinical visit, which occurred from 1990 to 1992, because the psychosocial factors of interest were assessed at that visit. At this visit 14,348 participants (92.9% of those from initial visit) were examined. Of those, we selected participants with blood pressures in the prehypertension range (120 to 139 mm Hg systolic or 80 to 89 mm Hg diastolic). We excluded participants who had been told by a physician that they had high blood pressure, those who were taking antihypertensive medication, and those who had a measured systolic blood pressure of 140 mm Hg and higher or diastolic blood pressure of 80 mm Hg and higher. Additionally, we excluded participants with cardiovascular disease defined as having a history of myocardial infarction, stroke/transient ischemic attack, or cardiac revascularization procedures or electrocardiographic evidence of myocardial infarction. Thus, the initial cohort consisted of 2,334 participants from visit 2 who had prehypertension but were free of cardiovascular disease.

Participants were followed up through each of the remaining triennial clinical examinations, which included visit 3 (from 1993 to 1995) and visit 4 (from 1996 to 1998); annual morbidity and mortality was determined by telephone follow-up. Follow-up ranged from 4 to 8 years.

Development of Hypertension
Participants were defined as having developed hypertension if, during visits 3 or 4 (3 to 6 years from visit 2), the measured systolic blood pressure was greater than 139 mm Hg or diastolic blood pressure was greater than 89 mm Hg, if they reported having been told by a physician that they had high blood pressure, or if they were taking an antihypertensive medication.

Development of CHD
For the follow-up period through 1998, development of CHD or CHD death was defined as having an acute myocardial infarction, a silent myocardial infarction on an electrocardiogram reading, a cardiac revascularization procedure, or fatal CHD. Death certificates and hospital discharge summary data were used to verify hospital CHD events. Additionally, participants’ next of kin and coroners’ or medical examiners’ reports were used to determine out-of-hospital causes and dates of death.

Demographic Variables
Demographic variables assessed as predictors include age, race, and sex. Patients were divided into 2 age-groups: those aged 48 to 57 years, and those aged 58 to 67 years. Race was defined as black and nonblack
based on patient self-report. Although the ARIC data set has extensive race information, the public use limited-access data set is classified as black or nonblack.

**Cardiovascular Risk Variables**
Smoking status was defined as current or not current. Using body mass index (BMI) calculated as weight in kilograms divided by the square of the height in meters, we defined participants as nonobese (BMI of 30 or less) or obese (BMI more than 30). Those participants who stated at visit 2 they had been diagnosed with diabetes or were taking medications for diabetes were considered as having a history of diabetes. Patients with measured low-density lipoprotein (LDL) cholesterol levels of greater than 160 mg/dL were defined as having hyperlipidemia.

For assessment of physical activity, the ARIC data set includes information about the top 4 sports and leisure-time activities in which an individual participates. The hours per week and the months per year are reported for each activity, and these values then were used to calculate the average number of hours per week spent on that activity during the course of the year. We summed the average hours per week for these 4 activities. To this sum we added the average number of minutes per week of walking or riding a bicycle to and from work or shopping. Participants with a total of 150 minutes per week or more were classified as getting sufficient exercise. This standard is based on the longstanding recommendation of several groups, including the President's Fitness Council and the American College of Sports Medicine.

**Psychosocial Variables**
Three standardized self-administered psychosocial questionnaires were administered during the Health and Life Profile in the second visit of the ARIC study. The first measure assessed each participant's satisfaction with life and his or her level of social support and social network. The Lubben Social Network scale assesses social networks among elderly people. The cohort was divided into tertiles (0 to 35, 36 to 39, 40 to 50). Long-term psychological stress (termed vital exhaustion) was assessed by the Maastricht Questionnaire. The cohort was divided into tertiles and classified as low, moderate, and high based upon their score (0 to 7, 8 to 12, greater than 12). Lastly, the 10 question Spielberger Trait Anger Scale was administered to assess levels of anger and hostility. Classifications of low (10 to 14), moderate (15 to 21) and high (22 to 40) were based on previously published scores.

**Statistical Analyses**
All analyses were performed using SUDAAN 9.0.1 statistical software. All continuous variables (age, BMI, LDL cholesterol, hours of exercise, and psychosocial scores) were tested for normality. Because neither the variables, including age, BMI, LDL cholesterol, physical activity, nor the psychosocial scores were normally distributed, we chose to categorize the variables as indicated above for statistical analysis and interpretation.

Separate bivariate ($\chi^2$) analyses were conducted examining which factors contributed to the development of hypertension or CHD in unadjusted analysis. In an effort to determine the best predictors of progression, we designated a priori that the categorical variables with a $P$ value of $<.2$ in bivariate analysis were to be included in the multivariable models. For progression to hypertension, odds ratios (OR) with 95% confidence intervals (CI) were calculated for the psychosocial variables using logistic regression modeling. Even though we investigated the development of disease, we used logistic regression rather than Cox regression and survival analysis, because time to event (development of hypertension) could not be precisely determined.

Cox proportional hazards regression was used to determine association between the psychosocial factors and incident CHD in participants with prehypertension. Detailed annual telephone follow-up and morbidity and mortality surveillance allowed for determination of time to event for this outcome. Crude probabilities of CHD event-free survival were determined by the Kaplan-Meier product-limit method.

Unadjusted associations between Maastricht score categories (long-term psychological stress) and anger categories were calculated using logistic regression for development of hypertension and Cox regression for development of CHD.

In the analyses, Maastricht scores and Spielberger anger scores were dichotomized into the highest tertile and the lowest 2 tertiles combined (high vs low/moderate), because in previous studies, high levels of the psychosocial variables have been the level commonly associated with various cardiovascular disease.

The Lubben Social Network score was not included in the models as it was not associated with either outcome. We stratified by sex because previous studies using this anger scale have shown differences between men and women.

To assess for confounding, we first performed $\chi^2$ analysis to determine which of the covariates were associated ($P < .05$) with each of the psychosocial variables. Then we performed additional analyses including only these confounders in separate logistic and Cox regression models for the development of hypertension and incident CHD, respectively.

To test the sensitivity of our findings to the cutpoints used, we performed separate multivariable regression analyses, entering the covariate risk fac-
tors as continuous rather than categorical variables, and found similar results (available in the online-only Supplemental Table 1, found at http://www.annfammed.org/5/5/403/DC1.)

**RESULTS**

In bivariate analysis, age, sex, race, BMI, history of diabetes, LDL cholesterol, hours per week of exercise, Maastricht score, and Spielberger anger score had unadjusted $P$ values < .2 (Table 1) for progression to hypertension and were therefore included in the multivariable regression analysis for progression from prehypertension to hypertension. Current smoking status and Lubben Social Network scores were not significantly associated with the development of hypertension in unadjusted analysis ($P > .2$) and were not included in the regression analysis.

Unadjusted associations for progression to hypertension by each psychosocial factor are displayed in Table 1. Demographics and Bivariate Analysis of Participants With Prehypertension During Visit 2 in the ARIC Study (N = 2,334) and Percentage of Each Group Developing Hypertension and Coronary Heart Disease

<table>
<thead>
<tr>
<th>Variable</th>
<th>Population No. (%)</th>
<th>Development of Hypertension</th>
<th>Development of CHD/CHD Death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age category</td>
<td></td>
<td>%</td>
<td>$P$ Value</td>
</tr>
<tr>
<td>48-57 y</td>
<td>1,176 (50.4)</td>
<td>53.0</td>
<td>.014</td>
</tr>
<tr>
<td>58-67 y</td>
<td>1,158 (49.5)</td>
<td>63.2</td>
<td>.014</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1,127 (48.3)</td>
<td>53.2</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Female</td>
<td>1,207 (51.7)</td>
<td>62.6</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonblack</td>
<td>1,863 (79.8)</td>
<td>56.0</td>
<td>.005</td>
</tr>
<tr>
<td>Black</td>
<td>471 (20.2)</td>
<td>66.3</td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>117 (5.0)</td>
<td>67.3</td>
<td>.052</td>
</tr>
<tr>
<td>No</td>
<td>2,217 (95.0)</td>
<td>57.5</td>
<td></td>
</tr>
<tr>
<td>Low-density lipoprotein cholesterol</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤160 mg/dL</td>
<td>1,839 (78.8)</td>
<td>57.0</td>
<td>.110</td>
</tr>
<tr>
<td>&gt;160 mg/dL</td>
<td>495 (21.2)</td>
<td>61.4</td>
<td>.075</td>
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<tr>
<td>Maastricht Questionnaire score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low (0-7)</td>
<td>773 (33.1)</td>
<td>56.7</td>
<td>.045</td>
</tr>
<tr>
<td>Moderate (8-12)</td>
<td>756 (32.4)</td>
<td>55.1</td>
<td></td>
</tr>
<tr>
<td>High (&gt;12)</td>
<td>805 (34.5)</td>
<td>61.6</td>
<td></td>
</tr>
<tr>
<td>Spielberger Trait Anger Scale score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low (10-14)</td>
<td>901 (38.6)</td>
<td>59.9</td>
<td>.018</td>
</tr>
<tr>
<td>Moderate (15-21)</td>
<td>1,272 (54.5)</td>
<td>55.6</td>
<td></td>
</tr>
<tr>
<td>High (&gt;21)</td>
<td>161 (6.9)</td>
<td>66.7</td>
<td></td>
</tr>
<tr>
<td>≥2.5</td>
<td>1,351 (57.9)</td>
<td>56.8</td>
<td></td>
</tr>
<tr>
<td>Body mass index</td>
<td></td>
<td></td>
<td>.007</td>
</tr>
<tr>
<td>≥30</td>
<td>1,671 (71.6)</td>
<td>56.3</td>
<td></td>
</tr>
<tr>
<td>&gt;30</td>
<td>663 (28.4)</td>
<td>62.8</td>
<td>.168</td>
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<tr>
<td>Exercise hours per week</td>
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<td></td>
<td></td>
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<tr>
<td>&lt;2.5</td>
<td>983 (42.1)</td>
<td>59.8</td>
<td>.484</td>
</tr>
<tr>
<td>≥2.5</td>
<td>1,351 (57.9)</td>
<td>56.8</td>
<td></td>
</tr>
<tr>
<td>Current smoking status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>502 (21.5)</td>
<td>60.0</td>
<td>.349</td>
</tr>
<tr>
<td>No</td>
<td>1,832 (78.5)</td>
<td>57.5</td>
<td></td>
</tr>
<tr>
<td>Lubben Social Network score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low (0-35)</td>
<td>707 (30.3)</td>
<td>57.7</td>
<td>.796</td>
</tr>
<tr>
<td>Moderate (36-39)</td>
<td>728 (31.2)</td>
<td>57.6</td>
<td></td>
</tr>
<tr>
<td>High (&gt;39)</td>
<td>899 (38.5)</td>
<td>59.7</td>
<td></td>
</tr>
</tbody>
</table>

ARIC = Atherosclerosis Risk in Communities; CHD = coronary heart disease.
in Table 2. In multivariable logistic regression analysis for progression from prehypertension to hypertension, high Spielberger trait anger scores compared with low/moderate scores (AOR 1.53; 95% CI, 1.05-2.24) were associated with progression from prehypertension to hypertension (Table 3). Approximately 7% of those with prehypertension had a high trait anger score, but of those, almost 67% developed hypertension, with 1.5 times greater odds for developing hypertension than those with low/moderate scores. Stratification by sex showed that high trait anger scores were associated with progression to hypertension in men only (AOR 1.71; 95% CI, 1.04-2.83). Long-term stress as assessed by highest tertile Maasstricht scores was not associated with progression from prehypertension to hypertension (AOR 1.06; 95% CI, 0.87-1.30) and remained nonsignificant for both sexes after stratification.

Bivariate analysis results for prehypertensive participants developing CHD for each risk factor and psychosocial factor are displayed in Table 1. There was a significant difference between prehypertensive participants who developed CHD and those who did not for both long-term psychological stress and trait anger (P < .05 for both). In addition to these psychosocial factors, age category, sex, race, smoking status, diabetes, and LDL cholesterol category were significantly different between the 2 groups (P < .2) and were therefore included in the Cox regression models as covariates. The Lubben Social Network scores were not associated with progression to CHD (P = .22) in unadjusted analysis and was therefore not included in the Cox regression model.

After adjusting for other risk factors (age, sex, race, smoking, and LDL cholesterol), there was an increased risk of incident CHD with high long-term psychological stress compared with low/moderate stress for both men and women (Table 4). High trait anger scores were associated with a 90%
increase in the risk of progression to CHD in prehypertensive men but not significantly related to CHD in women. Crude Kaplan-Meier probability curves for long-term psychological stress and for trait anger by sex are displayed in Figures 1 through 3.

To assess for confounding, we first performed $\chi^2$ analysis to determine which of the covariates were associated ($P < .05$) with each of the psychosocial variables. Then we performed additional analyses including only these confounders in separate logistic and Cox regression models for the development of hypertension and incident CHD, respectively. Results were similar to the findings from the initial models presented above (data not shown).

**DISCUSSION**

This study from a cohort of middle-aged adults in the US with prehypertension shows that among men with high trait anger scores, there is a modest association with progression to hypertension and CHD. The study also shows that long-term psychological stress is associated with development of combined CHD/CHD death for persons with prehypertension.

Trait anger as measured by the Spielberger Trait Anger Scale is a stable personality trait characterized by the frequency, intensity, and duration of anger. Those with high trait anger scores tend to experience anger more frequently with higher intensity and longer duration than those with low to moderate scores. Previous studies have shown a relationship between high levels of trait anger and coronary heart disease development in normotensive adults, as well as increased risk of incident stroke among a subset of patients. To our knowledge, no study has assessed its association with development of hypertension in a population with prehypertension.

The mechanism related to trait anger and progression to hypertension and CHD is unknown, but studies suggest that such biological mechanisms as sympathetic hyperactivity and arousal associated with anger and psychological stress may play a role in cardiovascular disease. Although one might consider that trait anger may be difficult to treat, a study by

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**Figure 1. CHD event-free survival probabilities among prehypertensive participants by Maastricht Questionnaire scores.**
Figure 2. CHD event-free survival probabilities among prehypertensive men by Spielberger Trait Anger Scale scores.

CHD = coronary heart disease.

Figure 3. CHD event-free survival probabilities among prehypertensive women by Spielberger Trait Anger Scale scores.

CHD = coronary heart disease.
Blumenthal et al showed that a specified exercise program was successful in reducing both type A psychological scores and cardiovascular risk factors in middle-aged adults. Further studies may help determine whether treatment of anger by counseling, medication, or other means will have a beneficial effect on slowing progression from prehypertension to CHD.

Psychological stress as assessed by the Maastricht Questionnaire was initially designed to assess symptoms of fatigue and depression that precede myocardial infarction. Specifically, the questionnaire assesses feelings of fatigue, lack of energy, worsening irritability, and feelings of demoralization. Appels and Mulder found that the stress measure was associated with increased myocardial infarction risk as well as an association with nonfatal myocardial infarction in middle-aged men. The measure also predicts new cardiac events in men and women after successful angioplasty. The current study expands this knowledge, showing that psychological stress increases the risk of CHD in prehypertensive middle-aged adults.

Strengths of this study include its prospective design and the ARIC study’s comprehensive collection of data and outcome surveillance, which allowed for monitoring participants who were free of CVD during multiple visits and follow-up interviews for an extended period to assess development of hypertension and CHD. The cohort had a large proportion of African American patients, a population that is often underrepresented in research studies. Furthermore, the study included assessments of psychosocial factors, such as social support, long-term stress, and anger in addition to traditional risk factors for hypertension. This study provides impetus for further study into treatment of modifiable risk factors that may slow or prevent the progression of prehypertension to hypertension and CHD. Finally, our findings appear robust, as we ran our models numerous ways to ensure proper accounting for confounding and got similar results.

Limitations include the generalizability of the findings to patient populations of different ages. Certain factors may be of differing importance in the progression from prehypertension to hypertension or CHD for younger and older patients. The observational nature of the study limits inference beyond associations. Finally, few women (5.8%) developed CHD in our cohort, which may account for the lack of association in women. Longer follow-up time may be needed for women with prehypertension.

The Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure designated prehypertension as a new blood pressure category based on the increased cardiovascular risks and events associated with blood pressures in this range. The findings of this study further support these associations with prehypertension. Additionally, we were able to show that beyond traditional cardiovascular risk factors, anger and psychological stress play a role in development of CHD in participants with prehypertension. This study serves to further characterize individuals with prehypertension and adds to the growing evidence of the role of psychological factors in the development of cardiovascular disease.

To read or post commentaries in response to this article, see it online at http://www.annfammed.org/cgi/content/full/55/4/403.

Key words: Prehypertension; psychosocial factors; hypertension; anger; stress, psychological

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References


Let’s Not Talk About It: Suicide Inquiry in Primary Care

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ABSTRACT

PURPOSE The purpose of this study was to ascertain physician characteristics associated with exploring suicidality in patients with depressive symptoms and the influence of patient antidepressant requests.

METHODS Primary care physicians were randomly recruited from 4 sites in northern California and Rochester, NY; 152 physicians participated (53%-61% of those approached). Standardized patients portraying 2 conditions (major depression and adjustment disorder) and 3 antidepressant request types (brand specific, general, or none) made unannounced visits to these physicians between May 2003 and May 2004. We examined factors associated with physician exploration of suicidality.

RESULTS Suicide was explored in 36% of 298 encounters. Exploration was more common when the patient portrayed major depression (vs adjustment disorder) (P = .03), with an antidepressant request (vs no request) (P = .02), in academic settings (P < .01), and among physicians with personal experience with depression (P < .01). The random effects logistic model revealed a significant physician variance component with ρ = 0.57 (95% confidence interval, 0.45-0.68) indicating that there were additional, unspecified physician factors determining the tendency to explore suicide risk. These factors are unrelated to physician specialty (family medicine or internal medicine), sex, communication style, or perceived barriers to or confidence in treating depression.

CONCLUSIONS When seeing patients with depressive symptoms, primary care physicians do not consistently inquire about suicidality. Their inquiries into suicidal thinking may be enhanced through advertising or public service messaging that prompts patients to ask for help. Research is needed to further elucidate physician characteristics associated with the assessment of suicidality.


INTRODUCTION

Suicide is a leading cause of death and potential life-years lost worldwide.1 Most people who die by suicide have a treatable mental disorder, usually depression, but few have seen a mental health specialist.2,3 Although many patients are reluctant to seek and actively engage in mental health treatment, up to 75% of those who complete suicide have seen a primary care clinician in the previous 30 days.4-7 The primary care setting thus presents an excellent venue for detection of and early intervention for suicide risk.8,9

Suicide ideation, defined as the presence of passive or active thoughts about a premature end of life, is present in 2% to 7% of all primary care patients.10,11 Suicide ideation confers risk for suicide as well as morbidity and all-cause mortality.12-18 In spite of ample opportunity for detection and intervention, presuicidal patients seldom alert physicians to their plans, and studies have found low rates of inquiry and detection of patients’ suicidal thoughts by primary care practitioners.8,15,19 Remarkably little is known about the factors that influence whether primary care physicians broach the topic of suicide. The lack of data on suicide risk is especially

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striking considering how much has been written about the detection of depression in the primary care setting.\textsuperscript{20-23}

To determine whether physician characteristics, patient symptoms, and patient behavior influence whether physicians explore the topic of suicide with their patients, we conducted secondary analyses of data collected in a randomized trial that examined actual clinical behavior of physicians in the context of patient requests for treatment. Specifically, we examined the following 4 questions: (1) What physician demographic and clinical characteristics enhance the likelihood that they will broach the topic of suicide to patients with depressive symptoms? (2) Are physicians more likely to inquire about suicide when patients have more severe symptoms of depression? (3) Do patient requests for antidepressants affect physician inquiries about suicide? Inquire about suicide when patients have more severe symptoms of depression? (3) Do patient requests for antidepressants affect physician inquiries about suicide? (4) Are physicians more likely to inquire about suicide when patients have more severe symptoms of depression? (3) Do patient requests for antidepressants affect physician inquiries about suicide?

\section*{METHODS}
\subsection*{Design Overview}

The study was approved by the institutional review boards at all participating institutions, and details have been presented elsewhere.\textsuperscript{24} Standardized patients were trained to portray 6 roles, involving 2 clinical conditions (major depression or adjustment disorder) and 3 medication request types (brand specific, general, or none). Participating physicians gave advanced consent to see 2 unannounced standardized patients and have the visits covertly audio recorded by the patient, physicians were randomized to see both roles with 2 of the request types. Visits took place between May 2003 and May 2004. After each visit, the standardized patients completed a reporting form on the questions asked by the physician. Physicians completed a clinician background questionnaire at the conclusion of the study.

\subsection*{Physicians}

Internists and family physicians were recruited from 4 sites: (1) a primary care network in the Sacramento, Calif, area; (2) a group-model health maintenance organization, also in the Sacramento area; (3) a physician network in the San Francisco, Calif, Bay Area; and (4) a physician network in the Rochester, NY, area. A total of 152 physicians participated in the study; 6 physicians saw only 1 standardized patient. Participation rates by site ranged from 53\% to 61\%. The age and sex distributions of participating physicians were similar to those of nonparticipating physicians.

\subsection*{Standardized Patient Roles and Visits}

A total of 18 actresses portrayed the 2 standardized patient roles. Role 1 was a 48-year-old divorced white woman with major depression of moderate severity and wrist pain consistent with carpal tunnel syndrome. Role 2 was a 45-year-old divorced white woman with adjustment disorder with depressed mood and low back pain. Role outlines were revised iteratively until they were judged by a consensus of investigators and advisors to be clinically credible and manageable within the context of a 15- to 20-minute, new-to-physician, “acute” visit. Standardized patients were required to portray the role details with 95\% accuracy, maintain affective fidelity (agreed-on levels of depressed mood and anxiety), and demonstrate competence in completing the reporting form. By design, there were 3 antidepressant request conditions: (1) a request for Paxil (paroxetine), (2) a request for “medication that might help,” and (3) no specific request. In the analyses reported here, the first 2 request conditions were collapsed into 1 category, called “prompt.” The third condition was labeled “no prompt.”

Immediately following the visit, standardized patients listened to the audio recording and completed the reporting form, including questions on the physician’s depression history taking. An independent judge listened to 36 randomly selected audio recordings; overall agreement between the standardized patient and the independent judge was 92\% (mean $\kappa$, 0.82). Within 2 weeks of a standardized patient visit, physicians were asked via facsimile whether, during the prior 2 weeks, they had been definitely or probably suspicious that 1 of their patients was actually a standardized patient; 12.8\% of physicians reported being suspicious. At least 2 months separated both the time from consent to the first visit and the time from the first to the second visit.

\subsection*{Standardized Patient Reporting Form Questions}

This study focused on the items on the standardized patient reporting form pertaining to history taking for depression symptoms. Items were derived from published recommendations and the advice of the study’s clinical advisory panel.\textsuperscript{25} One item inquired whether the physician asked the standardized patient about thoughts of wanting to be dead, of engaging in self-harm, or of committing suicide (yes/no). This variable was the main outcome of the study and is referred to as exploration.

\subsection*{Clinician Background Questionnaire}

We asked physicians about their age, sex, race (white or not), medical specialty (family medicine or internal medicine), and practice setting (solo or group, academic medical setting or not). Based on Bandura’s Social Cognitive Theory,\textsuperscript{26} we asked 8 questions pertaining to their level of confidence in treating depres-
explored the topic of suicide with the standardized measure of interest in these analyses was whether the physician inquired about suicidality (details not shown). 

Analyses were performed with STATA version 9.2 (Stata Corp, College Station, Tex). The main outcome measure was the likelihood of exploring suicidality in their patients. The MPCC has shown adequate reliability (intrarater reliability reported as 0.80-0.83) and validity, and has an established relationship with patient trust and patient perceptions of their physicians’ communication behavior.24-30 The MPCC measures 3 aspects (or components) of physician communication and is unique in that it is theoretically linked to a model of patient-centered communication. For component 1 (exploring both the disease and the illness experience), the coder notes patient statements about symptoms, ideas, expectations, feelings, and the effect of the symptoms on functioning. Component 2 (understanding the whole person) measures the degree to which the physician explores family, social, and occupational issues. Component 3 (finding common ground) measures the degree to which the physician arrives at a common understanding with the patient about the nature of the problem and its management. We trained 2 coders to score the recordings using the MPCC; 10% of recordings were scored by both coders. The total MPCC score represents the mean of the 3 component scores. Observed scores ranged from 0.12 (least patient centered) to 0.81 (most patient centered), with a mean of 0.51 (SD, 0.88). Our reliability data as well as means and standard deviations of the scores were virtually identical to those reported by the developers.28

Audiotape Analysis

Encounters were analyzed using the Measure of Patient-Centred Communication (MPCC).28 We felt that the MPCC score would serve as a proxy for physician communication style that would predict the likelihood of exploring suicidality in their patients. The MPCC has shown adequate reliability (intrarater reliability reported as 0.80-0.83) and validity, and has an established relationship with patient trust and patient perceptions of their physicians’ communication behavior.24-30 The MPCC measures 3 aspects (or components) of physician communication and is unique in that it is theoretically linked to a model of patient-centered communication. For component 1 (exploring both the disease and the illness experience), the coder notes patient statements about symptoms, ideas, expectations, feelings, and the effect of the symptoms on functioning. Component 2 (understanding the whole person) measures the degree to which the physician explores family, social, and occupational issues. Component 3 (finding common ground) measures the degree to which the physician arrives at a common understanding with the patient about the nature of the problem and its management. We trained 2 coders to score the recordings using the MPCC; 10% of recordings were scored by both coders. The total MPCC score represents the mean of the 3 component scores. Observed scores ranged from 0.12 (least patient centered) to 0.81 (most patient centered), with a mean of 0.51 (SD, 0.88). Our reliability data as well as means and standard deviations of the scores were virtually identical to those reported by the developers.28

Statistical Analysis

Analyses were performed with STATA version 9.2 (Stata Corp, College Station, Tex). The main outcome of interest in these analyses was whether the physician explored the topic of suicide with the standardized patient (exploration), as assessed from the standardized patient reporting form. In addition to examining the bivariate relationships between exploration and other variables, we used logistic mixed models to examine the relationships between exploration and characteristics of patients and physicians including the MPCC score. Patient characteristics included mood disorder (major depression vs adjustment disorder) and prompting (any medication request vs none). Physician factors included demographics, study site (San Francisco, Calif; Sacramento, Calif; Rochester, NY), practice setting (solo vs group; academic vs nonacademic), confidence in treating depressed patients, perceived barriers to treating depressed patients, and personal experience with depression (vs none).

Analyses were conducted with each standardized patient–physician encounter as an observation. Random intercept, mixed effects regression analyses evaluated both standardized patients and physicians as random effects and other covariates as fixed effects. Assessment of the physician random effect (or variance component) allowed calculation of the consistency with which physicians explored suicide in the encounters. We report that consistency as the proportion of total variance contributed by the physician variance component (p, or the intraclass correlation coefficient).31 Results were considered statistically significant if the P value was .05 or less. Analyses excluding encounters wherein the physician suspected the patient was a standardized patient were similar to those reported here and are not presented.

RESULTS

Suicide was explored in 36% of the 298 encounters. Table 1 shows the relationships between exploration about suicidality and each of the measured characteristics. Exploration was more common when the standardized patient role was major depression (vs adjustment disorder) and when the standardized patient used a prompt (vs none). In the depression scenario, the rate of question asking about suicidality was at least 10% higher for both request conditions (brand specific and general) compared with the no request condition (data not shown). In addition, the increased exploration in the depression scenario was more pronounced with a general request than with a brand-specific request.

Exploration was also more common in academic settings and among physicians with a personal experience with depression (whether in themselves, family members, or close friends). There was no relationship between individual standardized patients (n = 18) and the likelihood of exploring suicide (details not shown, P = .25).
When only the standardized patient role and request variables were entered into a random effects logistic model with exploration as the dependent variable, we observed a significant physician variance component ($\rho = 0.57$, 95% confidence interval, 0.45-0.68). When physician characteristics and MPCC score were also entered into the model, the effects for role, prompt, academic setting, and personal experience with depression continued to be significant (Table 2). The $p$ value dropped slightly to 0.53 (95% confidence interval, 0.40-0.67). In none of the logistic regression models were standardized patient random effects significant, suggesting that role fidelity was well standardized across the 18 standardized patients.

### DISCUSSION

This secondary analysis of a randomized trial of standardized patient visits to primary care practices examined specific physician and patient characteristics that may predict whether physicians are likely to inquire about suicide in their patients with depression. We found that, overall, primary care physicians inquired about suicide in less than one half of the standardized patients with depression and in even fewer of those with adjustment disorder. In the depression scenario, standardized patient requests for medication significantly increased physicians’ inquiries about suicide. This finding was especially true when general requests were made; the effects of brand-name requests on inquiry about suicide were less powerful.

There was significant physician variance in this behavior with a large effect size ($p$), suggesting that physicians have a characteristic style that influences whether they explore suicide.

This finding is impressive, given that the $p$ value for primary care physician activities is generally reported to range from 0 to 0.3 and is usually less than 0.1. Even after controlling for potential confounders, the $p$ value remained large, indicating

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**Table 1. Relationships Between Exploration and Patient and Physician Characteristics**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>No. (%) of Encounters*</th>
<th>Exploration†</th>
<th>$P$ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>298 (100)</td>
<td>108 (36)</td>
<td>190 (64)</td>
</tr>
<tr>
<td>Patient</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Role</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major depression</td>
<td>149 (50)</td>
<td>63 (42)</td>
<td>86 (58)</td>
</tr>
<tr>
<td>Adjustment disorder</td>
<td>149 (50)</td>
<td>45 (30)</td>
<td>104 (70)</td>
</tr>
<tr>
<td>Prompt‡</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>199 (67)</td>
<td>81 (41)</td>
<td>118 (59)</td>
</tr>
<tr>
<td>No</td>
<td>99 (33)</td>
<td>27 (27)</td>
<td>72 (73)</td>
</tr>
<tr>
<td>Physician</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age, mean (SD), y</td>
<td></td>
<td>45.0 (9.9)</td>
<td>46.7 (9.8)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>97 (33)</td>
<td>34 (35)</td>
<td>63 (65)</td>
</tr>
<tr>
<td>Male</td>
<td>201 (67)</td>
<td>74 (37)</td>
<td>127 (63)</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>210 (70)</td>
<td>83 (40)</td>
<td>127 (60)</td>
</tr>
<tr>
<td>Not white</td>
<td>88 (30)</td>
<td>25 (28)</td>
<td>63 (72)</td>
</tr>
<tr>
<td>Specialty</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family medicine</td>
<td>98 (33)</td>
<td>35 (36)</td>
<td>63 (64)</td>
</tr>
<tr>
<td>Internal medicine</td>
<td>200 (67)</td>
<td>73 (36)</td>
<td>127 (64)</td>
</tr>
<tr>
<td>Practice size</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solo</td>
<td>67 (22)</td>
<td>23 (34)</td>
<td>44 (66)</td>
</tr>
<tr>
<td>Group</td>
<td>231 (78)</td>
<td>85 (37)</td>
<td>146 (63)</td>
</tr>
<tr>
<td>Practice setting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic</td>
<td>40 (13)</td>
<td>24 (60)</td>
<td>16 (40)</td>
</tr>
<tr>
<td>Nonacademic</td>
<td>258 (87)</td>
<td>84 (33)</td>
<td>174 (67)</td>
</tr>
<tr>
<td>Barriers score,§ mean (SD)</td>
<td>2.0 (0.4)</td>
<td>2.0 (0.5)</td>
<td>.82</td>
</tr>
<tr>
<td>Confidence score,¶ mean (SD)</td>
<td>3.0 (0.4)</td>
<td>3.0 (0.4)</td>
<td>.82</td>
</tr>
<tr>
<td>Personal experience with depression</td>
<td>122 (41)</td>
<td>57 (47)</td>
<td>65 (53)</td>
</tr>
<tr>
<td>Yes</td>
<td>122 (41)</td>
<td>57 (47)</td>
<td>65 (53)</td>
</tr>
<tr>
<td>No</td>
<td>176 (59)</td>
<td>51 (29)</td>
<td>125 (71)</td>
</tr>
<tr>
<td>Site</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sacramento, Calif, network</td>
<td>41 (14)</td>
<td>14 (34)</td>
<td>27 (66)</td>
</tr>
<tr>
<td>Sacramento, Calif, HMO</td>
<td>60 (20)</td>
<td>19 (32)</td>
<td>41 (68)</td>
</tr>
<tr>
<td>San Francisco, Calif</td>
<td>101 (34)</td>
<td>40 (40)</td>
<td>61 (60)</td>
</tr>
<tr>
<td>Rochester, NY</td>
<td>96 (32)</td>
<td>35 (36)</td>
<td>61 (64)</td>
</tr>
<tr>
<td>MPCC score,¶ mean (SD)</td>
<td>0.52 (0.73)</td>
<td>0.51 (0.93)</td>
<td>.13</td>
</tr>
</tbody>
</table>

HMO = health maintenance organization; MPCC = Measure of Patient-Centred Communication.

Note: The main outcome of interest was whether the physician explored the topic of suicide with the standardized patient. This variable is referred to as exploration.

* The number (percentage) of encounters with the characteristic present.
† The number (percentage) of encounters with the characteristic present with (Yes) and without (No) exploration, or the mean (SD) for the characteristic for encounters with and without exploration.
‡ By design, there were 3 standardized patient conditions: (1) request for Paxil (paroxetine), (2) request for a medication that might help,” and (3) no specific request. The first 2 conditions were collapsed into 1 category, called “prompt.”
§ Range of scores: 1.75-4.00. Higher scores indicate greater perceived barriers to treating depression.
|| Range of scores: 1.75-4.00. Higher scores indicate greater confidence in treating depression.
¶ Range of scores: 0.23-0.67. Higher scores indicate greater patient-centered communication.
that there are additional, albeit unspecified, physician factors that determine the tendency to explore suicide risk. These factors are probably related to unmeasured attitudes, traits, or knowledge. Our analyses suggest that suicide inquiries are not related to unmeasured attitudes, traits, or knowledge. Some physicians might avoid bringing up the issue of suicide because of fears that broaching the topic might heighten patients’ suicidal feelings. Others could be concerned about offending the patient or are themselves made uncomfortable by the prospect of inquiring about a behavior that was once considered a sin by many religious authorities and a crime in many legal jurisdictions worldwide. Prior work on primary care physicians’ response to domestic violence invoked the image of opening Pandora’s box to explain why they avoided screening for domestic violence. Physicians reported a fear of offending their patients and concern that they had insufficient expertise to intervene appropriately if the patient screened positive—so they avoided the topic altogether. For some physicians, suicide may represent another of the thorny issues in Pandora’s box, raising many of the same fears and concerns of inadequate expertise and insufficient time in a busy practice. Interestingly, although there was no association between physicians’ personal experiences with domestic violence and their proclivities to screen, we found that physicians’ personal experience with depression was significantly associated with exploration (adjusted odds ratio = 3.11; P = .03). Perhaps those who have had personal experience with depression are less judgmental, more attuned to the suffering it entails, more aware of the mortality risk, and less likely to be influenced by societal stigmatization of mental illness and suicide.

We found patient-related factors were also a significant predictor of physician suicidal assessment. Physicians were more likely to ask about suicide when the standardized patient role was major depression (vs adjustment disorder with depressed mood). This finding is reassuring because patients with more depressive symptoms are more likely to attempt and complete suicide. Physicians also were more likely to ask about suicide when the standardized patient requested antidepressant treatment (vs no request). This was especially true when general requests were made, the effects of brand-name requests on inquiry about suicide were less powerful. This finding suggests that patient requests or prompts may in essence give the physician permission to ask about a topic such as suicide that otherwise might be avoided by both physician and patient. In fact, it is interesting to note that the patient request in this study had a similar effect size to a clinical intervention to improve detection of suicidal ideation in primary care described in a recent study.

Overall, physicians asked about suicide only 27% of the time in the unprompted condition. This finding is similar to the control group rate of detection of 20.5% in a recent study. Surprisingly, there are few studies that would help inform effective interventions to address this problem. A recent study from France found that telephone follow-up after a suicide attempt reduced repeated attempts over 1 year, and collaborative care has been shown to reduce suicide ideation in primary care patients. These studies suggest that system-level interventions similar to what has been found to improve outcomes for depressed primary care patients may also improve outcomes for suicidal patients. To date, routine screening for suicide has not been universally advocated, but it seems evident that inquiries about suicide may be the most important questions that primary care physicians ask of patients with depressive symptoms. Our study suggests that one approach to improving the rate of

### Table 2. Adjusted Relationships of Exploration With Patient and Physician Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>AOR (95% CI)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major depression</td>
<td>4.12 (1.95-8.71)</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Prompt (yes)*</td>
<td>2.29 (1.00-5.24)</td>
<td>.05</td>
</tr>
<tr>
<td><strong>Physician</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.95 (0.90-1.02)</td>
<td>.14</td>
</tr>
<tr>
<td>Female</td>
<td>0.95 (0.30-2.95)</td>
<td>.92</td>
</tr>
<tr>
<td>White</td>
<td>3.30 (0.90-12.18)</td>
<td>.07</td>
</tr>
<tr>
<td>Family medicine</td>
<td>0.81 (0.27-2.38)</td>
<td>.70</td>
</tr>
<tr>
<td>Site</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sacramento, Calif</td>
<td>2.06 (0.31-13.44)</td>
<td>.45</td>
</tr>
<tr>
<td>San Francisco, Calif</td>
<td>1.23 (0.25-6.11)</td>
<td>.80</td>
</tr>
<tr>
<td>Rochester, NY</td>
<td>1.19 (0.21-6.88)</td>
<td>.84</td>
</tr>
<tr>
<td>Solo</td>
<td>2.90 (0.70-12.00)</td>
<td>.14</td>
</tr>
<tr>
<td>Academic</td>
<td>10.03 (2.13-47.31)</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Barriers score</td>
<td>1.39 (0.39-4.94)</td>
<td>.61</td>
</tr>
<tr>
<td>Confidence score</td>
<td>0.71 (0.19-2.64)</td>
<td>.61</td>
</tr>
<tr>
<td>Personal experience with depression (yes)</td>
<td>3.11 (1.09-8.89)</td>
<td>.03</td>
</tr>
<tr>
<td>MPCC score</td>
<td>1.04 (0.99-1.10)</td>
<td>.10</td>
</tr>
</tbody>
</table>

AOR = adjusted odds ratio; CI = confidence interval; MPCC = Measure of Patient-Centred Communication.

Note: The main outcome of interest was whether the physician explored the topic of suicide with the standardized patient. This variable is referred to as exploration. The model included standardized patient dummy variables (not shown). For categorical variables, AORs were calculated by comparison with the alternate characteristic. For continuous variables (age, barriers score, confidence score, MPCC score), AORs reflect the effect of a unit change in value.

* By design, there were 3 standardized patient conditions: (1) request for Paxil (paroxetine), (2) request for a "medication that might help," and (3) no specific request. The first 2 conditions were collapsed into 1 category, called "prompt."
physician recognition of suicidal thinking in depressed patients is through advertising or public service messaging (“social marketing”) that prompts patients to ask for help in treating depression without encouraging them to request specific antidepressant medications. Patient prompts for treatment would not be effective, however, if we did not improve the ability of physicians to respond appropriately to these prompts. Earlier research has suggested that interventions aimed at changing specific physician behavior in depression care are more likely to lead to primary care physician behavior change and improved patient outcomes than more comprehensive interventions aimed, for example, at improving physician monitoring of depression treatment response.38

This study has a number of limitations. First, we established that there are significant individual differences between physicians in their propensity to broach the topic of suicide, but the study design did not allow us to identify the specific traits, attitudes, or personal experiences that account for these differences. More research is needed. Second, although the use of standardized patients has a number of potential methodologic advantages, we cannot know whether the observed physician behavior would hold true with real patients in other practice settings.24 It is reassuring that standardized patient factors were not significant in determining whether physicians broached the topic of suicide. Third, a considerable limitation is that the standardized patients in this study were middle-aged women making first visits to a new physician. The estimated rate of exploring suicide risk in this sample may not accurately represent physicians’ overall rate of exploration or formal screening.10 Rates of exploration or screening may be higher or lower as a function of patient age, sex, or race, or length of the physician-patient relationship. Given that suicide rates peak in women in their mid 40s, our focus on depressed middle-aged women is a strength. Fourth, although we can provide a reasonable estimate of whether physicians explored the topic of suicide with these patients, we have no data on the quality of these discussions or whether the discussions could be considered formal suicide screens. The numbers provided here are undoubtedly upper-bound estimates of the rate of suicide screening conducted with depressed middle-aged women in the community. Fifth, although our study concludes that physicians have a characteristic style that influences whether they explore suicide, we are unable to clearly identify the specific physician factors that determine this behavior. Finally, the data on suicide exploration were derived entirely from standardized patient report. Although these reports were made immediately after the visit with the physician and thus should not be subject to memory decay, we do not have data on their validity.

In summary, this study examined the factors that influence whether physicians broach the topic of suicide with distressed patients in primary care. The finding that patient requests for medication led to higher rates of exploration speaks to the potential value of disease awareness campaigns, mental health literacy programs, and patient activation programs.40-42 Our data also suggest that research is needed to better elucidate the characteristics of physicians associated with the assessment and reporting of suicide ideation in patients with symptoms of depression. Ideally, these studies would be conducted in conjunction with research on how characteristics of patients and health care settings influence physician assessments. More translational research is needed to inform the design and implementation of interventions aimed at suicide prevention and other improved outcomes for depressed patients.

To read or post commentaries in response to this article, see it online at http://www.annfammed.org/cgi/content/full/5/5/412.

Key words: Depression; adjustment disorders; antidepressants; suicide; primary care; office visits; multilevel models; prevention; screening; practice-based research

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References


Patient Satisfaction With Care for Urgent Health Problems: A Survey of Family Practice Patients

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ABSTRACT

PURPOSE Patient satisfaction is an important health care outcome. This study compared patients' satisfaction with care received for an urgent health problem from their family physician, at an after-hours clinic in which their physician participated, at a walk-in clinic, at the emergency department, from telephone health advisory services, or from more than 1 of those services.

METHODS We mailed a questionnaire to a random sample of patients from 36 family practices in Thunder Bay, Ontario. We elicited satisfaction with care for the most recent urgent health problem in the past 6 months on a 7-point scale (very dissatisfied to very satisfied).

RESULTS The response rate was 62.3% (5,884 of 9,397). Of the 5,722 eligible patients 1,342 (23.4%) reported an urgent health problem, and data were available for both services used and satisfaction for 1,227 patients. After adjusting for sociodemographic characteristics and self-reported health status, satisfaction with care received for most recent urgent health problem was significantly higher among patients who visited or spoke to their family physician (mean 6.1; 95% confidence interval [CI], 5.8-6.4) compared with all other services (all \( P < .004 \), adjusted for multiple comparisons), with the exception of patients who used the after-hours clinic affiliated with their physician, whose satisfaction was not significantly different (mean 5.6; 95% CI, 5.2-6.0).

CONCLUSIONS Satisfaction was highest for patients receiving care from their own family physician or their physician's after-hours clinic. These results are important for new primary care models that emphasize continuity and after-hours availability of family physicians.

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INTRODUCTION

Patient satisfaction is an important outcome of health care services and can affect compliance with medical advice, service utilization, and the clinician-patient relationship. Patients' choice of site for care for perceived urgent health problems is likely to involve a multitude of factors and may, in turn, influence health care system organization and continuity of care. Canada, as have many other countries, has faced a shortage of family physicians for many years. For patients with a family physician, options for addressing acute health problems may include an urgent appointment with their own family physician, an after-hours clinic, a walk-in clinic, a hospital emergency department, or telephone health advisory services. Emergency department costs for minor acute illnesses are much higher than treatment in primary care settings, and there are concerns about lack of continuity and duplication of services in walk-in clinics. Patients' choice of health services other than their family physician's office is not entirely explained by the urgency of the problem.
Many family physicians in Canada provide care only during regular business hours. As a result, patients in these practices must use other services, such as walk-in clinics or the emergency department, if they require care after-hours for an urgent problem. Some patients have additional options to receive care for urgent health problems from their family physician. In Canada recent restructuring of primary care has introduced extended after-hours access to address patients' needs for care. In Ontario contractual requirements in some new models of primary care introduced in the past decade require physician groups to staff an after-hours clinic with evening and weekend services, in addition to providing physician backup to a nurse-staffed telephone triage service.

To better understand patients' satisfaction with care provided in different settings, we report results of a survey and examine family practice patients' satisfaction with the health services they received for their most recent self-defined urgent health problem.

METHODS

The study was conducted in Thunder Bay, a city in Northern Ontario with a population of approximately 115,000. Thunder Bay has 1 full-service hospital, including a 24-hour emergency department. Many family physicians in the city have joined primary care reform models introduced in Ontario since the late 1990s, including Family Health Networks and Family Health Groups, both of which have contractual obligations to provide some after-hours care. Other community family physicians practice in the traditional system of fee-for-service with no contractual obligations to provide after-hours services. At the time of this study, there were after-hours clinics affiliated with each Family Health Network and Family Health Group. In both these models, physicians form a virtual group (some may or may not be located in one building) and alternate providing after-hours care (usually from 5 pm to 8 pm several evenings each week and 1 half-day on weekends), as well as provide on-call availability to the nurse-staffed after-hours telephone triage. There were also 5 nonaffiliated walk-in clinics open during regular business hours in addition to evening and weekend hours. Patients in Family Health Network and Family Health Group models who visit their own practice's after-hours clinic may see their physician if he or she is staffing the clinic at that time. In the after-hours clinic, information from the visit is provided to the patient's family physician, as these clinics are extensions of the participating practices. Walk-in clinics in the study community rarely forward information about the visit to the patient's family physician.

In 2005 we conducted by mail a cross-sectional survey of the use of and satisfaction with health services for urgent health problems in the previous 6 months among family practice patients in Thunder Bay. We approached 44 family physicians, of whom 36 agreed to participate: all 8 physicians from the city's single Family Health Network, 16 from the 3 Family Health Groups, and 12 from traditional fee-for-service practices.

In the practices without a patient roster, we used electronic billing data to create the sampling frame. In Family Health Network practices, which have rosters of most patients for the purposes of capitated payment, we used the roster for the sampling frame because it was considered to represent true patients of the practice. The Family Health Network practice roster excluded patients of other physicians who might be seen for specialized services not provided by their own family physician, such as obstetrics or palliative care. The roster is updated by the government at 3-month intervals. To minimize the number of questionnaires mailed to patients who were deceased or were no longer part of the practice, the sampling frame was limited to patients older than 1 year who had a visit in the previous year. A random sample of approximately 260 patients was selected from each practice, based on sample size calculations for the main study hypothesis regarding health service utilization by patients of physicians practicing in the 3 different models. A total of 9,612 questionnaires were mailed to patients, and approximately 4 weeks later nonrespondents were mailed a reminder letter and second questionnaire. If the patient was younger than 17 years, a modified version was addressed to the patient's parent or guardian.

The questionnaire was based on adaptations of questions used in a previous study of emergency department use in Canada and previously validated surveys for sociodemographic and self-reported health questions. The questionnaire was pilot tested with administrative staff at one of the authors' offices and with several patients of a family practice in Hamilton to check for clarity and face validity of the questions, after which minor modifications were made.

The final questionnaire asked whether the respon-
dent had experienced an urgent health problem that required immediate care in the previous 6 months. Other questions elicited information about the health services the patient used and satisfaction with care. Sites for care included the family physician, the practice's after-hours clinic (if applicable), the emergency department, a walk-in clinic, and a telephone health advisory service. Patients either visiting or speaking directly to a family physician were considered to have received care from the physician. In addition to the provincial health information telephone line staffed by nurses and available to the general public, Family Health Network and Family Health Group practices have an after-hours telephone triage service for their patients, from 5 pm to 9 am weekdays and on weekends and holidays. Nurses staff this service, and a participating physician is on call. The questionnaire did not distinguish the type of telephone service used. We asked patients to indicate overall how dissatisfied or satisfied they were with how their most recent emergency was handled by circling the appropriate number on a 7-point scale. (The section of the questionnaire asking about urgent health problems and health services used can be found in the Supplemental Appendix, available online-only at http://www.annfammed.org/cgi/content/full/5/419/DC1).

The outcome was mean satisfaction on the 7-point scale. We analyzed the data using analysis of covariance (ANCOVA) and including age (as a continuous variable), sex, highest level of completed education (in school, elementary, some or completed high school, some or completed college or some university, completed university), annual household income (<$30,000, $30,000-$44,999, $45,000-$79,999, $80,000+), self-reported health status (poor, fair, good, very good, excellent) in the model. To account for clustering of patients within physicians, we adjusted the omnibus F test by dividing by the variance inflation factor calculated using the intraclass correlation coefficient for the patient satisfaction outcome.\textsuperscript{18} We present the $\eta^2$ statistic, the proportion of total variance attributed to the model variables, and calculated post-hoc pairwise comparisons of mean scores at different sites of care. The Bonferroni corrected $P$ value of .004 (0.05/13) was used for these comparisons; otherwise, the criterion of statistical significance was set at $\alpha = .05$. Hedges' $g$ test\textsuperscript{19} was used to assess the effect size of the difference between unadjusted means, calculated using Effect Size Generator, version 2.3.\textsuperscript{20} Analyses were conducted using SPSS version 13.0 (SPSS Inc, Chicago, Ill).

The research ethics boards of Hamilton Health Sciences and the Thunder Bay Regional Health Sciences Center approved the study.

**RESULTS**

A total of 9,612 questionnaires were mailed, with 215 patients subsequently excluded because a current correct address could not be found (n = 210) or because they were deceased (n = 5). Of the remaining 9,397, 62.6% (5,884) responded. The median response rate per physician was 62.2% (interquartile range 7.7%). The mean age of respondents was 43.8 years (SD 22.2) compared with 36.3 years (SD 20.3) among nonrespondents ($P < .001$). Respondents were 60.3% female (3,549 of 5,884) compared with 57.5% (2,021 of 3,513) of nonrespondents who were female ($P = .008$).

Only 1.6% (97 of 5,884) of respondents indicated that they were not a patient of the physician whose list we sampled or did not answer the question and were thus excluded from the analysis. Sixty-five of the eligible 5,787 respondents did not answer the question about the occurrence of an urgent health problem. Of those who responded, the prevalence of a self-reported urgent health problem in the past 6 months was 23.4% (1,342 of 5,722) (95% CI, 22.4%-24.6%). Among these 1,342 respondents, 97 (7.2%) did not provide information on services used, and a further 18 did not respond to the satisfaction question, leaving 1,227 respondents for analysis. Most respondents (89.6%, 1,100 of 1,227) used 1 service, and 10.4% (127 of 1,227) used 2 or more. Table 1 displays the characteristics of patients who used the different services.

Table 2 displays the mean satisfaction levels for each service, adjusted for the demographic and self-reported health variables, and the 95% confidence intervals around the mean. The highest satisfaction was reported among patients visiting or speaking to their family physician, followed in descending order by patients who used the after-hours clinic, the emergency department, a telephone health advisory service, a walk-in clinic, and more than 1 service, adjusted for the demographic and self-reported health variables, and the 95% confidence intervals.

Adjusted mean satisfaction among patients visiting or speaking to the family physician was significantly higher than satisfaction among patients who used the emergency department, a walk-in clinic, a telephone health advisory service, or more than 1 service (omnibus ANCOVA $F_{5,1073} = 7.7, P < .001$; $\eta^2 = .05$). Older age and better health status were significant predictors of higher satisfaction. Adjusted mean satisfaction among patients visiting or speaking to the family physician was significantly higher than satisfaction among patients who used the emergency department, a walk-in clinic, a telephone health advisory service, or more than 1 service, but it was not significantly higher than among patients who used their practice's after-hours clinic. Patients who visited their own practice's after-hours clinic were significantly more satisfied than patients who visited a walk-in clinic or used 2 or more services.

A score on the Hedges' $g$ test of less than 0.20 indicates a small effect size; 0.20 to 0.50 indicates a moderate effect size, and 0.50 to 0.80 indicates a large effect size.\textsuperscript{18} Moderate to large effect sizes were found for comparisons of satisfaction for patients visiting
URGENT HEALTH CARE SATISFACTION

the family physician vs the emergency department ($g = 0.52$), a walk-in clinic ($g = 0.69$), using a telephone health advisory service ($g = 0.65$), or using 2 or more services ($g = 0.70$). Effects sizes for satisfaction among patients using the after-hours clinic vs a walk-in clinic, a telephone health advisory service, or more than 1 service were moderate ($g = 0.49-0.50$), and effect sizes for patients using the emergency department vs the after-hours clinic, walk-in clinic, a telephone health advisory service, or more than 1 service were low to moderate ($g = 0.20-0.23$).

Table 2. Adjusted Mean Satification Score for Care for Most Recent Urgent Health Problem Among 1,227 Patients Who Used Different Services

<table>
<thead>
<tr>
<th>Site of Service*</th>
<th>Adjusted Score†</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family physician</td>
<td>6.1 (0.14)</td>
<td>5.8-6.4</td>
</tr>
<tr>
<td>After-hours clinic</td>
<td>5.6 (0.20)</td>
<td>5.2-6.0</td>
</tr>
<tr>
<td>Emergency department</td>
<td>5.3 (0.08)</td>
<td>5.2-5.5</td>
</tr>
<tr>
<td>Telephone health advisory service</td>
<td>4.8 (0.32)</td>
<td>4.2-5.5</td>
</tr>
<tr>
<td>Walk-in clinic</td>
<td>4.7 (0.21)</td>
<td>4.3-5.1</td>
</tr>
<tr>
<td>More than 1 service</td>
<td>4.7 (0.17)</td>
<td>4.4-5.0</td>
</tr>
</tbody>
</table>

Note: Scores are based on a Likert scale in which 7 = very satisfied, 1 = very dissatisfied. SE = standard error; CI = confidence interval.

* For site of care, $F_{(5,1,073)} = 7.67; P < .001$; $\eta^2 = .05$.
† Adjusted for age, sex, self-reported health status, education, and income.
‡ Significantly ($P < .004$) higher satisfaction compared with patients who used emergency department, walk-in clinic, telephone health advisory service, or more than 1 service.
§ Statistically significantly ($P < .004$) higher satisfaction compared with patients who used a walk-in clinic or more than 1 service.
†† Statistically significantly ($P < .004$) higher satisfaction compared with patients who used more than 1 service.

DISCUSSION

This study found that patients reporting an urgent health problem who visited their family physician or an after-hours clinic with which their physician was affiliated were most satisfied, and patients who visited their family physician were significantly more satisfied than patients who obtained care at the emergency department or a walk-in clinic, or who used a telephone health advisory service.

Patient satisfaction is influenced to a large extent by expectations. Patients who could not access their own family physician and who had lower expectations of walk-in clinic or emergency department services may account for the lower satisfaction at these sites. Continuity of care, timeliness of care provision, and having expectations met by the family physician have been associated with satisfaction in previous studies. In studies of after-hours care from general practice cooperatives with deputizing services (ie, on-call replacement physicians) and telephone advice, satisfaction was lower for patients who did not receive care from a clinician or in the location that was desired, and satisfaction was lower for deputizing services compared with the usual general practitioners.21-24 Some authors suggest this outcome may be due in part to longer wait times for deputizing services.23 In previous studies, physician continuity appeared to have inconsistent effects on patient satisfaction. In a study
of primary care patients consulting their family physician in the United States and the United Kingdom, satisfaction was highest for patients consulting their own doctor if they reported high trust in their doctors.25 One study has found that continuity was important for predicting satisfaction only for patients with a high volume of visits, whereas some patients preferred a shorter wait time regardless of physician.26

Patients may be more satisfied with waiting times in the family physician’s office than in other sites, such as walk-in clinics or emergency departments.27 Although we did not have information on the length of time spent waiting, long wait times experienced in the emergency department may partially explain patients’ lower satisfaction scores, especially if patients came to the emergency department with less-urgent problems and were triaged to a lower priority of care. In a Canadian study, patients visiting for a defined set of non–life-threatening acute conditions were more satisfied with walk-in clinics than emergency departments.27 In the present study, satisfaction was higher for the emergency department than walk-in clinics, although not significantly. This result may be related in part to satisfaction with shorter wait times. The present study included any patients regardless of how acute the problem, and patients with serious problems may have been treated very quickly in the emergency department.

In this study, there was no difference in satisfaction between patients receiving care from their family physician and those receiving care in their physician’s group after-hours clinic, and satisfaction was higher for both of these services than for walk-in clinics, suggesting that providing patients with after-hours access to such care may be advantageous. A previous study has found that satisfaction with walk-in clinics and family physicians was similar with respect to patient-centered communication and physician’s attitude.27 In the current study, the chance of seeing one’s own physician on-call at the after-hours clinic and the continuity of information between the after-hours clinic visit and the patient’s family physician may have contributed to a perception among patients of improved continuity and coordination, leading to higher satisfaction when compared with walk-in clinics.

Older age and better self-reported health status were associated with higher satisfaction independent of the site in which care was received. Older patients may have experienced more serious health problems and appreciated more the care they received, they may have had lower expectations, or they may have received quicker access to care. Other studies have also reported older patients to be more satisfied with primary care28 and after-hours care27 than younger patients.

Satisfaction with telephone health advisory services was lower than for nearly all other services and was significantly lower than for patients receiving care from the family physician. A previous study of after-hours telephone health advisory service in Ontario found that most callers were advised to seek additional care or advice from a health care clinician.29 In this study, if patients’ concerns were not completely addressed by the telephone advisory service, being required to seek additional care may explain their lower satisfaction.

There are several limitations in this study. The time lag of up to 6 months between the urgent problem and the questionnaire administration is a limitation and may have affected reliability of the responses, because patients’ perceptions of their experiences may have changed compared with their perceptions immediately after seeking care. In addition, we did not have information on the nature or severity of the problem for which patients sought care, which may have been a potential confounder of the association between site of care chosen and satisfaction with the outcome of care. The proportion of variance explained by the type of service used was very small and suggests other factors contributed to satisfaction. We did not have information about whether patients who used a nurse-staffed telephone health advisory service had subsequent contact with a physician when they were part of a practice model that had physician back-up to the telephone service, and satisfaction may have been different for telephone advice alone vs contact with the on-call physician. Our questionnaire contained only 1 question on satisfaction and did not address the various domains that have been incorporated into other surveys, such as satisfaction with access, communication, physician’s attitude, and outcomes of care.21,27,28 Overall satisfaction, however, has been shown to have a moderate to high correlation with other related concepts of care, such as communication, trust, technical care, and interpersonal skills of the physician.30

In future research it would be helpful to examine patient satisfaction for urgent health problems in other geographic areas and different primary care systems. Future research could benefit from a more comprehensive satisfaction instrument that assesses satisfaction with wait times, communication with and attitude of the physician, and satisfaction with the outcome of care in a study that accounts for level of care expectations and the nature and severity of the problem. Such information could also be used to inform quality indicators. In settings with relatively new nurse-staffed telephone health advisory systems, it would be important to evaluate the use of and satisfaction with these services in more detail.

The new models of primary care in Ontario and
in many other provinces and countries emphasize improved access and continuity for patients. Satisfaction may be one important factor in determining what services patients choose for urgent unscheduled encounters with the health care system. The finding that patients are most satisfied receiving care for a self-defined urgent health problem from their own physician or an after-hours clinic staffed in part by their own physician supports increasing financial and human resources to enhanced access to practice-based primary care services.

To read or post commentaries in response to this article, see it online at http://www.annfammed.org/cgi/content/full/5/5/419.

Key words: Patient satisfaction; family practice; emergency service, hospital; walk-in clinics; ambulatory care facilities; telephone triage; urgent care; after-hours care

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Disclaimer: The views expressed in this paper are those of the authors and do not reflect the views of the Ontario Ministry of Health and Long-Term Care.

References

8. Vertesi L. Does the Canadian Emergency Department Triage and Acuity Scale identify non-urgent patients who can be triaged away from the emergency department? CJEM. 2004;6(5):337-342.
Assessing Risk for Development of Diabetes in Young Adults

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ABSTRACT

PURPOSE The prevalence of diabetes is increasing to epidemic levels. A multivariable risk score for the development of diabetes has been shown to be predictive for middle-aged adults; however, it is unclear how well it performs in a younger adult population. The purpose of this study was to evaluate a preexisting multivariable risk score for the development of diabetes in a young adult cohort.

METHODS We analyzed the Coronary Artery Risk Development in Young Adults (CARDIA), a population-based observational study of participants aged 18 to 30 years recruited in 1985-1986. We observed individuals without diabetes at baseline for 10 years for the development of diabetes (n = 2,543). We computed receiver operating characteristic (ROC) curves for a diabetes risk score composed of the following 6 variables: elevated blood pressure, low high-density lipoprotein cholesterol levels, high triglyceride levels, body mass index, large waist circumference, and hyperglycemia.

RESULTS The area under the ROC curve was .70 in this population, which was less than the .78 previously found among middle-aged adults. BMI alone (.67) was not significantly different from the risk score. Blacks (.72; 95% CI, .69-.74) and whites (.68; 95% CI, .66-.71) do not significantly differ in the area under the ROC curve for the risk score; however, the area under the ROC curve for BMI is significantly larger for blacks (.69; 95% CI, .66-.72) than for whites (.63; 95% CI, .60-.65).

CONCLUSION An established risk score for the development of diabetes among middle-aged persons has limited utility in a younger population. Future research needs to focus on identifying novel factors that may improve the risk stratification for diabetes development among young adults.


INTRODUCTION

Considerable evidence has been presented on the increased prevalence of diabetes in the United States.\(^1\) This prevalence has become so large that diabetes has been termed an epidemic.\(^1,2\) In particular, diabetes is increasingly diagnosed among adolescents and younger adults.\(^3,4\) One factor thought to be driving the diabetes epidemic is the increase in obesity.\(^1,7\)

Prediction of chronic conditions that have a definable onset in adults can help to guide interventions and health policy development. Prediction is an important issue, given that diabetes leads to considerable morbidity and mortality, which can be mitigated through early recognition and treatment.\(^8\) Major risk factors for diabetes have been identified and are currently used by the American Diabetes Association to guide screening strategies. Risk scores for diabetes fall into 2 primary categories that are conceptually distinct. Although risk scores are usually thought to quantify an individual's risk of developing disease, as with the Framingham Risk Score for coronary heart disease, most self-identified diabetes risk scores do not assess the risk of developing disease; rather, they assess the likeli-
hood of having undiagnosed diabetes.\textsuperscript{9-14} There are few measures that assess the risk of developing diabetes.\textsuperscript{15,16}

Some risk scores for the likelihood of having undiagnosed diabetes have been tested in populations other than the ones in which they were created and have unfortunately not worked as well.\textsuperscript{17,18} Considering the importance of identifying individuals at risk for developing diabetes, a strategy for assessing risk of developing diabetes in young adults has many benefits, including targeted interventions for young adults at high risk. Thus, the purpose of this study was to evaluate how well a risk score for developing diabetes that was created with a middle-aged population performs in a cohort of young adults.

**METHODS**

This study is based on an analysis of the Coronary Artery Risk Development in Young Adults (CARDIA), a population-based observational study of participants aged 18 to 30 years recruited in 1985-1986. Participants were recruited in 4 communities: Birmingham, Alabama; Chicago, Illinois; Minneapolis, Minnesota; and Oakland, California. Recruitment was stratified by race (black and white), age (18 to 24 years, and 25 to 30 years), and education (less than high school, and high school or more). Second (1987-1988), third (1990-1991), fourth (1992-1993), fifth (1995-1996), and sixth examinations (2000-2001) have been completed in the cohort. The public use data set used for this study, however, only includes information from the first 5 examinations.

For the progression to diabetes analyses, all individuals had no indication of diabetes at baseline. This cohort was comprised of 2,543 persons. A total of 100 persons out of 2,543 developed diabetes within the 10 years.

**Diabetes**

Diabetes was defined by self-report in response to the question, “Has a doctor or nurse ever said you had diabetes (high sugar in blood or urine)?”\textsuperscript{7} and by a fasting plasma glucose of ≥126 mg/dL. Although this biomarker definition deviates from the definition in place at baseline (≥140 mg/dL), we believed that it was important to use a current definition of diabetes, whether diagnosed or not. This definition is also consistent with the diabetes risk score used in this study.\textsuperscript{15} Development of diabetes was defined as having diabetes at year 10 (examination 5).

**Diabetes Risk Score**

The risk score used in this study predicts the development of diabetes, not the risk of having undiagnosed diabetes.\textsuperscript{15} It was created from an analysis of individu-
RISK OF DIABETES IN YOUNG ADULTS

Table 1 displays the characteristics of the cohort. Only 2.1% of this young adult cohort was classified at baseline as being at high risk for developing diabetes, whereas 3.9% developed diabetes within 10 years. Further, 32.9% of the cohort was overweight or obese at baseline (BMI ≥25). The proportion of individuals with a family history of diabetes had a moderate increase when the definition of family history was changed from parents to parents and siblings.

The area under the ROC curve for the diabetes risk score in this young adult cohort is not optimal at .70 compared with .78 found in the middle-aged cohort in the ARIC study (Table 2). A diabetes risk score of 4 or greater had a sensitivity of 15.0% and a specificity of 98.4% in the CARDIA participants.

The area under the ROC curve does not increase significantly when family history is added to the diabetes risk score. Moreover, the 3-category BMI variable is not significantly different from the multivariable diabetes risk score in the area under the ROC curve, nor is BMI plus family history of diabetes significantly better than BMI alone (P = .08).

Table 3 shows the analyses within racial groups. Blacks (.72; 95% CI, .69-.74) and whites (.68; 95% CI, .66-.71) do not significantly differ in the area under the ROC curve for the risk score, as indicated by the overlapping 95% confidence intervals. The area under the ROC curve for BMI is significantly larger for blacks (.69; 95% CI, .66-.72) than for whites (.63; 95% CI, .60-.65). Similarly, the area under the ROC curve for BMI plus family history is significantly larger for blacks (.73; 95% CI, .70-.76) than for whites (.64; 95% CI, .61-.66).

DISCUSSION

As the prevalence of diabetes rises, and more young adults and adolescents develop diabetes, it is crucial from a clinical and public health perspective to be able to identify high-risk populations. The findings of this study indicate that a risk score for the development of diabetes created from a middle-aged population is a less successful predictor of the development of diabetes in a younger population.

We chose to assess the diabetes risk score developed in the ARIC cohort because it is one of the few measures designed to assess the risk of developing diabetes rather than the likelihood of having undiagnosed diabetes (e.g., Cambridge Risk Score). An alternate measure to the ARIC diabetes risk score was considered for evaluation, but it included in the model “history of high blood glucose,” which was defined as “Have you ever been told by a health-care professional that you have diabetes or latent diabetes?” Including

Table 1. Characteristics of the Study Cohort

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development of diabetes, %</td>
<td>3.9</td>
</tr>
<tr>
<td>Female, %</td>
<td>55.7</td>
</tr>
<tr>
<td>Black, %</td>
<td>41.2</td>
</tr>
<tr>
<td>Mean age ± SD, y</td>
<td>25.0 ± 3.6</td>
</tr>
<tr>
<td>ARIC diabetes risk score ≥4, %</td>
<td>2.1</td>
</tr>
<tr>
<td>Body mass index, kg/m²</td>
<td></td>
</tr>
<tr>
<td>&lt;25, %</td>
<td>67.0</td>
</tr>
<tr>
<td>25-29.99, %</td>
<td>22.6</td>
</tr>
<tr>
<td>&gt;30, %</td>
<td>10.3</td>
</tr>
<tr>
<td>Family history of diabetes</td>
<td></td>
</tr>
<tr>
<td>Parents, %</td>
<td>13.6</td>
</tr>
<tr>
<td>Siblings and parents, %</td>
<td>14.4</td>
</tr>
</tbody>
</table>

ARIC = Atherosclerosis Risk in Communities.

Table 2. Area Under ROC Curve Using a Diabetes Risk Score, Family History of Diabetes, and BMI to Predict Development of Diabetes Within 10 Years

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Area Under ROC Curve</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARIC diabetes risk score</td>
<td>.70</td>
</tr>
<tr>
<td>Family history of diabetes</td>
<td></td>
</tr>
<tr>
<td>Parents</td>
<td>.57*</td>
</tr>
<tr>
<td>Siblings and parents</td>
<td>.58*</td>
</tr>
<tr>
<td>BMI</td>
<td></td>
</tr>
<tr>
<td>Continuous</td>
<td>.65†</td>
</tr>
<tr>
<td>3 categories</td>
<td>.67†</td>
</tr>
<tr>
<td>3 categories plus family history of diabetes (siblings and parents)</td>
<td>.69†</td>
</tr>
</tbody>
</table>

ARIC = Atherosclerosis Risk in Communities; BMI = body mass index; ROC = receiver operating characteristic.

* Area under the curve significantly different from that of diabetes risk score.
† Not significantly different.

Table 3. Area Under ROC Curve to Predict Development of Diabetes Within Groups of White and Black Participants

<table>
<thead>
<tr>
<th>Predictors</th>
<th>White</th>
<th>Black</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARIC diabetes risk score</td>
<td>.68</td>
<td>.72</td>
</tr>
<tr>
<td>BMI, 3 categories</td>
<td>.63*</td>
<td>.69*</td>
</tr>
<tr>
<td>BMI, 3 categories plus family history of diabetes (siblings and parents)</td>
<td>.64*</td>
<td>.73*</td>
</tr>
</tbody>
</table>

ARIC = Atherosclerosis Risk in Communities; BMI = body mass index; ROC = receiver operating characteristic.

* Not significantly different.
a previous diagnosis of diabetes as a predictor of the development of diabetes did not seem to be a logical strategy for identifying individuals at high risk for developing diabetes. Thus, we believed that the Lindstrom score was not as useful for evaluation as the ARIC diabetes risk score.

Multivariable risk scores that are diagnostically helpful should be clinically less burdensome in the age of personal digital assistants and electronic health records and should therefore allow the clinician to go beyond assessing risk factors singly for development of disease. In this case, the multivariable diabetes risk score does not predict the development of diabetes any better than simply using the BMI. Because the diabetes risk score includes BMI in addition to 5 other variables, it would be expected to perform better than BMI alone. With an area under the ROC curve of .67, however, BMI as a predictor of the development of diabetes in young adults is not optimal. Further, the addition of family history to either BMI or the diabetes risk score did not significantly improve prediction of the development of diabetes. These findings suggest that more work is needed to create an effective strategy for identifying young adults at high risk for developing diabetes.

Recent evidence has suggested that risk assessment strategies may need to differ depending on which racial or ethnic population is being evaluated. The results reported in this study indicate that although the diabetes risk score did not differ significantly between young black and white adults in the prediction of diabetes, BMI and BMI plus family history did differ between the 2 groups: BMI plus family history was a significantly more predictive strategy for identifying risk for the development of diabetes among blacks than among whites. These racial differences in the relationship of BMI and the development of diabetes may be due to the interaction of race and diet, as Pereira et al found that fast-food habits varied by race and sex and were related to insulin resistance in the CARDIA study. This finding indicates the need to be more aware of racial and ethnic differences in diabetes risk and the need to include that awareness in the development of diabetes risk assessment strategies. Further evaluation of the novel factors, including biomarkers, underlying these differences is also necessary.

There are several limitations to this study. First, the biomarker diagnosis of diabetes in the CARDIA data is based on a single fasting glucose test. This strategy, although common in epidemiological studies, could potentially underestimate the prevalence of diabetes associated with isolated postchallenge hyperglycemia, which occurs more commonly in women and lean populations. It could also overestimate diabetes prevalence, because a clinical diagnosis of diabetes in asymptomatic persons requires 2 abnormal fasting glucose levels. Second, racial differences in the predictive utility of the risk assessment strategies suggest that evaluating the risk score and other markers may be enhanced by having a diverse sample of ethnic groups. The CARDIA study is limited to blacks and whites and thus does not allow for evaluation with other racial or ethnic groups. Third, not only is it inherently difficult to improve on conventional risk factors when developing a scoring system as a prognostic tool, as shown by Wang et al and discussed by Ware, it is also difficult to improve on conventional risk factors when developing a prognostic tool. Hence, we compared the ARIC metabolic syndrome (augmented) model with BMI alone and BMI plus family history of diabetes to determine whether multivariate diabetes risk factors performed better than more general risk factors.

In conclusion, an established risk score for the development of diabetes among middle-aged persons had limited utility in a younger population. The diabetes risk score had no advantage compared with BMI alone. Neither BMI nor the risk score, however, had optimal predictive ability, suggesting that future research needs to focus on identifying novel factors that may improve the risk stratification for diabetes development among young adults.

To read or post commentaries in response to this article, see it online at http://www.annfammed.org/cgi/content/full/5/5/425.

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Key words: Diabetes mellitus, type 2; cohort studies; risk factors

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References


Randomized Comparison of 3 Methods to Screen for Domestic Violence in Family Practice

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ABSTRACT

PURPOSE We undertook a study to compare 3 ways of administering brief domestic violence screening questionnaires: self-administered questionnaire, medical staff interview, and physician interview.

METHODS We conducted a randomized trial of 3 screening protocols for domestic violence in 4 urban family medicine practices with mostly minority patients. We randomly assigned 523 female patients, aged 18 years or older and currently involved with a partner, to 1 of 3 screening protocols. Each included 2 brief screening tools: HITS and WAST-Short. Outcome measures were domestic violence disclosure, patient and clinician comfort with the screening, and time spent screening.

RESULTS Overall prevalence of domestic violence was 14%. Most patients (93.4%) and clinicians (84.5%) were comfortable with the screening questions and method of administering them. Average time spent screening was 4.4 minutes. Disclosure rates, patient and clinician comfort with screening, and time spent screening were similar among the 3 protocols. In addition, WAST-Short was validated in this sample of minority women by comparison with HITS and with the 8-item WAST.

CONCLUSIONS Domestic violence is common, and we found that most patients and clinicians are comfortable with domestic violence screening in urban family medicine settings. Patient self-administered domestic violence screening is as effective as clinician interview in terms of disclosure, comfort, and time spent screening.


INTRODUCTION

The prevalence of current victims of domestic violence among patients in primary care settings ranges from 7% to 50%, even though studies show that only 1% to 15% of women in primary care settings were asked about domestic violence by their clinician. Lack of office protocols and limited time are perceived as common barriers by medical clinicians. In one study, battered women perceived clinician reluctance to ask about abuse as a major barrier to their domestic violence disclosure.

Although studies have found that brief screening questionnaires increase identification of domestic violence, research findings are inconsistent on the optimum method of administering screening tests. In a recent randomized study, MacMillan et al found no significant difference in the proportion of patients who disclosed domestic violence using a self-administered questionnaire compared with patients who were interviewed by a clinician; the patients, however, preferred self-administered screening. McFarlane and colleagues found that a medical staff interview identified more abused women than a written history form, whereas another study reported opposite findings.

With few notable exceptions,
previous studies have not examined clinician and patient comfort with different screening protocols. One study of a brief screening tool indicated that 91% of women felt comfortable when screened by their clinicians.10

The purpose of this study was to identify an optimal screening protocol to help overcome barriers to domestic violence screening. We compared the rate of domestic violence disclosure, comfort level with screening, and time spent screening for self-administered, medical staff interview, and physician interview screening protocols.

METHODS

Participants

This randomized trial of 3 domestic violence screening protocols was conducted in 4 urban family medicine practices. The 4 practices have a total of 18 physicians and 27 residents who see approximately 3,500 patients per month total, of which 86% are African-American or Hispanic. The target population was women aged 18 years or older who were currently with a partner.

Procedure

Figure 1 is a flowchart of the study design. At the start of the study, 7 research assistants, all medical staff, and all physicians received 3 hours of training by the investigators in lecture format on screening techniques, the use of the screening questionnaires, assessment of domestic violence victims, interventions, and referral to support agencies.

During June 2004 through March 2005, the research assistants approached and recruited consecutive patients and confirmed their eligibility in private. Screening at each practice site ranged from 2 to 5 months, because some practice sites see more adult female patients and took fewer months to accrue the sample. The research assistants completed the study in one practice before moving on to the next. Randomization of the 3 protocols was conducted before recruitment with research assistants blinded to the method assigned to patients. A block design was not used. If the protocol was to be self-administered, the patient completed the questionnaire herself. When necessary, the research assistant explained the questions to the participant. Patients assigned to be interviewed by medical staff were directed to one of the medical staff, who administered the screening tool, reviewed the results, and intervened if necessary. For patients assigned to be interviewed by a physician, a similar procedure was performed. In all 3 protocols, participants were provided with domestic violence materials by research assistants. The physicians were informed of the written results of screening. Those patients whose screen-
ing test was positive for domestic violence received an intervention by the physicians. The time taken to provide materials on domestic violence was included in the estimate of time for screening, whereas the time taken to intervene with those who disclosed domestic violence was not included.

After the health care visit, the research assistants distributed self-administered questionnaires to the participants in a private room. This postscreening questionnaire sought more details about the domestic violence and assessed comfort level and time spent screening. After patients completed the questionnaire, the women received a stipend of $10 for their participation. At the end of the study, medical staff and physicians completed a self-administered questionnaire on their time spent screening and their overall comfort with screening but not about a specific patient.

Data Collection
Patients were screened for domestic violence using 2 brief screening tools: HITS (hurt-insult-threaten-scream)\textsuperscript{18} and WAST (Woman Abuse Screening Tool)-Short\textsuperscript{16} (Supplemental Appendix at: http://www.annfammed.org/cgi/content/full/5/5/430/DC1). HITS is one of the shortest screening tools, forms an easily remembered acronym, has been tested with diverse populations, and has been tested and used in family medicine practices. Answers were summed to form an interval scale of the total HITS score, which could range from 4 to 20. Using a cutoff score of 10.5, Sherin et al found that HITS accurately classified 91% of nonvictims and 96% of victims.\textsuperscript{18} WAST has a Cronbach’s $\alpha$ of 0.80 and is highly correlated with the Conflict Tactics Scales ($r = 0.85$).\textsuperscript{18,19} WAST-Short consists of 2 items from the 8-item WAST. Women responded to the 2 items with a 3-point response set and met the criteria for domestic violence exposure if they answered “a lot of tension/great difficulty” to either question. The remaining 6 items were included in the postscreening questionnaire to validate results from the domestic violence screening. For the 8-item WAST, answers were summed to form an interval scale, ranging from 3 to 24. The WAST has a reliability of 0.75, and abused women identified by WAST-Short score significantly higher on WAST than women who were not abused.\textsuperscript{10} WAST has been tested in only predominantly white and middle-class populations, however.\textsuperscript{10}

Women who had positive findings on HITS or WAST-Short in the 3 protocols met the criteria for domestic violence exposure.

Data on patient comfort levels with the screening instruments, the screening method, and time spent screening were collected using a patient postscreening questionnaire. Questions addressing comfort with screening were adapted from previous studies,\textsuperscript{10,16} with answers ranging from not at all (1) to very comfortable (4). Patient comfort levels with each item of HITS and WAST were assessed in the postscreening questionnaire (Supplemental Appendix). Answers were summed to form interval scales of the total HITS, WAST, and overall comfort scores. We included a question on how comfortable the patient was with the assigned screening method. A clinician survey assessed the physicians’ and medical staff’s comfort level with the screening tools and the assigned screening protocol. Scales similar to the patient comfort scales were used.

We calculated the sample size based on a previous study by the authors and the literature.\textsuperscript{10,13,19} We expected patient disclosure rates of 6% for the self-administered questionnaire, 16% for the medical staff interview, and 9% for the physician interview. We hypothesized 0.3 differences in comfort level scores (3.0, 3.3, 3.6, respectively, SD = 0.5). Screening for domestic violence with 167 women from each method for a total of 501 provides more than 80% power to detect such differences at $\alpha = .05$ (2-tailed test). Institutional Review Board approval for this study was obtained.

Analysis
Analysis was done using SPSS version 14.0.2 (SPSS, Inc, Chicago, Ill). Outcome measures were domestic violence disclosure, patient or clinician comfort level, and time spent screening. To determine the reliability and validity of HITS and WAST-Short, we calculated Cronbach’s coefficient $\alpha$, correlations of the 2 instruments with WAST, and assessed the relation of domestic violence disclosure by HITS and WAST-Short to WAST scores. Then, $\chi^2$ tests and ANOVA were conducted to compare differences in domestic violence disclosure, patient and clinician comfort levels, and time spent screening among the 3 protocols.

RESULTS
Participants
During the 10 months in the practices, 730 women were eligible to participate in the study. Of these women, 200 refused to participate, and 7 did not complete the questionnaire because of the waiting time for a private room. A total of 523 (72%) eligible patients participated in the study. Institutional Review Board regulations did not allow us to collect demographic data for nonrespondents; however, percentages of African American and Hispanic women in the sample and the 4 practices were similar (84% and 86%, respectively).
Table 1 displays the demographic characteristics of participants. The 3 randomly allocated groups were similar on all but 2 variables. Women interviewed by medical staff were more likely to be employed ($P = .005$), and those who completed self-administered questionnaires had visited the practice more often in the previous year ($P = .005$).

**Disclosure of Domestic Violence**
Table 2 shows no difference in the prevalence of a positive screening result for domestic violence among 3 methods of administering HITS and WAST-Short. Overall, 14.2% of women had positive findings on 1 or both instruments. A higher proportion of women had positive findings with WAST-Short than with HITS (12.5% vs 6.3%, respectively), perhaps because the WAST-Short questions are more general.

**Internal Reliability and Validity of Instruments**
The internal reliability of the short screening instruments was good, and each was highly correlated with the WAST total score. Cronbach’s $\alpha$ was .79 for HITS and .80 for WAST. The correlations of HITS and WAST-Short total scores with WAST total scores were 0.77 ($P < .001$) and 0.81 ($P < .001$), respectively. Those who had positive results on HITS or WAST-Short had WAST total scores that were significantly higher than those who had negative results ($P < .001$ for both instruments). Cronbach’s $\alpha$ was .97 for the patient overall comfort scale and .95 for the clinician overall comfort scale.

**Patient Comfort and Time Spent Screening**
Most patients (93.4%; total $n = 523$) reported being comfortable with the assigned protocol. Comparisons of the mean scores of patient comfort showed no differences in HITS, WAST-Short, and overall comfort among protocols. Women whose screening results were positive for domestic violence and those whose were not were similar in perception of helpfulness of screening and comfort with screening across methods. One exception was that those with positive screening results for domestic violence were slightly less comfortable with medical staff screening ($P = .021$). Time spent screening ranged from 2 to 15 minutes and was similar among the 3 methods.

**Clinician Comfort**
Most clinicians (84.5%; total $n = 33$) were comfortable with the screening methods regardless of whether the clinician interviewed the patient or the questionnaire was self-administered. Comfort levels with each screening protocol were similar for physicians and medical staff across methods. Physicians and medical staff were comfortable with the screening tools (mean score = 3.1), although physicians were slightly more comfortable with WAST-Short compared with the medical staff ($P = .039$). Subgroup analysis indicated that physicians preferred WAST-Short to HITS ($P = .043$), and self-administered questionnaire to medical staff interview ($P = .007$).

**DISCUSSION**
Our findings provide support that rates of domestic violence disclosure are similar with self-administered screening, medical staff interview, and physician interview. The prevalence rate of domestic violence in our study is similar to findings from previous studies.12-14
Overall, 1 in 7 women in intimate relationships had positive findings for domestic violence. Consistent with prior studies, our findings show that patients and clinicians are comfortable with domestic violence screening.\(^{10,13-17}\) Although MacMillan et al found that a face-to-face approach was less preferred by patients,\(^{12}\) we found that patient comfort levels were similar among clinician interviews and self-completed questionnaires. We also found that physicians were comfortable regardless of screening tools and screening methods. This study provides implications for cost savings if self-administered screening tools are used.

This study has some limitations. Provision of a stipend might affect the participant's rating of their comfort with screening. Even so, the stipend did not seem to affect the comparative ratings of the 3 screening protocols. There was no validation of the time spent; however, the reported time is reasonable given the brevity of the questionnaire. Nonparticipants and participants might differ in demographic characteristics and in abuse, which may introduce unknown bias. Our study only screened women patients, because women are 7 to 14 times more likely than men to suffer injuries.\(^{20}\) We did not have physicians and medical staff assess their comfort with screening each patient. Finally, this study was conducted in urban clinical settings with predominantly minority patient populations, indicating that WAST and WAST-Short may be acceptable screening instruments in such settings.

In conclusion, domestic violence is common in urban family medicine settings. Screening patients for domestic violence using a self-administered questionnaire is as effective as clinician screening in terms of disclosure, comfort, and time spent screening. Brief screening tools such as those used in this study can be helpful to busy clinicians, but in practice, clinicians would still need to conduct further assessment to confirm the domestic violence victim's status.

To read or post commentaries in response to this article, see it online at http://www.annfammed.org/cgi/current/full/5/5/430.

**Key words:** Domestic violence/diagnosis; screening

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### Table 2. Patient Disclosure and Patient and Clinician Comfort Level, by Screening Protocol

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total</th>
<th>Self-Report</th>
<th>Medical Staff Interview</th>
<th>Physician Interview</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patients, No.</strong></td>
<td>523</td>
<td>173</td>
<td>169</td>
<td>181</td>
<td></td>
</tr>
<tr>
<td>Patient domestic violence disclosure, %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HITS</td>
<td>6.3</td>
<td>6.4</td>
<td>5.9</td>
<td>6.7</td>
<td>.959</td>
</tr>
<tr>
<td>WAST-Short</td>
<td>12.5</td>
<td>13.3</td>
<td>11.8</td>
<td>12.2</td>
<td>.914</td>
</tr>
<tr>
<td>Overall</td>
<td>14.2</td>
<td>14.5</td>
<td>13.0</td>
<td>15.0</td>
<td>.862</td>
</tr>
<tr>
<td>Patient comfort with screening tools, mean, score*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HITS</td>
<td>3.5</td>
<td>3.5</td>
<td>3.6</td>
<td>3.6</td>
<td>.434</td>
</tr>
<tr>
<td>WAST-Short</td>
<td>3.6</td>
<td>3.5</td>
<td>3.6</td>
<td>3.6</td>
<td>.519</td>
</tr>
<tr>
<td>Overall</td>
<td>3.5</td>
<td>3.5</td>
<td>3.6</td>
<td>3.6</td>
<td>.446</td>
</tr>
<tr>
<td>Patient perception of helpfulness for screening, mean, score†</td>
<td>3.4</td>
<td>3.4</td>
<td>3.5</td>
<td>3.4</td>
<td>.656</td>
</tr>
<tr>
<td>Time spent screening, min</td>
<td>4.4</td>
<td>4.8</td>
<td>4.4</td>
<td>4.0</td>
<td>.100</td>
</tr>
<tr>
<td><strong>Clinicians, No.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinician comfort with screening methods, mean, score*‡</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-administered</td>
<td>3.4</td>
<td>N/A</td>
<td>3.2</td>
<td>3.6</td>
<td>.181</td>
</tr>
<tr>
<td>Medical staff</td>
<td>3.1</td>
<td>N/A</td>
<td>3.1</td>
<td>3.2</td>
<td>.801</td>
</tr>
<tr>
<td>Physician</td>
<td>3.4</td>
<td>N/A</td>
<td>3.4</td>
<td>3.4</td>
<td>.788</td>
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<tr>
<td>Clinician comfort with screening tools, mean, score¶</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HITS</td>
<td>3.1</td>
<td>N/A</td>
<td>2.8</td>
<td>3.2</td>
<td>.184</td>
</tr>
<tr>
<td>WAST-Short</td>
<td>3.3</td>
<td>N/A</td>
<td>3.0</td>
<td>3.5</td>
<td>.039</td>
</tr>
<tr>
<td>Overall</td>
<td>3.1</td>
<td>N/A</td>
<td>2.9</td>
<td>3.3</td>
<td>.100</td>
</tr>
</tbody>
</table>

HITS = hurt, insult, threaten, scream; N/A = not applicable; WAST-Short = 2-items of the Woman Abuse Screening Tool.

* Range: not at all comfortable (1) to very comfortable (4).
† Most patients (93.4%) reported being comfortable with the assigned protocol.
‡ Women who disclosed domestic violence and those who did not were similar in perception of helpfulness for screening and comfort with screening across methods; the only exception was those who disclosed domestic violence were slightly less comfortable with medical staff screening (P = .021).
§ Most clinicians (84.5%) were comfortable with the screening methods.
¶ Subgroup analysis indicated that physicians preferred WAST-Short to HITS (P = .043) and self-administered questionnaire to medical staff interview (P = .007).
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References


Differences Among International Pharyngitis Guidelines: Not Just Academic

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ABSTRACT

PURPOSE Many countries have national guidelines for the treatment of pharyngitis. We wanted to compare the recommendations and the reported evidence in national guidelines for the management of acute sore throat in adults.

METHODS Guidelines were retrieved via MEDLINE and EMBASE and through a Web-based search for guideline development organizations. The content of the recommendations and the underlying evidence were analyzed with qualitative and bibliometric methods.

RESULTS We included 4 North American and 6 European guidelines. Recommendations differ with regard to the use of a rapid antigen test and throat culture and with the indication for antibiotics. The North American, French, and Finnish guidelines consider diagnosis of group A streptococcus essential, and prevention of acute rheumatic fever remains an important reason to prescribe antibiotics. In 4 of the 6 European guidelines, acute sore throat is considered a self-limiting disease and antibiotics are not recommended. The evidence used to underpin these guidelines was different in North America and Europe. North American guidelines cited more North American references than did European guidelines (87.2% vs 48.0%; odds ratio, 4.6-11.9; P < .001).

CONCLUSION Although the evidence for the management of acute sore throat is easily available, national guidelines are different with regard to the choice of evidence and the interpretation for clinical practice. Also a transparent and standardized guideline development method is lacking. These findings are important in the context of appropriate antibiotic use, the problem of growing antimicrobial resistance, and costs for the community.


INTRODUCTION

In many countries, clinical practice guidelines are developed to bridge the gap between research and practice.1 In an era of easy access to international research data, we would expect guideline recommendations on the same clinical topic to be similar.2-4 Several authors, however, have pointed to differences that could be explained by insufficient evidence, different interpretations of the evidence, unsystematic guideline development methods, the influence of professional bodies, patient preferences, cultural and socioeconomic factors, or characteristics of health care systems.5-18 Three studies explored differences of content in relation to differences of the cited scientific evidence supporting the recommendations.7-9 Selective use of evidence can lead to differences in practice recommendations and, consequently, to important disparities in patient care and outcome. The World Health Organization (WHO) and other organizations recommend using a rigorous procedure to ensure that practice guidelines are supported by the best available evidence.19-40 Nineteen key components of guidelines for guidelines are proposed to improve the use of research evidence.

In this study we focus on guidelines for managing acute sore throat, a relatively straightforward condition for which agreement can be antici-
INTERNATIONAL PHARYNGITIS GUIDELINES

The treatment recommendations have public health implications through the use of antibiotics and antibiotic resistance rates. We explore the content of these guidelines and investigate whether potential differences can be explained by variation in the use of scientific evidence. We also evaluate whether the guidelines are in agreement with the WHO recommendations.10-34

METHODS

We performed a Web-based search for organizations that develop guidelines41 on acute sore throat, including the TRIP database, the Cochrane Library, Sumsearch, DARE, Clinical Evidence, EMBASE and MEDLINE (from 1970 to May 2006). We used the MeSH terms “pharyngitis,” “sore throat,” and “practice guidelines.” Systematic reviews and evidence reports without specific practice recommendations were excluded.

The quality of the development method of pharyngitis guidelines was assessed by means of the 19 WHO key components. The recommendations concerning the use of diagnostic tests, treatment (indications for antibiotics, dose, and duration), and criteria for referral were extracted and independently analyzed by 2 authors (M.D.M., J.M.) who have experience in the domain of acute sore throat research.42,43 Discrepancies were resolved through discussion.

We compared the cited references for the recommendations in each guideline. The number of references and the overlap of citations was quantified by calculating the proportion of shared references among guidelines according to the publication dates of the guideline and its references.7 For each reference we determined the study design (meta-analysis, review, randomized controlled trial, other) and the country of origin (North America, Europe, other). Citations (expressed as proportions) were compared using Fisher’s exact test. For statistical analysis we used SPSS 12.0 (SPSS Inc, Chicago, Illinois).

RESULTS
Selection of Guidelines

We identified 14 guidelines and included 10 in our analysis: 6 from Western Europe, 3 from the United States, and 1 from Canada (Table 1).44-53 Four guide-

Table 1. Characteristics of Selected Guidelines on Acute Sore Throat

<table>
<thead>
<tr>
<th>Country (+ code)</th>
<th>Organization Responsible for Guideline Development</th>
<th>Web Sites of the Selected Guidelines</th>
<th>Title in English</th>
<th>Year of Publication (No. of Pages)</th>
<th>Levels of Evidence or Grades of Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Netherlands (NL02)45</td>
<td>Dutch College of General Practitioners, NHG</td>
<td><a href="http://nhg.artsennet.nl">http://nhg.artsennet.nl</a></td>
<td>Standard Acute Sore Throat</td>
<td>1999 (8)</td>
<td>No</td>
</tr>
<tr>
<td>Finland (FI04)</td>
<td>Duodecim</td>
<td><a href="http://www.guideline.gov">http://www.guideline.gov</a></td>
<td>Sore Throat and Tonsillitis</td>
<td>2001 (4)</td>
<td>Yes</td>
</tr>
<tr>
<td>England (E05)</td>
<td>National Health Service, PRODIGY</td>
<td><a href="http://www.prodigy.nhs.uk">www.prodigy.nhs.uk</a></td>
<td>Acute Sore Throat</td>
<td>2004 (9)</td>
<td>Yes</td>
</tr>
<tr>
<td>Scotland (SC06)</td>
<td>Scottish Intercollegiate Guidelines Network (SIGN)</td>
<td><a href="http://www.sign.ac.uk">www.sign.ac.uk</a></td>
<td>Management of Sore Throat and Indications for Tonsillectomy</td>
<td>1999 (24)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada (CA07)</td>
<td>Canadian Medical Association (CMA)</td>
<td><a href="http://www.hith.gov.bc.ca">http://www.hith.gov.bc.ca</a></td>
<td>Diagnosis and Management of Sore Throat</td>
<td>2001 (4)</td>
<td>No</td>
</tr>
<tr>
<td>United States (US08)</td>
<td>Institute for Clinical Systems Improvement (ICSI)</td>
<td><a href="http://www.guideline.gov">www.guideline.gov</a></td>
<td>Acute Pharyngitis</td>
<td>2005 (33)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States (US09)</td>
<td>Infectious Disease Society of America (IDSA)</td>
<td><a href="http://www.guideline.gov">www.guideline.gov</a></td>
<td>Practice Guidelines for the Diagnosis and Management of Group A Streptococcal Pharyngitis</td>
<td>2002 (13)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States (US10)</td>
<td>American College of Physicians &amp; American Society of Internal Medicine-Centers for Disease Control and Prevention (ACP/ASIM)</td>
<td><a href="http://www.guideline.gov">www.guideline.gov</a></td>
<td>Principles of Appropriate Antibiotic Use for Acute Pharyngitis in Adults (+ Background)</td>
<td>2001 (12)</td>
<td>Yes</td>
</tr>
</tbody>
</table>
lines aimed at children only were excluded (United Kingdom, Finland, Michigan, Singapore). All the European guidelines—Belgium (BE01), the Netherlands (NL02), France (FR03), Finland (FI04), England (E05), and Scotland (SC06)—were national guidelines. The Canadian guideline (CA07) was disseminated by the Government of British Columbia. The US guidelines (US08, US09, US10) were identified through the National Guideline Clearinghouse.

Comparison of Recommendations
Points of Agreement
The guidelines are in agreement on the general management of patients with acute sore throat in the following recommendations (Table 2). Group A β-hemolytic streptococcus (GABHS) is accepted as a pathogen for the diagnosis. No internationally accepted clinical scoring system (based on history and physical examination) can sufficiently predict a positive throat culture and guide antibiotic treatment without further investigation. Serologic tests (antistreptolysin O, C-reactive protein, leukocyte count) are not recommended. For the treatment of acute sore throat, narrow-spectrum penicillin is the first choice of antibiotic for the treatment of GABHS. Nearly all agree that antibiotics aim to shorten the clinical evolution, relieve symptoms, and limit the spread of GABHS in the case of high-risk and very ill patients. Antibiotics are not indicated for the prevention of acute glomerulonephritis.

Differences Among Guidelines
For the diagnosis of GABHS, the Centor criteria (fever greater than 38.5°C, absence of cough, tonsillar exudate, and enlarged cervical glands) are used in only 4 guidelines (US08-10, CA07). In the clinical decision model of US10, the rapid antigen test is recommended when 2 or 3 Centor criteria are present. There is no international consensus on the use of the rapid antigen test: it is recommended in the 3 US guidelines and in the French and Finnish guidelines. The others do not recommend its use because of the high prevalence of streptococcal carriers (5% to 20%) and its modest sensitivity (65% to 80%) in primary care (BE01, NL02, SC06). Recommendations on the use of a throat culture also differ. A throat culture is advised in 2 US guidelines. The Canadian and Finnish guidelines. One US guideline recommends a throat culture when the rapid antigen test result is negative for GABHS or when the test is not available. According to the Belgian, Dutch, French, Scottish, English, and 1 North American guideline, the results of a throat culture arrive too late to have a major influence on the clinical course, and a throat culture is therefore not recommended.

For treatment, there is no consensus on the use of antibiotics. Prevention of acute rheumatic fever is a major reason to recommend antibiotics in the North American (CA07, US08, US09, US10), French, and Finnish guidelines. Prevention of local complications (retrotonsillar abscess, sinusitis, otitis media) is another reason to prescribe antibiotics in 2 US guidelines. All guidelines recommend penicillin as first choice; however, French guidelines recommend aminopenicillins and cephalosporins.

Quality of Assessed Guidelines
It was not possible to score the guideline development method according to the 19 WHO key components, because they were seldom explicitly mentioned in the clinical guidelines (priority setting, group composition and consultations, declaration and avoidance of conflicts of interest, group processes, identification of important outcomes, explicit definition of the questions and eligibility criteria, type of study designs for different questions, identification of evidence, synthesis and presentation of evidence; specification and integration of values; making judgments about desirable and undesirable effects; taking account of equity; grading evidence and recommendations; taking account of costs; adaptation, applicability, and transferability of guidelines; structure of reports; methods of peer review; planned methods of dissemination and implementation; and evaluation of the guidelines). It was also impossible to infer these components. We therefore evaluated only 1 key component, ie, identification of evidence.

Comparison of Evidence
The 10 guidelines included a total of 544 references of which 308 were different. Eighty-five references were shared by 2 guidelines. Eight guidelines used the same 2 references to studies on rheumatic fever that were published in the 1950s. Not one of the available meta-analyses (eg, Cochrane review) or landmark studies was used in all the guidelines. Most first authors of the studies cited in the guidelines (63.8%) originated from North America. North American guidelines cited more North American publications than did European guidelines (87.2% vs 48.0%; odds ratio, 4.6-11.9; \( P < .001 \)) (Table 3). In 2 North American guidelines (US08, US09) only 2% of the references referred to non-American studies; no mention was made of the 3 European randomized placebo controlled clinical trials published in the 1990s or the Cochrane review. Only 1 US guideline (US10) referred to 21 European references (of a total of 72 references), including the 3 European trials.
DISCUSSION

We have identified fundamental differences in the recommendations for the management of acute sore throat, in particular among guidelines from North America, France, and Finland on the one hand, and from Belgium, The Netherlands, England, and Scotland on the other. Recommendations differ with regard to the use of a rapid antigen test or throat culture and the indication for antibiotics. North American, French, and Finnish guidelines consider diagnosis of GABHS necessary, and prevention of acute rheumatic fever remains an important reason to recommend antibiotics. In 4 of the 6 European guidelines, acute sore throat is considered a self-limiting disease, and antibiotics are not recommended. The evidence used to underpin the guidelines was different in North America and Europe. Our bibliographic analysis shows that North American guidelines mainly rely on publications from authors of the same region.

To our knowledge, this study is the first that simultaneously compares the clinical content of the recommendations and the evidence of guidelines on acute sore throat. Although many national sore throat guidelines are easily available on the Internet, not all existing guidelines could be identified through the indexed literature or the Internet. Consequently, a potential limitation of our study is that we included only a selection of all national guidelines and omitted regional or local guidelines. Also, the effect of guidelines on public health in specific regions still needs to be studied. Even a well-constructed guideline is a hypothesis that needs to be tested unless it has been based on the results of practice-based effectiveness trials.

Explaining Differences in Recommendations

The North American, French, and Finnish guidelines recommend prescribing antibiotics to prevent acute rheumatic fever if streptococcal pharyngitis is suspected. This recommendation is most likely based on
the findings of the Fort Warren studies in the United States in the 1950s. They found a 0.3% to 3% reduction of the incidence of acute rheumatic fever if streptococcal angina was treated with parenteral penicillin. These findings, however, have never been confirmed in other trials with penicillin, nor have they been confirmed in consecutive prospective studies. Almost a half-century ago, an editorial claimed:

The statement that 3% of such streptococcal infections will be followed by ARF [acute rheumatic fever] rests mainly on the extensive work at Fort Warren, and it is not at all certain that conditions reflect these in general practice. There can therefore be no hard and fast rule that 3% of streptococcal infections are followed by ARF.

By the 1980s acute rheumatic fever was considered a vanishing disease that had disappeared in the Western world. Some local revivals of acute rheumatic fever were registered in the United States (N = 164) and in Italy (N = 21), but closer analysis suggested that antibiotics did not play an important role. The morbidity and mortality rates for acute rheumatic fever in Western countries had clearly been declining before the use of antibiotics in the 1950s, and an effect of antibiotic use could not be shown.

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Table 3. Type of Studies and European or American Articles Cited in the 10 Guidelines on Acute Sore Throat

<table>
<thead>
<tr>
<th>Type of Study</th>
<th>BE01</th>
<th>NL02</th>
<th>FR03</th>
<th>FI04</th>
<th>E05</th>
<th>SC06</th>
<th>CA07</th>
<th>US08</th>
<th>US09</th>
<th>US10</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>Cochrane, No.</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>3</td>
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<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>9</td>
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<tr>
<td>Other systematic reviews, No.</td>
<td>9</td>
<td>6</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>34</td>
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<tr>
<td>Randomized controlled trial, No.</td>
<td>23</td>
<td>20</td>
<td>26</td>
<td>1</td>
<td>0</td>
<td>22</td>
<td>1</td>
<td>7</td>
<td>26</td>
<td>17</td>
<td>143</td>
</tr>
<tr>
<td>Guidelines, No.</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>3</td>
<td>29</td>
</tr>
<tr>
<td>Overview/others</td>
<td>43</td>
<td>54</td>
<td>35</td>
<td>0</td>
<td>5</td>
<td>44</td>
<td>9</td>
<td>26</td>
<td>63</td>
<td>50</td>
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</tr>
<tr>
<td>Total cited, No.</td>
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<td>85</td>
<td>69</td>
<td>5</td>
<td>16</td>
<td>73</td>
<td>12</td>
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<td>72</td>
<td>544</td>
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<tr>
<td>European, No. (%)</td>
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<td>46</td>
<td>27</td>
<td>1</td>
<td>13</td>
<td>31</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>21</td>
<td>178</td>
</tr>
<tr>
<td>American, No. (%)</td>
<td>40</td>
<td>36</td>
<td>39</td>
<td>1</td>
<td>2</td>
<td>38</td>
<td>11</td>
<td>38</td>
<td>92</td>
<td>50</td>
<td>347</td>
</tr>
<tr>
<td>Other, No. (%)</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>19</td>
</tr>
</tbody>
</table>

important differences of evidence

Guidelines also differ with regard to the use of diagnostic tests. Those promoting outpatient tests, either a rapid antigen test or a throat culture (FR03, FI04, CA07, US08-10), recommend penicillin to treat GABHS. Others (BE01, NL02, E05, SC06) discourage diagnostic testing, and reserve antibiotics for high-risk patients only.

**Important Differences of Evidence**

Two North American (US08, US09) and the Canadian guidelines do not refer to relevant European trials. Both North American guidelines do not cite the Cochrane review (Table 3). Other authors have mentioned that only a few guidelines use formal, systematic methods to combine scientific data. Also, Cochrane reviews are not always used even though they may be among the most relevant sources of evidence. It was not possible to assess the methods used by guideline developers to select scientific evidence supporting the guidelines.

Perhaps the lack of European trials in most North American guidelines is caused by selection bias. A recent study found that open review of abstracts (when authors’ names and institutions are included) favors authors from the United States or from English-speaking countries outside the United States and from prestigious academic institutions. This finding cannot explain why the Cochrane review was not included, however.

We found that evidence is not interpreted in the same way, perhaps because North American guidelines are often developed by (ear, nose, and throat) specialists, whereas the first authors of the Belgian, Dutch, English, and Scottish guidelines are family physicians. Finally, although we have identified fundamental differences between most North American and European guidelines, 2 European guidelines, the French and Finnish, comply
with the American guidelines. The French guideline does not refer to the Cochrane review, whereas the Finnish guideline mentions it as 1 of its 5 references. As a result, in Europe the different management recommendations are also a topic for further research.81

Differences among guidelines are not merely academic; they have important consequences for daily practice.82 A patient consulting a family physician for acute sore throat will be managed differently according to the country. In France, North America, or Finland, a diagnostic test will be performed, and the treatment will depend on its result. In England, Scotland, Belgium, or the Netherlands, physicians will not use a diagnostic test, and the decision to prescribe penicillin will depend mainly on the patient’s illness severity. Both approaches are based on scientific evidence. The differences seem to be related to selection or interpretation of the available studies. More uniform development methods could lead to more uniform guidelines, and when implemented, to more uniform practice. Our findings support the need for a transparent development procedure as recommended by WHO. The next step would be to convene guideline developers from various countries and learn more about how they weigh the evidence and how they formulate conclusions.

National guidelines on acute sore throat promote different clinical approaches, recommend different treatments, and cite different evidence. There is no evidence that regional variation is appropriate. Introduction of an explicit guideline development method for both European and North American guidelines may lead to more uniformity in the diagnosis and management of acute sore throat.

To read or post commentaries in response to this article, see it online at http://www.anfmammed.org/cgi/current/full/5/5/F436.

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References


Race and Ethnicity in Trials of Antihypertensive Therapy to Prevent Cardiovascular Outcomes: A Systematic Review

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ABSTRACT

PURPOSE We wanted to systematically review (1) the participation of racial and ethnic minorities in clinical trials of antihypertensive drug therapy and (2) racial differences in the efficacy of these therapies for the prevention of cardiovascular outcomes.

METHODS MEDLINE, EMBASE, LILACS, African Index Medicus, and the Cochrane Library were searched from their inception to December 2005 for randomized controlled trials testing the efficacy of antihypertensive drug therapy in preventing myocardial infarction, stroke, revascularization, or cardiovascular death. MEDLINE was also searched from 2005 through 2006. The 2 authors independently assessed studies for inclusion and quality.

RESULTS Twenty-eight studies met inclusion criteria. Eight trials reported results by racial subgroup. Trials with black and Hispanic participants (ALLHAT, INVEST, VALUE) found similar primary outcomes, but ALLHAT found a greater magnitude of benefit for blacks on diuretic therapy compared with nonblacks. One trial (PROGRESS) compared Asians with non-Asians, reporting that angiotensin-converting enzyme inhibitors (vs placebo) were equally effective for preventing stroke in both groups. In the LIFE trial, post hoc analyses showed different outcomes for blacks and nonblacks, raising questions about the usefulness of angiotensin-receptor blockers as first-line antihypertensive agents in blacks. In 3 studies conducted exclusively in Asians (JMIG-B, FEVER, NICS-EH), calcium channel blockers were effective in preventing cardiovascular outcomes. No trials described cardiovascular outcomes in Native Americans.

CONCLUSIONS Five trials made interethnic group comparisons; 4 had similar primary outcomes for ethnic minorities and whites. Increased minority participation in future studies is needed to determine optimal prevention therapies, especially in outcome-driven trials comparing multidrug antihypertensive treatment regimens.


INTRODUCTION

The high prevalence of hypertension in minority communities is a major contributor to the disproportionate degree of premature cardiovascular mortality (cardiovascular death when younger than 65 years) observed in Asian/Pacific Islanders, blacks, Hispanics, and Native Americans.¹ There is consensus that lowering blood pressure confers reductions in cardiovascular morbidity and mortality in all hypertensive populations, and the current Joint National Committee VII guidelines recommend diuretics as first-line antihypertensive agents regardless of race.² Questions arise, however, when selecting antihypertensive regimens for the many minority patients who require multiple classes of medication to achieve adequate blood pressure control. Currently it is unclear how dif-
ferent antihypertensive therapies should be prioritized to enhance prevention of cardiovascular outcomes in minority populations.

Prevention of cardiovascular morbidity and mortality outcomes in minorities is a salient issue, as several minority groups have a higher prevalence of hypertension and cardiovascular morbidity than whites. Blacks suffer earlier onset, greater severity, and more end-organ damage as a result of hypertension than whites, contributing to a twofold higher rate of stroke and 50% higher mortality from heart disease. Hispanics have a similar prevalence of hypertension but poorer blood pressure control and have not shared the declines in rates of stage 2 hypertension (≥160/100 mm Hg) seen in whites during the past decade.

Racial or ethnic differences in response to antihypertensive therapies may contribute to the disparities observed in those with hypertension and cardiovascular disease. Identifying population differences in outcomes of hypertension clinical trials may help address disparities and provide valuable clues for future pharmacogenomic or mechanistic research. Doing so, however, would require sufficient participation of minorities to allow for race- or ethnicity-based comparisons of a therapy's efficacy. It is unclear whether minorities have participated in outcomes-based clinical trials at a level that allows for conclusions to be made about specific racial groups. We therefore conducted a systematic review of the literature with 2 aims. First, we quantified the number and proportion of Asians, blacks, Hispanics, and Native Americans participating in randomized, controlled trials of antihypertensive drug therapy to prevent cardiovascular disease. Second, we critically appraised these trials and summarized racial and ethnic differences in the efficacy of antihypertensive therapies for the prevention of cardiovascular outcomes.

**METHODS**

We searched the literature for published reports of randomized clinical drug trials that tested the effect of antihypertensive therapy—diuretics, β-blockers, α-blockers, calcium channel blockers, angiotensin-converting enzyme (ACE) inhibitors, and angiotensin II receptor blockers—on outcomes related to cardiovascular disease morbidity and mortality. The specific criteria for a trial's inclusion in our review were prespecified as follows: (1) primary endpoint related to cardiovascular morbidity and mortality (fatal or nonfatal myocardial infarction, fatal or nonfatal stroke, cardiovascular death, revascularization, or a composite of these endpoints); (2) random allocation of subjects to single-drug therapy vs placebo, single-drug-based combination of drugs vs placebo, or single-drug-based combinations vs other combinations of drugs; (3) double-blind design or prospective, randomized, open-label, blinded endpoint (PROBE) design; and (4) follow-up of at least 1 year. We excluded trials that examined only surrogate endpoints for cardiovascular disease (such as blood pressure lowering), studies with primary outcomes other than cardiovascular disease, and studies that excluded hypertensive subjects.

To identify relevant trials, we searched MEDLINE, EMBASE, African Index Medicus, LILACS (Literatura Latino-America y del Caribe en Ciencias de la Salud), and the Cochrane Clinical Trials Database from their inception to December 2005. We also searched MEDLINE from 2005 through 2006. We did not restrict our search to specific languages.

We applied 3 electronic search strategies. The first strategy utilized terms published by the Cochrane Collaboration Hypertension Group and restricted to the Major Subject Heading (MeSH) heading “treatment outcome.” The second strategy included the term “hypertension” combined with terms for continental ancestry groups (eg, African Continental Ancestry Group) and with specific terms for US racial ethnic minority groups (eg, African Americans). The final strategy utilized the MeSH headings “cardiovascular disease,” “myocardial infarction,” or “cerebrovascular disease,” with ‘prevention and control.’ We supplemented our search of electronic databases by hand, searching other systematic reviews and national practice guidelines and by speaking with experts.

Each trial's study design, population characteristics, outcomes, and subgroup analyses were assessed independently by the 2 authors. Disagreements over trial eligibility were resolved after discussion between the authors. Eligible trials were assigned a Jadad score from 0 to 5 based on reporting of randomization, blinding, withdrawals, and losses to follow-up. We extracted data on race and ethnicity and outcomes for each trial. If no such data were published, we contacted principal investigators twice in an attempt to gather missing information. For trials with available subgroup analyses, we recorded race-specific differences in baseline characteristics, blood pressure control, cardiovascular outcomes, and adverse events.

**RESULTS**

Electronic searches yielded 1,849 unique citations with abstracts, from which we selected 56 potential studies. Fifty were identified from MEDLINE; an additional 6 were found through hand searching those studies or other systematic reviews. In the initial evaluation, we excluded 28 studies: 18 for having surrogate outcomes or primary outcomes other than cardiovascular disease morbidity or mortality, and 10 for failing to meet other
inclusion or exclusion criteria (Figure 1). Thus, 28 studies met initial inclusion criteria and received a detailed evaluation.

**Participation of Minority Subgroups**

We reviewed multiple publications from each study including articles on design and rationale, outcomes, and subgroup analyses. Twelve of 28 studies (43%) did not have any retrievable information on subjects’ racial characteristics. Of the 16 studies with racial data, 8 studies did not describe outcomes in minority subgroups. Characteristics of the 8 trials with racial subgroup analyses are summarized in Table 1, including sample size, number of subjects by racial category, study site location, drug intervention and comparison treatment, duration of follow-up, inclusion criteria, racial subgroups compared (if any), and baseline differences between minority groups and whites.

The Antihypertensive Lipid Lowering Treatment to Prevent Heart Attack Trial (ALLHAT) and the International Verapamil-Trandolapril Study (INVEST) were the only 2 trials with greater than 50% minority participation. Each had large numbers of blacks and Hispanics. The Protection Against Recurrent Stroke Study (PROGRESS) reported the largest analysis comparing Asians (38%) with non-Asians. Two trials of angiotensin II receptor blockers conducted subgroup analyses of blacks: the Losartan Intervention For Endpoint Prevention (LIFE) and Valsartan Long-term Use Evaluation (VALUE). Three trials were conducted exclusively in Asian populations: the Japanese Multicenter Investigation of Cardiac Disease (JMIC-B), the National Intervention Cooperative Study in Elderly Hypertensives (NICS-EH), and the Felodipine Event Reduction Study (FEVER). No trials described cardiovascular outcomes in Native Americans.

**Cardiovascular Outcomes**

Results for the 8 studies that reported cardiovascular outcomes in nonwhite populations are summarized in Figure 2. The Jadad scores for methodologic quality of these studies ranged from 3 to 5. Both JMIC-B and INVEST utilized an open-label design and lost 2 points for description and method of blinding. The NICS-EH and FEVER trials lost 1 point for description of withdrawals/dropouts. ALLHAT, LIFE, PROGRESS, and VALUE received the maximum score of 5. In all studies, subjects were randomly allocated to treatment (or placebo) groups. With the exception of the NICS-EH, all studies used intention-to-treat analyses. Because these studies had widely differing designs and primary outcomes, formal statistical procedures and meta-analyses could not be performed.

**Outcomes in Asians**

In PROGRESS, Asians had greater reductions in blood pressure than did Western participants ($P = .01$); however, there was no significant interaction between race-treatment interactions with perindopril on secondary stroke prevention ($P = .1$). In the 2 Japan-based trials (JMIC-B, NICS-EH), which compared calcium channel blockers with ACE inhibitors or diuretics, no difference in cardiovascular outcomes.
Race and Antihypertensive Therapy

was found. In the China-based trial (FEVER), a calcium channel blocker plus diuretic was found to be more effective than low-dose diuretic monotherapy.

Outcomes in Blacks

In ALLHAT, there were no racial differences for the primary outcome of fatal or nonfatal coronary heart disease. For stroke and combined cardiovascular disease, however, blacks experienced a greater magnitude of benefit with chlorthalidone than did nonblacks (for interaction \( P = .01 \) for stroke, and \( P = .04 \) for cardiovascular disease). Although blacks achieved a 4/1 mm Hg greater blood pressure reduction with chlorthalidone than with lisinopril, adjustment for blood pressure did not fully explain differences in outcomes.

In the LIFE trial, statistical tests for interaction of race and treatment on outcome showed a trend toward significance (\( P = .057 \)), prompting a post hoc analysis, which found that nonblacks on losartan-based therapy had a reduction in cardiovascular events, whereas blacks on losartan-based therapy had an increase in cardiovascular events despite greater regression of left ventricular hypertrophy.

### Table 1. Trials of Antihypertensive Agents With Cardiovascular Morbidity and Mortality Outcomes

<table>
<thead>
<tr>
<th>Trial, year</th>
<th>Racial Subgroups No. (%) Study Sites</th>
<th>Drug Intervention</th>
<th>Follow-up Mean, y</th>
<th>Inclusion Criteria</th>
<th>Subgroups Compared</th>
<th>Baseline Differences (vs Whites)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALLHAT, 2002</td>
<td>White 19,977 (47) Black 15,085 (35.5) Hispanic 5,299 (12.5) Other 2,058 (5) USA, Canada</td>
<td>Chlorthalidone vs doxazosin, amlo-dipine, or lisinopril</td>
<td>4.9</td>
<td>Aged &gt;55 y, HTN, prior CAD, or 1 risk factor</td>
<td>Blacks, nonblacks</td>
<td>Blacks: age, baseline CVD, DM, LVH (( P &lt; .001 ))</td>
</tr>
<tr>
<td>INVEST, 2003</td>
<td>White 10,925 (48.3) Black 3,029 (13.4) Asian 149 (0.8) Hispanic 8,045 (35.6) Other 428 (1.9) North &amp; Latin America, Europe</td>
<td>Verapamil-based vs atenolol-based</td>
<td>2.7</td>
<td>Aged &gt;50 y, HTN, known CAD</td>
<td>Blacks, Hispanics, white, other</td>
<td>Hispanic &amp; black: age, DM, ASA/ statin use (( P &lt; .001 )) Blacks: LVH, BMI, CKD (( P &lt; .001 ))</td>
</tr>
<tr>
<td>PROGRESS, 2001</td>
<td>White 3,770 (62) Asian 2,335 (38)</td>
<td>Europe, China, Japan</td>
<td>Perindopril + indapamide vs placebo</td>
<td>3.9</td>
<td>No age limits, previous CVA or TIA ± HTN</td>
<td>Asians, westerners</td>
</tr>
<tr>
<td>VALUE, 2004</td>
<td>White 13,643 (89.1) Black 658 (4.3) Asian 535 (3.5) Other 474 (3.1)</td>
<td>USA, Western Europe</td>
<td>Valsartan-based vs amlo-dipine-based</td>
<td>4.2</td>
<td>Aged &gt;50 y, HTN, 2-3 CV risk factors</td>
<td>Asian, blacks, white, other</td>
</tr>
<tr>
<td>LIFE, 2002</td>
<td>White 8,503 (92) Black 533 (6) Asian 43 (1) Hispanic 100 (1)</td>
<td>Europe, USA</td>
<td>Losartan vs atenolol</td>
<td>4.8</td>
<td>Aged 55-80 y, HTN, LVH</td>
<td>Blacks, nonblacks</td>
</tr>
</tbody>
</table>

ACE = angiotensin-converting enzyme; ASA = acetylsalicylic acid; BMI = body mass index; CAD/CHD = coronary artery (heart) disease; CKD = chronic kidney disease; CV = cardiovascular; CVA = cerebrovascular accident; CVD = cardiovascular disease; DM = diabetes mellitus; HTN = hypertension; LVH = left ventricular hypertrophy; TIA = transient ischemic attack.
Figure 2. Effect of treatment strategies on cardiovascular outcomes in racial/ethnic subgroups.

### Outcomes in Asians

<table>
<thead>
<tr>
<th>Study Name</th>
<th>Outcome</th>
<th>Racial/Ethnic Groups</th>
<th>RR</th>
<th>P Value</th>
<th>Intervention</th>
<th>Race-treatment Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROGRESS</td>
<td>All strokes</td>
<td>Asian Westerners</td>
<td>0.61 (0.48-0.78)</td>
<td>N/A</td>
<td>Favors Perindopril</td>
<td>Favors Placebo</td>
</tr>
<tr>
<td>FEVER</td>
<td>All strokes</td>
<td>Chinese</td>
<td>0.73 (0.60-0.95)</td>
<td>.002</td>
<td>Favors Felodipine</td>
<td>Favors HCTZ Alone</td>
</tr>
<tr>
<td>JMIG-8</td>
<td>Composite CV Events</td>
<td>Japanese</td>
<td>1.05 (0.81-1.37)</td>
<td>.75</td>
<td>Favors Nifedipine</td>
<td>Favors ACE Inhibitor</td>
</tr>
<tr>
<td>NICS-EH</td>
<td>Composite CV Events</td>
<td>Japanese</td>
<td>0.97 (0.51-1.83)</td>
<td>.93</td>
<td>Favors Nicardipine</td>
<td>Favors Trichlormethiazide</td>
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</tbody>
</table>

#### Outcomes in Blacks

<table>
<thead>
<tr>
<th>Study Name</th>
<th>Outcome</th>
<th>Racial/Ethnic Groups</th>
<th>RR</th>
<th>P Value</th>
<th>Intervention</th>
<th>Race-treatment Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALLHAT</td>
<td>Fatal/Non-fatal CHD</td>
<td>Blacks</td>
<td>1.10 (0.94-1.28)</td>
<td>.24</td>
<td>Favors Lisinopril</td>
<td>Favors Chloralidone</td>
</tr>
<tr>
<td></td>
<td>Stroke</td>
<td>Non-blacks</td>
<td>0.94 (0.85-1.05)</td>
<td>.29</td>
<td>Favors Amlodipine</td>
<td>Favors Chlorthalidone</td>
</tr>
<tr>
<td></td>
<td>Combined CVD</td>
<td>Blacks</td>
<td>1.40 (1.17-1.68)</td>
<td>&lt;.001</td>
<td>Favors Lisinopril</td>
<td>Favors Atenolol</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-blacks</td>
<td>1.00 (0.85-1.17)</td>
<td>.97</td>
<td>Favors Atenolol</td>
<td>Favors Atorvastatin</td>
</tr>
<tr>
<td>LIFE</td>
<td>Fatal CVD</td>
<td>US Blacks</td>
<td>1.66 (1.04-2.66)</td>
<td>.033</td>
<td>Favors Losartan</td>
<td>Favors Atenolol</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US Non-blacks</td>
<td>0.72 (0.53-0.99)</td>
<td>.046</td>
<td>Favors Losartan</td>
<td>Favors Atenolol</td>
</tr>
</tbody>
</table>

#### Outcomes in Multiple Ethnic Groups

<table>
<thead>
<tr>
<th>Study Name</th>
<th>Outcome</th>
<th>Racial/Ethnic Groups</th>
<th>RR</th>
<th>P Value</th>
<th>Intervention</th>
<th>Race-treatment Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>INVEST</td>
<td>Composite Death and Non-fatal CVA/MI</td>
<td>Blacks</td>
<td>1.00 (0.82-1.22)</td>
<td>N/A</td>
<td>Favors Lisinopril</td>
<td>Favors Atenolol-based Strategy</td>
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<tr>
<td></td>
<td></td>
<td>Hispanics</td>
<td>0.92 (0.78-1.08)</td>
<td>N/A</td>
<td>Favors Lisinopril</td>
<td>Favors Atenolol-based Strategy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Whites</td>
<td>1.00 (0.90-1.10)</td>
<td>N/A</td>
<td>Favors Lisinopril</td>
<td>Favors Atenolol-based Strategy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other</td>
<td>0.94 (0.50-1.76)</td>
<td>N/A</td>
<td>Favors Lisinopril</td>
<td>Favors Atenolol-based Strategy</td>
</tr>
<tr>
<td>VALUE</td>
<td>Composite Cardiac Events</td>
<td>Blacks</td>
<td>1.22*</td>
<td>.405</td>
<td>Favors Losartan</td>
<td>Favors Atenolol</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hispanics</td>
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<td>Favors Losartan</td>
<td>Favors Atenolol</td>
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<tr>
<td></td>
<td></td>
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<td>.201</td>
<td>Favors Losartan</td>
<td>Favors Atenolol</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other</td>
<td>1.08*</td>
<td>.514</td>
<td>Favors Losartan</td>
<td>Favors Atenolol</td>
</tr>
</tbody>
</table>

*Exact 95% CI not provided; range extrapolated from article figure.

ACE = angiotensin-converting enzyme; BP = blood pressure; CHD = coronary heart disease; CI = confidence interval; CV = cardiovascular; CVA = cerebrovascular accident; CVD = cardiovascular disease; HCTZ = hydrochlorothiazide; MI = myocardial infarction; RR = relative risk.
ventricular hypertrophy ($P = .018$) and similar blood pressure control in blacks on losartan and atenolol.

**Outcomes in Multiple Races**

In INVEST, there were no racial differences (among blacks, Hispanics, whites, or others) between the verapamil- and atenolol-based strategies for the primary outcome of death and nonfatal myocardial infarction or stroke. Hispanics had a lower overall cardiovascular event rate than non-Hispanics (hazard ratio, 0.87 [0.78-0.97]), but there was no evidence for race-treatment interaction.

Participants in the VALUE trial were predominantly white (89%). No significant racial differences were found (among blacks, whites, Asians, or others) between the valsartan- and amlodipine-based strategies for the primary outcome of composite cardiac events.

**DISCUSSION**

In attempting to quantify minority participation in hypertension clinical trials, we encountered both a lack of reporting and widely differing reporting methods on the part of investigators. Most of the studies without race or ethnicity data were conducted in the European Union, where trial reports are 5 times less likely to contain data on race or ethnicity than US trials. Despite US guidelines that specify both the inclusion and analysis of outcomes for minorities in federally funded clinical trials, $40\%$ of clinical trials in high-impact US journals still lack reporting on race, even in areas of such health disparities as cardiovascular disease. Social, environmental, and lifestyle factors differ greatly between hypertensive subjects in international trials and US minority subjects with shared geographic ancestry, these factors interact and may importantly influence cardiovascular risk and health outcomes.

In reviewing cardiovascular disease prevention trials of antihypertensive therapies, we identified only 4 trials that included a priori analyses to compare outcomes among minority groups (ALLHAT, INVEST, PROGRESS, VALUE). For each trial’s primary outcome, similar treatment efficacy was found for whites and minorities. Blacks in ALLHAT who were treated with the ACE-inhibitor lisinopril, however, had significantly higher blood pressures, a greater incidence of strokes, and a greater incidence of combined cardiovascular disease than blacks treated with diuretics. Previous research has suggested that, because of lower renin levels in black hypertensive patients, ACE-inhibitors are less effective as monotherapy for hypertension in blacks than in whites. Although ALLHAT provided evidence for poorer cardiovascular outcomes for blacks treated with lisinopril than with diuretics, studies such as the African American Study of Kidney disease have shown that treatment with ACE-inhibitors does reduce the rate of progression of hypertensive nephropathy in blacks. Currently, ACE-inhibitors are not recommended as first-line monotherapy for hypertension in blacks, but they appear to have utility in patients with hypertensive chronic kidney disease as part of a multiple drug antihypertensive regimen when specific organ sparing is a therapeutic goal.

In ALLHAT, INVEST, and PROGRESS, there were widespread dissimilarities of potential confounders both between and within minority racial subgroups. Factors such as baseline blood pressure, blood pressure control, diabetes, and baseline medication use widely varied between majority and minority groups. Although randomization in these trials minimized the differences between treatment groups, we feel that subgroup analyses generally should not be overinterpreted beyond showing the consistency of benefit (or detriment) for antihypertensive therapies across racial subgroups, except in the case where there is evidence for significant treatment-subgroup interactions.

Contrary to the similar outcomes described previously, a post hoc analysis of the LIFE data found that losartan therapy improved cardiovascular outcomes for whites and worsened outcomes in blacks despite similar blood pressure control for blacks on losartan or atenolol. This type of qualitative interaction (intervention has opposite effects in subgroups) is unusual and does raise questions regarding the efficacy of angiotensin-receptor blockers as antihypertensive treatment in blacks to prevent cardiovascular outcomes. Given
the post hoc nature of the analysis and the small number of cardiovascular events, however, these results should be interpreted cautiously. The only other outcome-based trial of angiotensin-receptor blockers (VALUE) did not show significant effects of race on outcome, but the proportion of black participants was small (<4%). Current recommendations by the Hypertension in African Americans Working Group state that angiotensin-receptor blockers (and ACE-inhibitors) can be effective initial therapy for hypertension in blacks, although cardiovascular disease outcome data in this population are limited.57

In Japan calcium channel blocker therapy is often used as a first-line agent in uncomplicated hypertension.58 Baseline data from the PROGRESS trial showed that 50% to 60% of hypertensive Asian subjects were being treated with calcium channel blockers.54 Two recent meta-analyses suggest that antihypertensive therapy with calcium channel blockers likely has an equivalent or only modestly detrimental effect on cardiovascular outcomes compared with other classes of therapy.59,60 The JMIC-B and NICS-EH studies (Japan) were not adequately powered to detect equivalence between calcium channel blockers and other therapeutic modalities; therefore, the investigators’ finding of “no difference” in both of these studies should not be interpreted as true equivalence between calcium channel blockers and ACE inhibitors or diuretics. In FEVER (China), a low-intensity regimen was compared with an intensive blood-pressure–lowering strategy (diuretics with calcium channel blockers), which is already known to reduce cardiovascular outcomes in Asian subjects.61 Given the differences in intensity of therapy, we cannot discern whether calcium channel blockers have any cardiovascular protective properties in Asians aside from blood pressure lowering.

Our review has several limitations. Because we were unable to retrieve race or ethnicity data from 12 trials, we may be underestimating overall minority participation. We analyzed results only from published trial reports; given the small number of trials with outcomes in minorities, funnel plots for publication bias were not performed. Neither reviewer was blinded to author or to journal of publication during data abstraction, although blinding of reviewers has not been shown to affect the results of published reviews.62

The inclusion of minorities and race-specific analyses in clinical trials are essential steps to identify important differences in pathophysiology and treatment response—differences that may lead to a reduction in health care disparities in cardiovascular disease. Standardized reporting of minority participation is also needed. Without this information, it will be impossible to understand disparities in clinical trial participation or the applicability of trial results to nonwhite populations. Certain groups (eg, Native Americans) bear a large burden of cardiovascular disease but have not been represented in clinical trials in numbers sufficient to conduct meaningful subgroup analyses. Understanding outcomes in this group would require pooling of data from multiple studies. Pooling of data would be facilitated if data from cardiovascular disease prevention trials were made available to researchers as public-use data sets.

Because most hypertensive patients will require therapy with 2 or more medications to achieve adequate blood pressure control, future trials should examine cardiovascular outcomes when multiple classes of antihypertensive therapy are combined to achieve common blood pressure goals. Whether future studies should examine outcomes exclusively in a single minority group (ie, African American study of kidney disease) compared with outcomes in multiple racial subgroups (ie, INVEST) is a subject of debate.63 What is clear is that outcome-based trials on the magnitude of ALLHAT or INVEST will be costly and require large numbers of minority participants to conduct prespecified analyses by race and ethnicity. The translation of these trial results to the care of minority patients in clinical practice will prove invaluable for appropriate therapeutic decision making and improvement of cardiovascular outcomes in an increasingly diverse patient population.

To read or post commentaries in response to this article, see it online at http://www.annfammed.org/cgi/current/full/5/5/444.

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References


49. Smith DH, Neutel JM, Lacourciere Y, Kemptonne-Rawson J, Prospective, randomized, open-label, blinded-endpoint (PROBE) designed trials yield the same results as double-blind, placebo-controlled trials with respect to ABPM measurements. J Hypertens. 2003;21(7):1291-1298.


63. Taylor AL, Wright JT, Jr. Should ethnicity serve as the basis for clinical trial design? Importance of race/ethnicity in clinical trials: lessons from the African-American Heart Failure Trial (A-HeFT), the African-American Study of Kidney Disease and Hypertension (AASK), and the Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT). Circulation. 2005;112(23):3654-3660; discussion 3666.
The Missing Link: Improving Quality With a Chronic Disease Management Intervention for the Primary Care Office

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ABSTRACT

Bold steps are necessary to improve quality of care for patients with chronic diseases and increase satisfaction of both primary care physicians and patients. Office-based chronic disease management (CDM) workers can achieve these objectives by offering self-management support, maintaining disease registries, and monitoring compliance from the point of care. CDM workers can provide the missing link by connecting patients, primary care physicians, and CDM services sponsored by health plans or in the community. CDM workers should be supported financially by Medicare, Medicaid, and commercial health plans through reimbursements to physicians for units of service, analogous to California's Comprehensive Perinatal Services Program. Care provided by CDM workers should be standardized, and training requirements should be sufficiently flexible to ensure wide dissemination. CDM workers can potentially improve quality while reducing costs for preventable hospitalizations and emergency department visits, but evaluation at multiple levels is recommended.


INTRODUCTION

A crisis in primary care and chronic disease management (CDM) is looming. We need a CDM strategy that improves quality, supports primary care physicians and patients, and is applicable in a diverse range of clinical settings. It is possible to achieve these multiple objectives by allocating dedicated health care assistants to work directly with patients who have chronic diseases at the point of care. Office-based CDM workers can offer self-management and case management services for these patients and be the missing link that connects patients, families, and physicians with CDM services available through health plans or in the community. A practical way to pay for and target CDM activities is to reimburse physicians for units of service delivered by their CDM workers. California's well-established Comprehensive Perinatal Services Program (CPSP) is a good example of a payment mechanism that supports health education and case management services through payments to physician employers.

Office-based CDM workers can potentially improve quality, enhance primary care physician satisfaction and productivity, promote self-management strategies, and reduce or control long-term costs related to poor patient outcomes, but their actual impact should be assessed at multiple levels. Wide dissemination of point-of-care CDM workers is practical and achievable, and it should occur before the primary care infrastructure so vital to our good health crumbles.
THE CRISIS IN PRIMARY CARE AND CHRONIC DISEASE MANAGEMENT

Primary care is in a crisis, and that it may not survive is particularly troubling, because primary care physicians supply the bulk of care to an increasing number of aging Americans with chronic diseases. Managing the daunting needs of patients with multiple comorbid chronic conditions is perhaps the greatest challenge confronting primary care physicians. Meanwhile, physician payments tied to clinical and patient satisfaction metrics in pay-for-performance or value-based purchasing reimbursement formulas are raising the stakes by rewarding high-quality care for these complex patients.

Many health plans support CDM programs. The tendency to segregate care into discrete disease entities, such as diabetes, heart failure, or emphysema, however, is not consistent with how patients with multiple overlapping chronic conditions are cared for in primary care practices. Furthermore, CDM evaluations generate additional reports requiring a physician response.

A range of other disease management strategies have been developed to reduce barriers to care. Many strategies incorporate self-management concepts and behavioral interventions; integrate care teams; use nonphysician personnel, such as nurses, community health workers, promotoras, and community health outreach workers; and provide services in homes, the community, or in primary care offices. The Chronic Care Model, a CDM strategy incorporated into the American Academy of Family Physicians’ new models of care, emphasizes office redesign and the use of nonphysician staff to accomplish disease management tasks. The Future of Family Medicine report predicted that implementation of the Chronic Care Model would have a positive impact on office costs after making assumptions regarding time required and reimbursement for providing high-quality care.

A CHRONIC DISEASE MANAGEMENT MODEL

A CDM strategy is needed that jump starts improvements in quality of care, supports primary care physicians and patients, and is applicable in a diverse range of clinical settings. A model to consider is California’s Comprehensive Perinatal Services Program (CPSP). The California Medicaid program, MediCal, established CPSP in the 1980s after studies showed cost savings through reductions in newborn complications. CPSP provides reimbursable health education, nutrition, psychosocial, and case management services to prenatal patients. Guidelines for CPSP workers have evolved from requiring highly specialized health educators, social workers, and registered dietitians, to permitting comprehensive perinatal health workers, with a minimum of 1 year of perinatal experience and a high school degree, to provide the range of CPSP-authorized services while operating under approved protocols.

Given the complex needs of chronic disease patients, it can be argued that the need for a CPSP-type intervention for chronic disease patients is greater than it is for prenatal patients. Dedicated health care assistants working directly with chronic disease patients through primary care offices could improve quality through a number of mechanisms. By coordinating and facilitating information and communication, an office-based CDM worker could become the missing link connecting patients, families, and physicians, with CDM services available through health plans or in the community. Just as CPSP workers educate prenatal patients, CDM workers could do the counseling that harried primary care physicians are hard pressed to provide for patients with diabetes, hypertension, heart disease, and asthma and emphysema. The CDM worker could be responsible for a broad range of tasks that could include ensuring consultations and services are scheduled, following up on recommended clinical interventions, such as diagnostic studies and prescriptions, and maintaining tracking systems and disease registries. CDM workers can also be expected to ensure that patients receive recommended routine (mammograms, Papanicolaou smears, etc), as well as chronic disease-specific, preventive services.

A key advantage of point-of-care CDM workers is the potential for replication in a range of primary care settings. Solo practitioners, group practices, and rural practitioners could all use point-of-care CDM workers. The decentralized nature of the CDM worker model would also have major implications for cultural and linguistic access. One would expect primary care offices to hire staff who reflect the ethnic diversity of their communities and who speak their patient’s language to a greater degree than would be found in centralized CDM programs.

Structural Issues

Structural issues must be addressed before an office-based CDM network can be established. These issues include eligibility, financing, worker payment, and CDM worker qualifications.

Disease management standards for specific conditions such as diabetes can help define what patients are eligible and what services are covered. A straightforward approach would be to include all patients aged 50 years and older or patients who have any chronic condition or major risk factor. This approach is justified because of the prevalence of chronic diseases and risk factors and the range of preventive services recommended in these populations.
Public programs including Medicaid and Medicare, as well as commercial health plans, are the most appropriate entities to pay for office-based CDM services. If CDM workers improve control of chronic diseases, cost savings would result from reductions in emergency department visits and hospitalizations for such conditions as uncontrolled diabetes, asthma attacks, stroke, and heart failure. Because savings will accrue to these same public programs and health plans, it is reasonable to expect health plans and payers to be the principal funders of an office-based CDM network. Public programs and health plans could defray some costs by diverting a portion of funding allocated to centralized health plan–level CDM programs toward primary care, office-based CDM services.

The CPSP reimbursement system can be adapted to finance office-based CDM workers. Physicians with CPSP workers in their offices are paid on a fee-for-service basis for defined units of service. The CPSP experience with more than 1,500 physicians in California suggests that a fee-for-service reimbursement model based on units of service would be readily accepted by physicians in diverse settings. Reimbursement for physicians who currently receive capitated payments could be handled in several ways. Health plans and payers could mandate use of CDM workers contractually, or they could argue that pay-for-performance programs offer physicians the flexibility to allocate resources to develop quality-improvement strategies best suited for their practices. Public programs and health plans, however, could promote specific CDM services in office-based settings by reimbursing for services most likely to be beneficial. This approach would permit public programs and health plans to target high-priority services, such as the clinical interventions that make up Health Plan and Employer Data Information Set (HEDIS) measures. Billing imperatives would ensure that relevant clinical encounters are properly captured and submitted at the point of care by supervising physicians.

Requirements for CDM workers should be designed to be expansive rather than restrictive to best meet the diverse needs of rural and underserved communities. It is certainly reasonable to insist that health professionals providing CDM services be properly trained and credentialed to provide high-quality care. Careful thought should be given to the content and structure of a training program for CDM workers to ensure key patient care concepts are taught and interpersonal and communication skills are stressed. Well-designed protocols and educational materials are needed to support and guide CDM workers in their office settings. The health care system is more likely to improve access and control cost if a broad range of health care professionals can become CDM workers rather than creating a network based on individuals with advanced degrees and limited availability. As noted above, CPSP eventually adopted this broad-based approach. We can also expect primary care offices to select their most competent individuals to receive the requisite CDM worker training.

It is possible to estimate the cost of a point-of-service CDM network by making assumptions about what patients and services will be covered. If the target population is anyone aged 50 year or older or who has a chronic condition or major risk factor, 25% to 50% of all patients would be eligible. In a practice with 24 patients per day, a .5 full-time-equivalent CDM worker could spend 30 minutes with 8 patients, or 33% of those visiting a practice. Using CPSP as an example, physicians are reimbursed $33 per hour for 4, 15-minute units of service provided in their offices in addition to reimbursement for professional fees or other office charges. This level of reimbursement is considerably less than physicians are paid to provide the same services but is adequate to cover the cost of a medical assistant at $35,000 a year. With these assumptions, the cost of 1 medical assistant–level CDM worker for each of 200,000 full-time primary care physicians (1 for every 1,500 patients, or enough for 300,000,000 Americans) would be $7,000,000,000. Billing and 1-time training costs would also need to be considered, but these costs would be offset to an unknown degree by potential savings from averted emergency department visits or hospitalizations. If a CDM model replaced a pay-for-performance program, savings on incentive payouts for improvements in quality measures could also help offset CDM costs. Other financial benefits could accrue from improved primary care physician workflow.

The impact of a network of CDM workers can and should be assessed at various levels. Costs and outcomes should be monitored for personnel, physician productivity, utilization measures such as primary care visits, laboratory, radiology, and pharmacy activity; consultants; emergency department visits; and preventable hospitalizations. The impact on quality measures such as HEDIS and both patient and primary care physician satisfaction should be tracked.

**BOLD STEPS**

With the crisis in primary care and chronic disease care looming, bold steps are necessary. A broadly disseminated network of CDM workers can be the missing link that facilitates care and coordination among primary care physicians, patients, and health care organizations. It is convenient for physicians to weave CDM services into the fabric of the office visit. It is also convenient for patients, who can combine visits to their doctor with ongoing self-management support offered during a
teachable moment. We should reimburse primary care offices for providing defined CDM services with a payment mechanism similar to that of California's CPSP system. Office-based CDM workers can improve primary care physician satisfaction, productivity, and quality of care; can personalize care for patients; and can reduce or control long-term costs related to poor patient outcomes. This intervention is practical and achievable, and it should be implemented before the primary care infrastructure so vital to our good health crumbles.

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Key words: Chronic disease/therapy; disease management; primary health care; physician’s practice patterns; practice management; quality assurance, health care; quality improvement; office practice issues; office redesign/practice redesign

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References


REFLECTION

The Teamlet Model of Primary Care

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ABSTRACT

The 15-minute visit does not allow the physician sufficient time to provide the variety of services expected of primary care. A teamlet (little team) model of care is proposed to extend the 15-minute physician visit. The teamlet consists of 1 clinician and 2 health coaches. A clinical encounter includes 4 parts: a previsit by the coach, a visit by the clinician together with the coach, a postvisit by the coach, and between-visit care by the coach. Medical assistants or other practice personnel would require retraining to assume the health coach role. Some organizations have instituted aspects of the teamlet model. Primary care practices interested in trying out the teamlet concept need to train 2 health coaches for each full-time equivalent clinician to ensure smooth patient flow.


INTRODUCTION

The following research findings show that the central institution of primary care—the 15-minute physician visit—can no longer accomplish what society expects:

- Fifty percent of patients leave the office visit without understanding what advice their physician gave.1
- Physicians, according to 1 study, interrupted patients’ initial statement of their problem in an average of 23 seconds; in 25% of visits the patient was unable to express his/her concerns at all.2
- It takes 7.4 hours per working day to provide all recommended preventive care to a panel of 2,500 patients, plus 10.6 hours to manage all chronic conditions adequately.3,4
- Forty-two percent of primary care physicians report not having adequate time to spend with their patients.5

During the 15-minute visit, primary care physicians cannot provide acute, chronic, and preventive care while building meaningful relationships with their patients and managing multiple diagnoses according to a host of evidence-based guidelines. The 15-minute physician visit must be eliminated as the central institution of primary care. The teamlet (little team) model is offered as a replacement for the 15-minute physician visit. This model has 2 central features: (1) the patient encounter involves 2 caregivers—a clinician (physician, nurse-practitioner, or physician’s assistant) and a health coach—rather than only the clinician; and (2) the 15-minute visit is expanded to include previsit, visit, postvisit, and between-visit care.

WHAT IS A TEAMLET?

All primary care practices have a team. For a small private office, the team is the physician, medical assistant, and receptionist. For community health centers, outpatient department clinics, and multispecialty groups, the team is larger and includes a variable mix of physicians, advanced practice clinicians, registered nurses, licensed vocational and practical nurses, medical

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assistants, receptionists, health educators, pharmacists, social workers, and community health workers.

Whereas the team varies dramatically with the size and type of practice, one constant feature as the central subunit of the team in almost all primary care settings is the clinician-medical assistant dyad.

The teamlet model proposes a transformation of this universal dyad. This transformed dyad is called the teamlet because it is only a small part of the primary care team. In this model, medical assistants or other appropriate personnel are retrained in such skills as chronic disease self-management support to assume the role of a health coach. Each patient cared for by the teamlet would participate in an expanded visit with both a clinician and a health coach.

The goals of the teamlet model are fivefold: (1) to improve the patient experience and enhance patients’ self-management skills by expanding the encounter to include one-on-one time with a trained health coach; (2) to improve process and outcome measures for preventive and chronic care by delegating routine processes (eg, ordering periodic cholesterol measurements or mammograms based on standing orders) to health coaches and by working more intensively with patients on their chronic disease self-management skills; (3) to enhance the work life of primary care clinicians by offloading tasks that can be completed by nonclinician staff; (4) to ensure that all practice personnel are working to their fullest potential by providing additional training, cross-training, and mentoring so that they are able to function as health coaches; (5) to cut health care costs by reducing unnecessary hospitalization and emergency department visits through intensive management of high-risk and high-utilizing patients by using health coaches to provide frequent personal contact with these patients.

THE TEAMLET MODEL

A teamlet consists of 1 clinician and 2 health coaches. Health coaches (or whatever name a practice chooses) are retrained medical assistants, community health workers, licensed practical or vocational nurses, registered nurses, or health educators—whoever is available and willing to undertake a new job. Health coaches should have cultural and language concordance with their patients. Ideally practices or clinics create a staffed nurses, or health educators—whoever is available and willing to undertake a new job. Health coaches should have cultural and language concordance with their patients. Ideally practices or clinics create a staffed ratio of 2 health coaches for 1 clinician, because health coaches spend more time with the patient than does the clinician.

In its fullest expression, the teamlet encounter involves a previsit with the health coach, a visit including both the clinician and the health coach, a postvisit with the health coach, and between-visit care provided by the health coach. Patients with relatively simple problems do not need the full previsit, postvisit, between-visit level of care.

The components of the teamlet encounter function as follows.

Previsit
The previsit is conducted by the health coach. The goals of the previsit are to offload routine work from the clinician and to improve chronic disease and prevention process measures by having health coaches order routine studies. During the previsit the health coach works with patients to negotiate the visit agenda, elicit a basic history, check on medication use, and perform indicated tests.

Huddle
Before the previsit, the health coach and clinician huddle quickly to discuss the clinical goals for the patient encounter.

Agenda Setting
Evidence shows that physicians rarely negotiate with patients concerning the medical visit agenda even though agenda setting is likely to improve the patient-centeredness of the encounter. Because time is a barrier to agenda setting, transferring this activity to the previsit improves the likelihood that the patient’s agenda items will be addressed. To set the visit agenda, the health coach explains the clinician’s agenda items and allows patients to express fully their agenda items. Having the health coach negotiate the agenda helps to minimize the unequal power relationship between physicians and patients.

Medication Reconciliation
To save clinician time, medication reconciliation can be initiated by the health coach during the previsit and completed by the clinician during the visit. For patients on multiple medications, the coach would document which prescribed medications patients are taking, and if a patient is not taking a prescribed medication, why not. This process is intended to address outpatient medication errors, which occur frequently. Although evidence supporting outpatient medication reconciliation for error reduction is not yet available, this activity is coming into common use.

Ordering Routine Services
Studies have found that physicians provide only 55% of recommended care and that quality indicators improve with longer visit times. To improve process measures, during the previsit the health coach would take responsibility for ordering routine chronic disease and preventive services according to standing orders.
or protocols. The health coach would explain these services to patients and order them if a patient agrees. Blood pressures, temperatures, heart rates, finger-stick glucose levels, electrocardiograms, oxygen saturation measurements, urine dipsticks, pregnancy and sexually transmitted screening tests, vision and hearing tests, immunizations, and other indicated tasks would also be included based on standing orders and the relevance of each test to a patient’s history.

History Taking
The health coach may take and record a patient’s history (on paper or in the electronic medical record) using specific questionnaires prepared for each common sign or symptom (sore throat, cough, abdominal pain, back pain, headache, dizziness, etc).

Visit
Once the previsit is complete, the clinician enters the examination room with the health coach. The clinician checks the patient’s history and asks additional questions to clarify and deepen the history. The coach documents (on paper or in the electronic medical record) the clinician’s physical findings; fills out forms; orders laboratory tests, x-ray studies, and referrals; sends electronic prescriptions to the pharmacy or writes prescriptions for the clinician to sign; retrieves items not in the examination room; assists with procedures, and so on. In other words, the health coach assists the clinician during the visit so that the clinician can focus on cognitive work (thinking about diagnosis and management) and on building relationships with patients. Coaches would not stay in the examination room for uncomplicated visits that do not require a postvisit or when the patient is uncomfortable having the coach in the room.

Postvisit
The purposes of the postvisit are to ensure that patients understand what took place during the visit, to engage the patient in self-management skill building, and to enhance the patient’s experience with the encounter. The goal is to encourage patients to be informed and to actively manage their health conditions, as such patients tend to have better outcomes than patients who are passive recipients of care.

Soliciting Patient Concerns
Once the clinician leaves, the postvisit begins. The coach may begin the postvisit by asking patients whether there is anything they would like to talk about. Posing this question enhances a patient-centered approach and helps the coach and patients develop a relationship that complements the clinician-patient relationship.

Closing the Loop
Ideally, an after-visit summary would be generated to recap the advice given by the clinician during the visit—what diagnostic studies to schedule, what referrals to arrange, what medications to take, what behavior changes to work on, and when to follow-up with whom. Using the after-visit summary, the health coach can apply the technique of closing the loop by asking patients to repeat back their understanding of each item of advice given during the visit. Closing the loop, which helps the 50% of patients who do not understand the clinician’s advice, has been found to be associated with improved outcomes in patients who have diabetes. Unfortunately, this process is seldom performed.

Goal Setting
The health coach engages patients in collaborative goal setting, negotiating an action plan regarding diet, exercise, taking medications, or other domains of the patient’s life. With the coach’s assistance, patients propose realistic action plans. For example, walking to work 3 days a week or eating 1 bowl of rice per meal instead of 2. Action planning is best done by health coaches; in one study, action planning by physicians took an average of 6.9 minutes, which is prohibitively time-consuming. Although conclusive evidence is lacking, some studies suggest that goal setting improves health-related behaviors. The American Diabetes Association and American Heart Association recommend setting goals collaboratively with patients.

Navigating the System
In a final postvisit activity, the health coach makes sure that patients are able to navigate the health system to accomplish the items on the after-visit summary.

Between Visits
Strong evidence supports regular follow-up as necessary to sustain improved chronic disease outcomes; such follow-up is the function of between-visit patient contact.

Between each visit, the health coach telephones or e-mails patients to see how they are doing, helps patients find solutions to difficulties they are having, reinforces items on the after-visit summary, and acts as a liaison between patient and clinician. The health coach keeps a between-visit log to track when each patient requires follow-up contact. An electronic medical record program could also send automatic follow-up reminders to the coach. Health coaches need a dedicated half-day per week to perform their between-visit responsibilities.

Patients often have difficulty reaching their clinician by telephone. In the teamlet model, patients can call
their health coach for questions or concerns about the after-visit summary or self-management goals. For more complex questions, the health coach consults with the clinician or asks the clinician to telephone the patient.

**POTENTIAL CHALLENGES**

The teamlet model is not without challenges, including those associated with workflow, continuity of care, team dynamics, and training.

Maintaining a smooth workflow in the teamlet model requires a delicate balance. Clinician throughput may exceed coaches’ throughput, or vice versa, depending on the complexity of a patient’s needs. These logistical problems have been successfully addressed by some primary care practices that have implemented aspects of the teamlet model. One practice uses a ratio of 5 coaches per 2 clinicians rather than a 2 to 1 ratio. This practice also utilizes headsets and walkie-talkies to help clinicians and coaches signal each other to smooth out previsit, visit, and postvisit transitions.

Continuity of care is another challenge. It may not be possible to schedule the same coach and clinician for each patient. Practices may decide to emphasize continuity between patient and clinician, with different health coaches involved with a particular patient. Academic clinical practices with part-time faculty physicians and residents may choose to encourage continuity between the health coach and the patient.

Scheduling systems need to conform to the scheduling priorities agreed upon by the practice and by the preferences of each patient.

Some physicians who have critiqued the teamlet model point out that the health coach may perform tasks that clinicians enjoy doing, such as talking with patients about behavior change. The teamlet, however, is highly flexible. If a clinician wants to talk with a patient about behavior change, the clinician is free to do so, and the health coach can be freed up for telephone calls or can begin a previsit with another patient. One purpose of the brief huddles before each patient encounter is to clarify the clinician-coach division of labor for that encounter.

The effect of a third person in the clinician-patient visit is not well known. It is possible that some patients may feel overwhelmed with 2 caregivers in the room. In at least 2 health systems, patients have appreciated the medical assistant participating in the visit.

Medical assistants, the fastest growing sector of the primary care workforce, vary in their capacity to perform the health coach function. Several primary care organizations have provided intensive training in teamlet tasks to medical assistants, generally with positive results.

The enthusiasm and job retention of teamlet coaches can pose substantial problems. Medical assistants with certain job expectations may not wish to take on the added responsibilities, and medical assistants who have received additional training may leave to seek advanced medical training.

Teamlet-patient relationships can create tricky situations. For example, patients might share a piece of information with the coach but do not want the coach to tell the clinician. Or patients might tell the coach that they disagree with the clinician’s care plan. The coach and clinician need to work out ground rules so that they do not undermine each other or break a patient’s trust.

**TRAINING HEALTH COACHES**

It is likely that health coaches have previously been working as medical assistants, community health workers, or licensed practical or vocational nurses. In all cases, they require considerable training, which can take place during a series of lunchtime seminars or on protected half days. Training could be conducted by clinicians within a practice or by an outside master trainer experienced in this role. Equally important is mentoring, during which trainers observe and provide feedback to health coach trainees working with patients.

Training curricula for health coaches are being developed and include such topics as the difference between acute and chronic care, the importance of the caregiver-patient partnership for chronic disease, closing the loop, shared decision making, discussing behavior change action plans with patients, how to navigate the particular health system in which the teamlet model is being introduced, issues related to medication reconciliation and medication adherence, and knowledge about the specific chronic conditions that are often encountered in the practice’s patient population. A number of primary care practices have successfully trained and mentored medical assistants in these areas. With time, more health professionals (clinicians, nurses, health educators, social workers, behavioral health professionals) could become master trainers who can conduct this training.

**FINANCIAL SUSTAINABILITY OF THE MODEL**

The teamlet model may not be financially viable under current primary care payment policy. Payment is relatively low for primary care, usually provided only for clinician services, and chiefly based on productivity (quantity of visits or relative value units). The model
is financially sustainable only if (1) it can show payers (Medicare, Medicaid, commercial health plans) that the model can reduce total health care costs (eg, hospitalizations, emergency department visits) for high-cost patients and payers share those savings with primary care practices, or (2) the model can increase productivity under fee-for-service payment. Two organizations using a 2 to 1 ratio of medical assistants to clinicians have shown a positive business case for these additional support personnel by increasing clinician productivity.\textsuperscript{16}

**IMPLEMENTING PARTS OF THE MODEL**

The teamlet model is a novel blueprint for addressing some of the serious problems facing primary care: inadequate visit time to provide all recommended acute, chronic, and preventive care; physician and patient dissatisfaction with the rushed atmosphere of many visits; and the inadequate quality of care provided by stressed primary care practices. A number of organizations have adopted elements of the teamlet model; few, if any, have developed the concept in its entirety. Implementing teamlets requires an increase in the number of medical assistants (the most likely caregivers to become health coaches) and time and expertise to train medical assistants to become coaches.

Although the teamlet model appears on the surface to be difficult to implement, practice pilot programs can be designed with 1 clinician and 2 medical assistants for 1 or 2 half-days per week. Moreover, pilot programs can begin by adding a previsit, by including the medical assistant in the visit, or by initiating a post-visit, it is neither necessary nor desirable to launch the entire model at one time. Currently pilot projects are underway to test the feasibility of the teamlet model.

To read or post commentaries in response to this article, see it online at [http://www.annfammed.org/cgi/content/full/5/5/457](http://www.annfammed.org/cgi/content/full/5/5/457).

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**Key words:** Primary health care; delivery of health care; health care team; organizational innovation

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**References**


ON TRACK

‘You Complete Me’

Kurt C. Stange, MD, PhD, Editor

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At a critical moment in the movie Jerry Maguire, Tom Cruise declares to Renée Zellweger, “You complete me.” With less drama, this is what TRACK comments since the last issue do for the Annals’ articles.

The articles being discussed were written by experts. They were peer reviewed by other experts and revised on the basis of these reviews. One article was interpreted by 2 editorials. Another was accompanied by a series of journal club questions. And yet, reading the online discussion completes these articles in important and unexpected ways. In some cases, the online discussion adds information. Other times it provides context, interpretation, or diverse relevant experience. Now and then it even reveals passion.

For example, one of the evaluators of the human papilloma virus (HPV) vaccine adds new scientific information on the vaccine efficacy in different subgroups. This information both reinforces and adds nuance to the interpretation of a study of counseling adolescents about HPV and cervical cancer prevention.

The article by Nicholson and colleagues on preventive induction of labor invoked both erudition and fervor. Discussants include the lead author, an editorialist, experienced clinicians, and researchers. Their challenges relate not only to the interpretation, dissemination, and next steps from a controversial obstetrical procedure, but also to how new knowledge is shared and advances.

Without the discussion, the article is less complete and our (re)action less informed and wise.

Application of the findings of an intervention study for patients with medically unexplained symptoms is made more complete by commentors. These discussants question the feasibility of the cognitive-behavioral intervention in primary care practice and question its mechanism of action. Without the discussion, the article is less complete and our (re)action less informed and wise.

The study by Dietrich and colleagues of a practical cancer screening intervention yields validation but also an unanswered cry for more information on factors that are important in disseminating successful interventions into clinical practice.

Consultants’ perspective of working with 349 small and medium practices provides a fitting counterpoint to a study of the effect of electronic medical records on quality of care. They note that just adding the tool is insufficient. “Office systems and culture must be reviewed, evaluated, and likely redesigned.”

The need for wholeness is brought to the fore by discussion of “Toward an Ecosystemic Approach to Chronic Care Design and Practice in Primary Care.” In responding with gratitude to his insightful readers, Soubhi invokes Hardin’s “Tragedy of the Commons,” reminding us of the interconnectedness of the complex systems in which we work and live. In this sense, “you complete me” is a statement of the goal of health care, and an ecological perspective is needed to minimize unintended consequences.

John Frey’s portrayal of the enduring career and life of John Geyman is amplified by the online comments of some of the giants whose life he influenced—Phillips, Gerard, Rosenblatt, and Scherger. These discussants remind us of how much our interactions with others are vital to completing our lives.


To read or post commentaries in response to this article, see it online at http://www.annfammed.org/cgi/current/full/5/5/462.

References

Family Medicine Updates

UPDATE FROM NAPCRG’S COMMITTEE ON ADVANCING THE SCIENCE OF FAMILY MEDICINE

NAPCRG’s Committee on Advancing the Science of Family Medicine (CASFM) was created to help consolidate work on the research and evidence needed to move to a new model of care. It specifically aims to:

- Promote the generation of new knowledge in all components of the Future of Family Medicine plan
- Identify means and needs for new knowledge to actively contribute to the transformation of primary care practice for the betterment of our patients and their communities
- Assure that the development, translation, and implementation of new knowledge becomes part of the fabric of what it means to be a family physician

These aims were driven by both the US Future of Family Medicine and the Canadian College of Family Physicians' Family Medicine in Canada: Vision for the Future. It pursues these aims through the work of focused sub-committees with superb leadership.

A Residency Research work group, its chair currently in transition, is exploring past efforts of the task force and is also considering research skill competencies related to new model practice, and how the new residency demonstration project (P4) will evaluate research competency and training.

A Practice-Based Research work group, chaired by Jim Mold, is exploring the role of these laboratories and learning communities in the development of new model practices. It is also considering advocacy needs of PBRNs.

A Health Information Technology (HIT) work group, chaired by Kevin Peterson, is considering the research and standards priorities in ambulatory/primary care, and opportunities to advance understanding of HIT needs in primary care. It will also consider how family medicine may maintain leadership in the HIT standards arena and identify specific advocacy requests/targets related to HIT in primary care.

An Economic Research work group, chaired by Rich Lord, is assessing the economic research needs related to new model practice as well as other research presented at NAPCRG. It will consider specific economic applications for new model practice but will also try to develop economic measurement and methods generally in primary care research.

An Optimizing Practice through Research Partnerships and Quality Improvement work group, chaired by Leif Solberg, intends to explore and explain the methods of implementing and disseminating practice optimization knowledge and systems. This subcommittee will explore translation, implementation, and optimization in ways that are not specific to work by practice-based research networks (PBRNs) and that are broader than quality improvement.

In less than 1 year, CASFM published a paper in JAMA entitled, "Practice-Based Research—'Blue Highways' on the NIH Roadmap." It has published a working paper for the Institute of Medicine on PBRNs as learning communities (http://www.iom.edu/CMS/28312/RT-EBM/41894.aspx). And, it has helped draft letters for NAPCRG and the AAFP to Dr Elias Zerhouni, Director of the NIH, requesting a meeting to discuss primary care participation in his translational research efforts.

CASFM is building liaisons with each family medicine organization and would welcome the same with other primary care groups. Participants at NAPCRG can expect to see more products from this lean and focused committee and will have an opportunity to learn more about where it is going.

Bob Phillips, MD
NAPCRG CASFM Chair

AAFP ENCOURAGES USE OF MEDICAL HOME, NEW IMMUNIZATION POLICY AT AMA CONGRESS

The AAFP recently sent the house of medicine a clear message during the American Medical Association’s (AMA) Congress of Delegates in Chicago. Any national health care policy agenda the AMA promulgates should be founded on the primary care–based medical home and should incorporate a payment
model that comprises both a fee-for-service component and a per-patient, care-management stipend.

Of the dozens of attendees who spoke out at a forum that was convened to solicit comments on a draft policy agenda document the AMA plans to finalize by this fall, AAFP Board Chair, Larry Fields, MD, of Flatwoods, Kentucky, was first to the microphone. He credited the work the AMA has accomplished to date in examining the issue of health system reform, but warned against overlooking some key issues.

“There are a lot of excellent ideas’ in the current draft of the AMA agenda document, Fields said in a recap of his testimony. “If they will hang those ideas on the frame of a primary care-based medical home, we have a great starting point.”

Another essential part of that framework, Fields added, is fair payment for all services rendered. “That's not only higher payment for primary care services,” he stressed, “but also an additional payment for coordination of care and disease-management services.”

AAFP President-Elect Jim King, MD, of Selmer, Tennessee, likewise addressed the payment issue during the forum, urging delegates to “think outside the box” when it comes to paying physicians for the care they provide.

“We really need to expand how we think about the way we pay physicians, especially in the primary care world, especially when the patient’s in (his or her) medical home,” King said. “One thing we feel needs to be in a payment system is a payment for the management of our patients.”

Overview of Draft Policy Agenda
In its current form, the draft agenda is divided into 5 main content areas, each with its own complement of specific issues. The 5 areas are:

- **Health care environment**, including universal coverage and access to care under a pluralistic and patient-driven system, medical liability reform, patient choice, and transformation of Medicare and Medicaid;
- **Clinical excellence**, including further integration of health information technology into medical practice, voluntary adoption of quality measures, improved patient safety, elimination of health care disparities and better care for the elderly;
- **Health of the public**, including disaster preparedness, boosting immunization rates, improving mental health services, raising awareness of global health issues and advocating healthy lifestyle behaviors;
- **Physician practice viability and patient access**, including antitrust issues, payment for true costs of care and the proliferation of consumer-driven health care;
- **Physician education and professionalism**, including workforce analysis and planning, transformation of the US medical education system, education and training funding, and improving medical self-regulation.

Immunization Advocacy Efforts
The AAFP delegation also rallied other primary care delegates and supporters behind a resolution crafted by the Academy and supported by the American Academy of Pediatrics and the American College of Physicians. Parts of that measure, as introduced, direct the AMA to:

- Intensify its efforts to advocate that vaccine manufacturers and distributors make adequate amounts of affordable vaccines available in a timely fashion to medical practices
- Advocate that health care purchasers provide plan participants with first-dollar coverage of all CDC-recommended vaccines
- Urge public and private payers to cover all vaccine-associated costs, including storage, insurance and spoilage/wastage, for CDC-recommended vaccines and their administration, “with no patient cost-sharing”

One clause of the original resolution created a stir among those testifying in a June 24 reference committee hearing on the topic, however. That resolve asked the AMA to step up its advocacy efforts with vaccine manufacturers and distributors to “assure that physician practices, hospitals, long-term care facilities and other medical facilities receive priority in obtaining immunizations.”

Citing preliminary results from the AAFP’s most recent member survey on immunizations, AAFP President Rick Kellerman, MD, of Wichita, Kansas, said that the resolution represented the Academy's attempt to spotlight problems with the overall vaccine acquisition and distribution system that continue to plague AAFP members. For example, more than 1 in 4 survey respondents reported having trouble ordering annual influenza vaccine for the 2006-2007 season, up more than 8% from the previous season. And nearly 60% of respondents said some or all of their influenza vaccine shipment was delayed.

Carol Berkowitz, MD, a member of the AAP delegation to the AMA house, testified at the hearing that AAP members also had experienced problems akin to what FP’s saw during the most recent influenza season. “During the 2006-2007 season, we did receive calls from our members saying that they had been unable to obtain vaccine until November,” said Berkowitz.

Still, a number of those testifying at the hearing claimed that when it comes to distributing vaccine, allowing physician practices and other medical
facilities to ‘go to the front of the line’ isn’t always in patients’ best interests.

Abigail Shefer, MD, a captain in the US Public Health Service and associate director for science in the Immunization Services Division of the CDC’s National Center for Immunization and Respiratory Diseases, told those at the hearing in no uncertain terms: “CDC opposes the concept of preferentially making vaccine available for any one group.”

“Instead of focusing on getting vaccine prioritized directly to physicians, our AMA should focus on removing barriers that keep docs from getting ready access” to vaccine products, suggested a member of the AMA Council on Science and Public Health.

Delegates Preserve Core Message

Apparently swayed by testimony at the hearing, the reference committee recommended that the prioritization clause be deleted from the immunization measure when it came before the full house on June 25; the house adopted that recommendation.

The Academy’s delegates remained committed to preserving the spirit of the original resolution, however, and proposed adding the following clause in place of the omitted language:

“Resolved, that the Board of Trustees study the impact on vaccine supply to medical practices, hospitals and other medical facilities that results from the large contracts, with preferential distribution, between vaccine manufacturers/distributors and large nongovernment purchasers, such as national retail health clinics, with particular attention to patient outcomes for clinical preventive services and chronic disease management.”

“This amendment addresses all immunizations, not just influenza,” Kellerman assured delegates when he introduced the proposed change. When physician offices are unable to offer routine vaccines to their patients, the overall function of the medical home can be breached, resulting in fragmentation of care and disruption of clinical preventive services and chronic disease management.

“We hope that this study will do 2 things: first of all, study the impact of large contracts with guaranteed delivery, such as to large retail purchasers, and the effect that that has on small practices; and then also study the effect on what happens in our offices when we don’t have vaccines—on things such as evaluating children for developmental delays or elderly patients who have chronic disease.”

In the end, the delegates signaled their approval of this middle ground by adopting the amended resolution, which also calls for a report back to the house at the 2008 annual meeting.

Cindy Borgmeyer
AAFP News Now

DIPLOMATE VERIFICATION UPDATE 2007

Since 1970, when the charter class of physicians attained certification by the American Board of Family Practice (ABFM), the Board has acknowledged the accomplishment of all physicians who achieve certification and recertification as a specialist in family medicine, the nation’s twentieth primary medical specialty. For the first 26 years, the Board published an annual Directory of Diplomates as a way of honoring and recognizing certified family physicians. The printed directory was made available to all Diplomates, residency training programs, libraries, and other individuals or entities. Formal recognition beyond certification in family medicine was added in the 1990s for physicians who achieve certification in geriatric medicine and sports medicine and received a Certificate of Added Qualifications (CAQ) in those specialties. When requested, letters are sent to any person, organization, or entity requiring the Board’s assurance that a physician is certified by the ABFM.

The ABFM now operates, distributes information, and facilitates interaction with candidates and Diplomates via its Web site at http://www.theabfm.org. The Web site contains a directory devoted to the continued recognition of family physicians who have attained certification, recertification, and a CAQ at any time in their professional career. Obviously, many Diplomates have retired from the practice of medicine, yet the Board continues to recognize the efforts of its past Diplomates in the same way it acknowledges current Diplomates. The online directory has become a refined extension of its predecessor, the Directory of Diplomates. The process of locating certified family physicians online is simple; the user enters a city and state into the online directory and a listing of current board-certified physicians in that geographical area is generated. Alternately, the user enters the first and last name of a physician and all family physicians with identical names are shown with city and state of residence and current and past certification status.

Additionally, the online verification process facilitates the ease by which other specialists, hospitals, third-party payers, and health care consumers can verify the certification status of family physicians. By accessing the verification page of our Web site and
entering the first name, last name, date of birth, and last 4 digits of the physician’s social security number, the user can search the ABFM’s database to verify a physician’s certification status. The data in the verification system is under the direct and complete control of the ABFM staff and is protected from and cannot be altered by unauthorized individuals.

Written verification of a Diplomate’s status continues to be an option for Diplomates and third parties. Diplomates can obtain a verification letter at no charge by entering the Physician Portfolio with their ABFM identification and password and clicking on “Request Verification Letter.” Others seeking written verification of a Diplomate’s status can have a letter generated by ABFM staff for a $25 fee, or they can access the ABFM’s online verification system at no charge. The ABFM grants permission to copy the information provided by the online verification system for the purpose of maintaining physician credentials or for activities related to the evaluation of physician qualifications. The same database is used for written and online inquiries.

Just as recertification has evolved into Maintenance of Certification for Family Physicians (MC-FP), the online verification process is evolving in its role as the primary source for finding a family physician’s certification status. A new online verification system will be launched later this year in 2 phases. The first phase, expected to be available in July 2007, will display certification information in a grid format. The second phase, expected to be available by the end of 2007, will expand verification to include a physician’s standing within MC-FP, a program designed to enhance the clinical excellence of family physicians through continuous measurement of physician competencies. The 4 components of MC-FP—Professionalism, Self-Assessment and Lifelong Learning, Cognitive Expertise, and Performance in Practice—must be successfully completed for renewal of certification.

The revised online verification system will display information in 5 categories.

### Certification Status
Indicates the current status of the Diplomate’s certification in family medicine or in one or more areas of added qualifications.
- **Certified.** The Diplomate has successfully met all requirements for initial certification or recertification.
- **Not Certified.** The Diplomate’s time-limited certificate has expired, or the CAQ certificate is current but not in effect because the family medicine certificate has expired or been withdrawn (there will be an explanation in the Comments column).
- **Expired.** The Diplomate’s time-limited family medicine or CAQ certificate has expired.
- **Withdrawn.** The Diplomate’s certification has been withdrawn because of disciplinary action by the ABFM (there will be an explanation in the Comments column).

### Certification History
Indicates a chronological history of all the Diplomate’s certifications (any discontinuity will be explained in the Comments column).

### Current MC-FP Status
Indicates the Diplomate’s status in the MC-FP process.
- **Participating and Current.** The Diplomate is participating in MC-FP and has met all requirements to date.
- **Participating and Not Current.** The Diplomate is participating in MC-FP but has not completed all current requirements.
- **Not Participating.** The Diplomate has not fulfilled the requirements necessary to participate in MC-FP.
- **Not Scheduled to Participate.** The Diplomate has not yet entered MC-FP.

### Table 1. Sample Chronological History of Diplomate’s Certifications

<table>
<thead>
<tr>
<th>Certification</th>
<th>Certification Status</th>
<th>Certification History</th>
<th>Current MC-FP Status</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Medicine</td>
<td>Certified</td>
<td>Certified 7/13/1990–12/31/1997</td>
<td>Participating and Current</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recertified 8/12/2003–12/31/2010</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Comments
Indicates explanations for any certification status other than “certified,” any non-certified interval, etc.

Family physicians who entered MC-FP within the year following their last successful examination, beginning with the 2003 examination, and who successfully complete all requirements through Stage 1 (the first 3 years of MC-FP) and Stage 2 (the second 3 years of MC-FP), will receive a 3-year extension to their 7-year family medicine certificate. Accordingly, the online verification system will appropriately note throughout each year of MC-FP the status of a physician in the MC-FP process. Physicians who are unable to complete the requirements of MC-FP as published will retain the certificate previously earned but they will remain on a traditional 7-year certification cycle.

The American Board of Medical Specialties (ABMS) Web site states that “certification means a commitment to quality care” and that consumers are becoming more active in learning about health, wellness, disease, and treatment options. The National Committee for Quality Assurance (NCQA) echoes these sentiments by indicating that the educated consumer is one of the most powerful forces driving improvement in health care. The NCQA also is on record as stating that “consumers who make informed choices and are engaged in their own care not only experience better health outcomes, they also help reward doctors, hospitals, and health plans that deliver better care and service.” The online directory and verification systems of the American Board of Family Medicine will enhance the visibility of family physician accomplishments. Concurrently, the public will become aware and gain confidence in knowing that the first medical specialty board to require mandatory recertification has now implemented a program for its Diplomates to enhance their clinical excellence through continuous measurement of physician competencies.


Terrance M. Leigh, EdD
Vice President, Exam Administration and Credentials

STFM SPONSORS PREDCTORAL DIRECTORS DEVELOPMENT INSTITUTE
Imagine yourself as a faculty member in a family medicine department tasked with administrative responsibilities consistent with the role of a predoctoral director, such as oversight of the courses and advising programs offered to medical students. Although you may have a few years of experience with predoctoral teaching, you may feel you need more help to develop in your role and advance in your career. Now you have an opportunity for this training through a program called the Predoctoral Directors Development Institute or PDDI, sponsored by STFM.

The inaugural session of the PDDI occurred in 2007. Twenty-six registrants were supported by their respective chairs to attend the institute, giving evidence for the importance of this program in meeting the needs of academic departments of family medicine. Roughly patterned after similar programs for residency program directors, the PDDI offered 2 separate days of instruction, scheduled in conjunction with the STFM Predoctoral Education Conference and with the STFM Annual Spring Conference. The topics covered included:

- Roles and activities of predoctoral directors
- Curriculum development and evaluation
- Learner observation, assessment, and feedback
- Care and feeding of preceptors
- Scholarship/promotion/publications
- Grant writing/ extramural funding 101
- Promoting student interest and knowledge of family medicine
- Negotiation skills

In addition to the formal curriculum, fellows in the PDDI were tasked with developing a project unique to their home institution and their own personal needs. Through advising sessions and assigned counseling by experienced predoctoral faculty, the fellows developed their projects for submission to future STFM conferences. The combination of face-to-face sessions at the 2 meetings and ongoing communication with advisors was designed to allow critical networking relationships to develop.

This is what some of the participants had to say:
I have been involved in pre-doc education for more than 10 years. The PDDI was exactly what I needed in my profes-
sional development. There have been numerous resources, ideas, and contacts that I have made which have been invaluable to me. The PDDI rejuvenated me in my work.

This fellowship offers a great resource for new or aspiring predoctoral directors to gain insight and crucial knowledge about this position/role. The information presented was invaluable and will help in all aspects of my career.

Extremely helpful overall. There was a great deal of knowledge shared in the lectures. The collaborative group discussions interspersed with the lectures allowed for processing and building on information provided. Small-group discussions were very valuable mentoring opportunities.

Focused, informative, and helpful experience to support work of predoc directors and those engaged in medical education. Connections with course faculty and fellow predoc directors was both encouraging and maturing.

This was an extremely valuable experience. It was targeted toward my needs & interests. The faculty was dedicated, knowledgeable, and excellent facilitators.

The second annual PDDI will be held in 2008, again in conjunction with the STFM Predoctoral Education Conference in Portland, Ore, and with the STFM Annual Spring Conference in Baltimore. Registration is available through the STFM Web site at http://www.stfm.org/predocinstitute/index.htm.

Questions about the Institute can be addressed to the PDDI Steering Committee:

Katie Margo, MD
Steering Committee Chair, University of Pennsylvania

Jeff Stearns, MD
STFM Education Committee Chair, University of Wisconsin

Alec Chessman, MD, Medical University of South Carolina

David Little, MD, University of Vermont

Paul Paulman, MD, University of Nebraska

Cathy Florio Pipas, MD, Dartmouth Medical School

Kent Sheets, PhD, University of Michigan

From the Association
of Departments of Family Medicine


THE RESIDENCY REVIEW COMMITTEE AND ADFM-CONTRASTING PERSPECTIVES?

The Association of Departments of Family Medicine (ADFM) has articulated a number of concerns regarding family medicine residency education, such as the need for flexibility, a simplification of requirements, and more innovation/experimentation in the residency education continuum. The original Residency Review Committee (RRC) requirements were 2 pages in length and have now expanded to 40 pages. The Future of Family Medicine report stated that “innovation in family medicine residency programs will be supported by the RRC for Family Medicine through 5-10 years of curricular flexibility … the discipline should actively experiment with 4 year residency programs that include additional training to add value to the role of family medicine graduates in the community.” The Residency Assistance Program, now known as Residency Programs Solutions (RPS), has suggested 3 levels of obstetrical training (the minimum being 2 months of obstetrical experience with no continuity obstetrics requirement) and a core curriculum that is competency based. The P4 project has identified 14 residency programs in order to support innovative educational process and content. Graduates of these innovative programs will be accepted by the ABFM to sit for the certification exam and the RRC looks forward to the impact these innovative programs may have on future editions of the RRC requirements. The P4 project is a major step to move residency education into the 21st century.

RRCs are accrediting bodies that determine whether a program has met the minimum standards to provide training sufficient to produce a competent family physician. Accreditation is substantially meeting the requirements—no program meets all requirements 100% of the time. The RRC has tended to be reactive to what it sees in the field and in the PIFs. In essence, the RRC has functioned as a rule-making body with measuring tools. The RRC has to respond to the ACCME, which oversees all RRCs. National accreditation organizations such as the ACGME may find that creativity and flexibility are a challenge. However, there is a sense that change may be forthcoming.

ADFM and the Association of Family Medicine Residency Directors (AFMRD) have much to gain by improving communication with each other and with the RRC for family medicine. Many concerns identified by ADFM are likely to be shared by AFMRD. ADFM should encourage the RRC to:

1. Permit several levels of obstetrical training with a floor of only 2 months of rotational experience and no continuity requirement. Specific rationale should be provided by programs requesting this option such as prohibitive malpractice costs or zero recent graduates practicing obstetrics in order to keep programs in step with reality.

2. Define the core curricular requirements that can be met in 18-24 months either through block rotations and/or longitudinal experiences. This would increase the available flexible time in each program.
3. Develop methods/measures/tools that permit individual resident advancement instead of solely using block/time criteria for advancement.
4. Define criteria for developing tracks, focused experiences and fourth year concentrations.
5. Change the predominant measurement parameters from number of patients seen or months experienced to competencies achieved.
6. Advocate that residencies ensure that residents participate in research programs that produce new information about caring for patients—instead of simple literature reviews.

These 6 concerns are content areas that have potential solutions. However, none of these concerns can be effectively resolved unless the RRC requirements are significantly simplified and shortened. ADFM in collaboration with AFMRD could draft an example of a shortened/focused RRC requirements. However, major revision of the RRC requirements with simplification and brevity as a goal will not occur without developing a new relationship between ADFM, AFMRD, and the RRC. These relationships must be established by structured communication. First, communication between ADFM and the AFMRD should occur regularly by having representation at each other’s appropriate meetings. Second, ADFM should regularly invite the chair of the RRC to give a report at the annual winter meeting. Third, the ADFM Residency Committee should develop principles for innovation and research, in collaboration with AFMRD, and request that they become part of future RRC requirements. Lastly, ADFM should develop educational sessions on residency innovation, research in residencies and competency-based education for presentation at annual ADFM meetings.

ADFM can see the RRC as an obstructive force that needs to be moved out of the way or the RRC may be seen as a latent agent of change that needs better communication and proactive assistance in order to move the discipline into the future. The latter approach is likely to get better results in a more timely manner.

Alan K. David, MD, and the Association of Departments of Family Medicine

References

BUILDING THE FOUNDATION OF A BETTER HEALTHCARE SYSTEM: FOR THE COMMON GOOD

Has a fellow traveler on an airplane ever asked you what it is you do? When someone asks me the “What do you do?” question, I tell them, “I’m building the foundation of a better healthcare system.” I believe it is the destiny of family medicine to be the foundation of a new system of healthcare for the common good of the American people. I believe that our discipline was created for this moment in time when all the interested parties in the business of healthcare are looking out for their own self-interests and not the common good. As natural servant leaders, family physicians work close enough to the people to care and work for the common good. As the trainers of the next generation of family physicians, we are building the foundation of a better health care system.

I envision a system of healthcare with a medical home for all Americans. These medical homes will be created, sustained, and staffed by family physicians and our primary care colleagues. The American Academy of Family Physicians, the American Academy of Pediatrics, the American College of Physicians, and the American Osteopathic Association have published an excellent description of the medical home entitled “Joint Principles of the Patient-Centered Medical Home.” I encourage you to read these joint principles as you build the medical homes in your practice. When you build a good medical home you are building the foundation of a better health care system. The Commonwealth Fund 2006 Health Care Quality Survey provides new evidence of the value of medical homes. Promising findings from this survey are that adults who have a medical home have improved access to care, higher rates of preventive screening, are better prepared to self-manage their hypertension, and racial disparities in access to and quality of care are reduced or eliminated.

I believe that the medical home is the unit of primary care for this country, and that we are approach-
ing the tipping point in the rest of the country coming to the same conclusion. What are the training implications of this? Our family medicine centers must be medical homes that truly offer an apprenticeship experience to learners at all stages from premedical students, to medical students, to residents, to fellows, to faculty. We must ensure that our residencies train our residents so that they will thrive in the medical homes of the future. Is it time for all medical students to receive training in a medical home, so they understand the foundation upon which the health care system will be built? Is it time to require a continuity of care experience in a medical home as a core competency to graduate from medical school?

One problem with the medical home model is that you can't fund it on E and M codes alone. It requires additional reimbursement that pays for care coordination and management that occurs outside of the office visit.

Who deserves extra reimbursement as a medical home? There is an opportunity for practices to become certified as medical homes by the National Committee for Quality Assurance (NCQA) with their Physician Practice Connections program. I predict that in the near future this certification will enable medical homes to receive enhanced practice revenue. This revenue will allow us to continue the work that we do every day that just isn't paid by office visits, such as telephone management, case and disease management, electronic medical record costs, and continuous quality improvement to name a few. A number of pilot programs are underway linking the Physician Practice Connections certification with enhanced revenue. If you review the Physician Practice Connections Standards of the NCQA (Table 1) most family medicine teaching practices have already put many of the requirements into place.

We are a patient-care based specialty and our training needs to maintain that emphasis. Our job is to train our residents as the clinical equivalent of pleuri-potentential stem cells. After residency, family physicians can differentiate into whatever their position or community requires. But, at the core, they were trained in the basic principles of family medicine in a medical home. I believe it is the destiny of family medicine to be the foundation of a better healthcare system for America. We are needed … for the common good.

Mark Robinson, MD
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Table 1. NCQA Practice Connection Standards

| Access and communication for patients |
| Patient tracking and registry functions |
| Care Management |
| Patient self-management support |
| Electronic prescribing |
| Test and referral tracking |
| Performance reporting and improvement |
| Interoperability of electronic systems |


References