

Primary Care Practice Organization and Preventive Services Delivery: A Qualitative Analysis

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BACKGROUND. Rapid developments within the health care environment have led to increased pressures for change among primary care physicians and their practices. Nevertheless, a lack of understanding of practice organization and function has limited the effectiveness of attempts to change practice behaviors. Recent attempts to increase the delivery of preventive health care services illustrate the limitations of current approaches. To assist physicians in their attempts at change, our study looked at the office as a whole system and at the competing demands within the primary care setting.

METHODS. Qualitative fieldnotes were recorded by research nurses who observed 138 family physicians in 84 practices in northeast Ohio for 4 days each. These data were content-analyzed to identify features that are important for understanding how practices are organized.

RESULTS. These data indicate that primary care practice is much more complex than research and transformation efforts generally acknowledge. The data identified a diverse set of features that describe how primary care practices are organized and function. These included cognitive and behavioral components of physician philosophy and style, and numerous features of the practice organization, such as office efficiency, clarity of staff roles, communication patterns among physicians and staff, and approaches to using office protocols. The data also suggest that some practices are more innovative than others and that some physicians or staff have special motivations that can support or inhibit a particular change.

CONCLUSIONS. Physicians who want to change their practice, as well as those persons who want to stimulate change from the outside, need to have a more comprehensive approach than is now commonly used to assess practices that encompass a broad spectrum of variables.

KEY WORDS. Systems theory; family practice; practice management, medical; preventive health services; physician's practice patterns. (*J Fam Pract* 1998; 46:404-409)

The call to change stands behind every family physician's door. It can wear the suit of managed care, the white coat of practice guidelines, the everyday clothing of patients with changing demands and expectations, or the casual dress of family physician academic colleagues pleading to improve delivery of preventive health care services. Greco and Eisenberg¹ describe the general methods of changing physicians' practices, including education, feedback, participation by physicians in efforts to bring about change, administrative rules, financial incentives, and financial penalties. According to the literature, practices do respond to these changes, but rarely as expected.¹⁻⁴

Most efforts at changing practice behavior have used methods such as administrative structure, education, feedback, incentives, or regulations that have focused on the individual physician. Schwartz and Cohen² suggest that behavior change strategies need to be based on a practice ecology model that focuses on the environment in which the physician practices. A number of organizational change approaches have been tried recently, including the approach often cited in the business literature known as continuous quality improvement (CQI),⁵ and the GAPS approach introduced by Dietrich and colleagues.⁶ Despite these efforts, most studies have focused on changing provider behavior and have not looked at the office as a system or at the competing demands within the primary care setting.⁷

The limitations of current approaches to changing practice patterns are evident in recent attempts to increase the delivery of preventive health services in primary care practices. Despite a decade of multiple initiatives, the delivery of preventive services remains less than optimal at the practice level.⁸ Nearly all the research on what is actually happening in community-based primary care practices relative to the delivery of preventive health care services consists of quantitative descriptions of levels of service delivery⁸⁻¹²; however, the actual process of care within community practices and the organizational

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context of practice remain largely unknown.

To better understand the context of primary care practice, the Direct Observation of Primary Care (DOPC) study, was designed to describe the content and context of family practice and to determine the content of patient visits within the competing demands of primary care practice. In this article we report the initial results of the qualitative data from the DOPC study¹³ and we suggest that understanding the practice organizational context and the process of care is critical to incorporating preventive services into primary care practice.

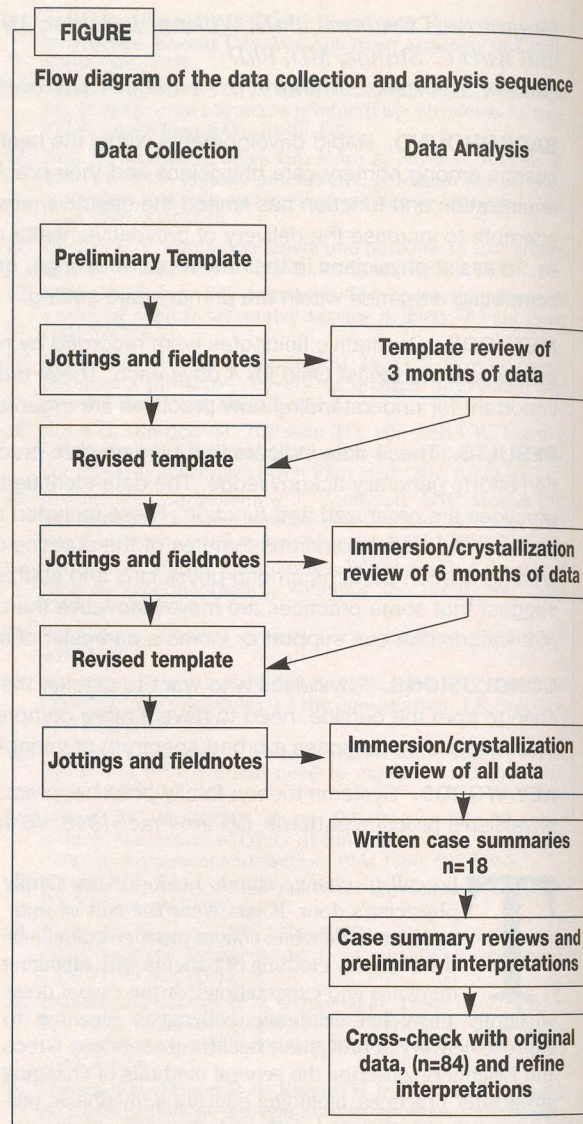
METHODS

The DOPC study used a cross-sectional design in which consecutive patients visiting their family physician were asked to participate in a study of primary care. The family physicians were members of the Research Association of Practicing Physicians (RAPP), a network of 138 community-based family physicians from 84 practices in northeast Ohio who agreed to participate in a study of the content of primary care practice. This cross-sectional study used a multimethod approach that included direct observation of clinical encounters, chart audits, questionnaires of patients and physicians, and semistructured participant observation of the practice. The quantitative study methods have been described in detail elsewhere.^{13,14}

From the perspective of the granting agency, the goals of the qualitative component of the study were to identify and describe the barriers to and the opportunities for preventive health care services, to note competing demands, and to describe the organizational context of the larger study. The research team saw the major role of the qualitative research as a process from which to generate illustrative anecdotes, to provide context for quantitative data, to generate new working hypotheses, to identify key conceptual themes for further research, and to provide insight about the study process. The data evolved into a more extensive database, worthy of analysis in its own right.

QUALITATIVE DATA COLLECTION

The qualitative component of the overall research design is best described as brief, cross-sectional, and iterative (Figure). Data collection primarily consisted of nonparticipating direct observation, with the iterative process being established by having the research nurses make repeat visits approximately 4 months after the initial visit. Research nurses worked in pairs; one nurse enrolled patients and observed them in the waiting room, and the other observed the clinical encounters of all patients who consented to participate in the study. Two of the days were spent in abstracting charts, which provided an opportunity to observe other dimensions of the practice. The 4 days of contact time with each physician provided brief descriptive "snapshots" of the physicians and their practices that eventually totaled more than 2000 pages of fieldnotes.



The primary qualitative data were brief observational fieldnotes that were limited in scope by the primary quantitative focus of the larger study. A preliminary guide or template for focusing observations was developed, and the research nurses were trained by two of the authors (W.L.M. and B.F.C.) in observational techniques based on the template. As research nurses collected quantitative data, they kept short "jottings," then dictated summary fieldnotes at the end of each day.¹⁵ These data were initially impressionistic and focused on describing the practice in terms of key features, such as location, office relationships, physical layout, prevention activity materials, physician characteristics, and how the practice functioned.

After the first 3 months of data collection, two of the

authors (W.L.M. and B.F.C.) reviewed the fieldnotes and discovered more information than originally anticipated. Thus, the research nurses' role as observer expanded, and they were asked to record information on a broader set of categories. Consequently, our study of the qualitative component of the DOPC moved from being a study of the study to exploring how practices function as organizations and how they do or do not facilitate the delivery of preventive services within the context of other health care services. A revised template was provided to the research nurses that requested more detailed information on the practice environment: the neighborhood, office building, waiting area, and clinical area; each of the office staff and doctors; the patients; competing demands within encounters and from other parts of the office; office function and operations; the presence and use of prevention- and patient-education materials; and descriptions of the charts. The research nurses were also asked to further elaborate on their overall impressions of the office and to comment on study issues, such as any problems revealed in implementing the study design, reasons for patients refusing to participate, and suggestions for improving the study process.

DATA ANALYSIS

All dictated fieldnotes were transcribed and imported into FolioViews (Folio Corp, Salt Lake City, Utah) for data management and coding.¹⁶ FolioViews allowed the team to organize the data much like a book with chapters and sections, in which the sections were the practices and the chapters were the physicians in the practice.

Data analysis changed through the iterative research cycle (Figure). The initial approach was to use a template style,¹⁷ since a template already existed in the form of the participant observation checklist. Two of the authors (W.L.M. and B.F.C.) cross-checked preliminary data with members of the DOPC research team, including the research nurses, to refine this initial template. The template was again revised near the end of the first round of data collection after an immersion-crystallization review¹⁸ of randomly selected practices. This entailed a repetitive series of intense readings (immersion) of the pertinent fieldnotes, followed by a summarization (crystallization) of the salient themes. The revised template was again cross-checked with the DOPC team and nurses.

Once the data collection had been completed, an independent analysis was performed by one of the authors (V.A.A.) using the immersion-crystallization approach. After all the data were read and important categories were identified, written case summaries were constructed from a purposefully selected sample of 18 of the practices that maximized variation along the dimensions of practice size (solo vs group), physician sex, and practice location. Three of the authors (B.F.C., W.L.M., and V.A.A.) independently reviewed the case summaries and developed preliminary interpretations that included

important features, processes, and relationships in the practices. These were subsequently cross-checked against the original data. The authors then used a purposeful sample of original fieldnotes from the remaining practices to search for disconfirming evidence and to refine the interpretations.

The qualitative content analysis resulted in more than 30 features that were seen as important in the organization of the offices. In addition to the qualitative description of each of these features, the investigators elected to conduct a factor analysis to determine how these features might be empirically grouped. This type of analysis is used to reduce the number of variables by identifying new composite measures (factors) while minimizing the loss of information. This was done independently by one of the authors (S.A.F.) only after the qualitative analysis had been completed. To do this, the features were categorized into 26 variables that were coded as either present or absent (0 or 1). Not all the coded variables were selected for the factor analysis, either because the distribution was such that the variables occurred very rarely or because they were highly redundant with other variables. A principal axis factor analysis with orthogonal rotation was specified. Only statistically meaningful (eigenvalue >1), reliable factors (Cronbach's alpha >.60) were interpreted.

RESULTS

The fieldnotes from the 4 days of observation of 138 family physicians in 84 practices were analyzed. There were 5 to 10 pages of notes for each physician. The practices represented an extensive variation of family practice settings; the details of this sample are described elsewhere.¹³

During the qualitative content analysis, it became possible to discern the key features or variables that appeared to be important in understanding how practices operate on a day-to-day basis (Table). Our interpretation of the data suggests that these are constructs that researchers and policymakers should pay attention to in future research.

PHYSICIAN-LEVEL CONSTRUCTS

At the physician level, there were three themes that emerged as important for understanding each primary care practice: physician philosophy, physician style, and doctor-patient continuity. Each individual physician had a *physician philosophy*, or cognitive framework, composed of: the degree to which he or she were problem- or patient-focused, the scope of clinical information used during encounters, and the approach to delivering preventive services. Some physicians focused primarily on ruling-out or treating disease; others assessed problems within the context of psychosocial information that could have influenced the chief complaint and other aspects of health. These differences often, but not always, corresponded to the physicians' limiting of the pertinent clinical informa-

TABLE

Features of Primary Care Practices Found in the Qualitative Analysis to Be Important for Understanding Practice**Physician-Level Constructs**

Physician Philosophy

- Problem- or patient-focused
- Scope of clinical information
- Approach to preventive services delivery

Physician Style

- Shared control in patient encounters
- Affective connection with patients
- Perception of competing demands
- Efficiency in time management
- Teaching and use of health-education materials

Doctor-Patient Continuity

- Personal knowledge of the patient
- Longitudinality
- Remembered shared experiences with the patient

Practice-Level Constructs

Practice Organization

- Clear and shared role expectations among staff
- Clear and shared communication among staff
- Efficiency of the office in moving patients through the system
- Protocol presence, clarity, and shared use
- Volume of patients
- Perception of being busy
- Perception of overwork or burnout of office physicians and staff
- Dissension or tension within the practice
- Sense of groupness of the physicians
- Distinctive vision of the practice

Office Staff

- Friendly office staff
- Staff shared knowledge with one another and their families
- Staff were involved in the delivery of preventive care

Patient Population

- Patients identified with the practice
- Medical and socioeconomic need of the patient population
- Presence of a dominant demographic group

Practice Continuity

- Consistent personnel over time and place

Additional Features

- Bee-in-the-bonnet
- Openness

with patients, the perception of competing demands, efficiency in time management, and the amount of teaching or information-sharing, including the use of health education materials. Many combinations of these features were observed. It should be noted that although each physician had a dominant philosophy and style, all were observed to occasionally adjust to differing situations and patient responsiveness. The fieldnotes were not rich enough to discern any distinctive patterns of variation; however, it was interesting that both physicians who were efficient with time management and those who were not could be effective at providing preventive services. That is, there were several physicians who were reported to be effective at providing preventive services and were still efficient in time management.

A third variant at the physician level was *doctor-patient continuity*. From the perspective of the physician, this construct consisted of three dimensions: personal knowledge of the patient; longitudinality, or the relationship over time; and remembered shared experiences with the patient. There were numerous examples of situations when personal knowledge of the patient allowed the physician to discuss health behavioral issues that might otherwise be awkward to bring up. This kind of relationship may increase the opportunity for counseling for tobacco, weight loss, and exercise. However, there were also examples of patients who had been to the office many times and had never received any basic preventive services. Thus, longitudinality of the relationship itself is not a guarantee that services will be delivered.

PRACTICE-LEVEL CONSTRUCTS

There were also four key areas of variation categorized at the practice level: practice organization, office staff, patient population, and practice continuity. Many of these variations were related to the *practice organization*, particularly to basic office function: the degree to which role expectations are clear and shared among the staff; the degree to which there was a clear and shared communication among the staff; the efficiency of the office in moving patients through the system; the presence, clarity, and shared use of protocols; and the volume of patients seen. Within the office organization there were also features relating to the affective sense of the practice. These were the physicians' and staffs' perceptions of being too busy and of being overworked or burned out, and the degree of dissension or tension within the practice.

Among the practices there was also variation in the sense of "groupness," that is, the degree to which the physicians worked as a team or as autonomous individuals sharing the same office space. Finally, we identified distinct practice visions: serving the patient (eg, biomedical needs, health promotion needs), supporting the traditional physician role (staff serves the doctor), serving the bottom line (the practice as a business), and serving the learner (the practice as teaching site). There were some practices

tion to biomedical data or including psychosocial material in their considerations.

There were distinct differences as to how much importance physicians placed on incorporating preventive services into their practice routines. A few acted as if it was someone else's responsibility; others limited the delivery of preventive services to special visits or a patient's request. A number of physicians integrated preventive health care into many visits by taking advantage of windows of opportunity within either acute or chronic care encounters, often using either a mental or written checklist of preventive services provided in nearly every visit.

Each physician also had clearly discernible approaches when interacting with patients during a clinical encounter. These *physician styles* consisted of features such as: the degree of shared power, the degree of affective connection

with no discernible vision evident in the available data.

Another practice-level key variant centered around features of the *office staff*. Among the practices there was clear variation in the degree to which office staff were friendly with one another and enjoyed the work setting. There were also differences in the degree to which staff shared knowledge of one another and their families. In addition, there were noticeable differences in the level to which staff were involved in the delivery of preventive care; any staff involvement, however, was usually very limited.

Characteristics of the *patient population* were found to affect the practice, particularly the degree to which the patients identified with the practice (as opposed to with the physician); the level of medical and socioeconomic need of the patients; and the presence or absence of a dominant demographic group. Important differences were also seen in *practice continuity*. This referred to the stability of the practice and its personnel over time and place, a feature that also affected staff knowledge of the patient population.

ADDITIONAL FEATURES

There were two other features not consistently found at either the physician or practice levels. The first of these features we called the *bee-in-the-bonnet*, to describe a physician or another individual, such as a nurse or practice manager, with a special interest in a particular issue, procedure, or disease. Sometimes this interest could be preventive services delivery or a particular aspect of prevention, such as diet and exercise or smoking cessation. At other times the special interest was in a particular disease, such as diabetes or heart disease. A person with a bee-in-the-bonnet can dramatically affect the delivery of that particular service, sometimes to the detriment of others, and this interest can clearly permeate the organization.

A second feature not consistently found at either the physician or practice level was the *openness* of the practice and the physician to new ideas and their readiness to change. There was considerable variation in the degree to which a practice or physician was open to new ideas and both external and internal information. Some practices were constantly seeking new ideas and trying to implement them, while others were rooted in tradition. There were physicians who were open to change but whose practices were not, and vice versa.

FACTOR ANALYSIS

The data revealed 30 features of the practice that are important to consider in interventions and policy decisions; however, it was clear that practices functioned as whole entities. As the analysis progressed, we saw that while it was easier to separate these variables this way for organizational purposes, they were not truly independent; they needed to be considered as being part of a complex system.¹⁹ This idea was further con-

firmed by the factor analysis.

The factor analysis suggests another approach to organizing these features into related domains of information. The variables included in the factor analysis included physician-level variables, practice-level variables, and the two additional features, bee-in-the-bonnet and openness to change. The factor solution indicated that three meaningful factors accounting for 36% of the variance in the item pool. Items contributing to the first factor included shared vision, office efficiency, physician efficiency, clarity of roles, practice stability, and high patient-physician continuity. This factor can be referred to as "organizational cohesiveness and office efficiency."

The second factor contained most of the physician-level variables, including the physician affectively responding to patients, being patient-focused, having a biopsychosocial focus, not controlling the visit agenda, using an integrative method, and being open to change. This factor separates differences in "physician philosophy and style."

The final factor included a mix of variables that seemed to be related to the practice's motivation to provide preventive services and health education. Groupness (the degree to which a group practice identifies itself and functions as a group), the presence of a person with a bee-in-the-bonnet, and the use of preventive services protocols were the top contributing variables. Also in this final factor was staff involvement in preventive services delivery, a high perception of practice "busyness," and a focus on health education. This factor was called "prevention motivation." Internal consistency reliability estimates for the each of the three factors was good, ranging from 0.82 for office efficiency to 0.68 for prevention and health education.

The three groupings of variables are consistent with the initial organization of the qualitative data, which included both physician-level constructs and practice-level constructs. The organizational cohesiveness and office efficiency factor seems to be oriented toward efficiency, while the physician philosophy and style factor seems to be oriented toward flexibility or openness; that is, being patient-centered, biopsychosocial, and nonpaternalistic. The third factor includes both physician-level and practice-level variables that largely seem to be related to doing things in the practice that enhance the possibility of providing preventive services. Two important features identified from the fieldnotes were clearly independent of the other variables evaluated: the physician's perception of competing demands and a dominant patient demographic did not correlate with any of the three factors. These two variables may be uniquely important in describing practice organizations.

CASE EXAMPLES

The following case examples illustrate the relevance of these organizational features for researchers and policy-

makers, as well as those interested in implementing interventions. The first two examples provide stark contrasts. In one, the practice has a fairly high level of organizational cohesiveness and office efficiency, high staff involvement, and physicians who are patient-centered and have a high level of motivation to practice prevention. None of these features were found in the second practice, with the possible exception of one of the physicians with a bee-in-the-bonnet for smoking-cessation counseling. The third example illustrates that it takes more than just a good organizational structure to be an effective prevention practice. These case examples should not be interpreted to represent what does or does not promote preventive services delivery. The data reported here are inadequate to address that important question.

Practice 1 is best described as a dusty jewel amid disorder and represents a practice that has a relatively high level of organizational cohesiveness, a moderate level of office efficiency, and a high level of preventive services delivery. The four physicians in this single-specialty urban group share a vision to improve the community they serve and are very motivated to provide systems to enhance preventive services delivery. One physician in particular has a bee-in-the-bonnet for preventive services that is passed on to the others because of the excellent internal communication.

The practice is located in a low-income neighborhood and serves a group of poor, working-poor, and middle-class people, many of whom are without insurance. The waiting room of the practice is dirty, with stains, dirt, and snags in the carpeting, and the examination rooms are very cluttered. Most of the practice staff come from the local community. In every examination room, the waiting room, and the hallway, there is a large amount of culturally relevant patient-education literature.

The delivery of preventive services is integrated into the daily care of patients by each of the physicians, all of whom provide a lot of counseling. In addition, the nursing staff, a nurse practitioner, and a dietitian provide counseling. The nursing staff is often involved in patient care. The staff are very familiar with the patients and know most of them by name. The staff also get along with one another, are very friendly, and are usually smiling and joking. They work as a team. This is a very busy practice, with appointments to see the nurse practitioner and physicians backlogged for 2 months or more. They have many no-shows and add-ons, and long waits are expected. Despite the apparent disorder, the office itself runs smoothly and is a fairly efficient system with organized charts.

Practice 2 serves as a contrast and can best be characterized as stagnant. The practice lacks an efficient office system and is plagued with turnover and dissension. This suburban practice of three physicians is located in a working middle-class community. In the fieldnotes, it was described as a fairly small, nondescript office with five very small examination rooms. There are no educational

materials in the waiting room or the examination rooms, and only a few in a hall rack where they are unlikely to be seen. While there are no preventive services or health education protocols, the office charts are very legible and organized.

The office is staffed by an office manager, a receptionist, and two medical assistants. It is clear that the staff do not like the office manager, and, in general, they are uncooperative and not very productive. They seem to have plenty of free time. The staff dresses casually, enough so as to raise a comment from one of the patients.

The three doctors are frustrated and feel powerless. One of the physicians has a bee-in-the-bonnet against smoking, but there is little communication among the physicians and no effort has been made to make any office-level policies.

Practice 3 is best described as a well-oiled machine that provides very efficient basic medical care. This solo practice is located in a suburban town and serves a mostly middle-class community. The office staff are very friendly and work well together. To maintain efficiency, three people work on billing and scheduling. The charts are extremely well organized, with dictated information and up-to-date genograms, problem lists, and medication lists on every chart.

The physician is friendly with his patients, but makes an effort to stay on time. He does not respond to patients' cues for emotional support, but instead focuses on the treatment of the complaint. There are well-equipped, large examination rooms; however, there is not much patient-education material, and there are no posters or pamphlets for patients to pick up. This office scored extremely high on organizational cohesiveness and office efficiency, but preventive services delivery is not a priority and does not fit into the physician's current philosophy or style of practice.

DISCUSSION

The results of this study give insights into the complexity of primary care practices. The identified features may be important for practitioners, administrators, researchers, and policymakers to consider in helping practices adapt to a changing environment. The nature and diversity of individual systems indicate that it may be risky to isolate facets of a practice for study or intervention. Instead, practices need to be viewed as dynamic systems in which different combinations of features may prove to facilitate or hinder change. The case examples demonstrate how the different features function as part of a larger whole that is essentially irreducible.

There are a number of limitations to this study. The design was cross-sectional and thus missed some of the dynamics that might have been captured if studied longitudinally. This kind of study, however, would only make the systems more complex than already described. The

data also lacked key informant interviews and had very limited participation by practices in the interpretations. There was only very brief participant observation; more exposure would add much more depth and probable reinterpretation. The quantitative focus of the larger project left the research nurses with limited time and energy for the more open qualitative data collection.

It is likely that the keys to success in preventive services delivery and other efforts to improve the quality of ambulatory care include physician commitment and a supportive organizational structure. There is also some evidence that the philosophy and style individual physicians bring to the clinical encounter contribute to preventive services delivery. Our data suggest that practices may vary greatly in these features. Therefore, future interventions will have to be tailored to particular physicians within their particular organizations. This type of tailoring may result in improvements beyond other previously attempted interventions.

This study raises some interesting questions for future research. How do the practice- and physician-level features relate to each other? How can we characterize and understand the sense of practices as organizations? How do the answers to the first two questions help us improve preventive services and illness care delivery in primary care practices? Each practice seems to have its own unique feel and form; how do we name and describe this impression? What if a practice's organization were examined from a systems perspective? While this study provides some initial insights into these questions, more in-depth case studies of primary care practices are needed. Further work is needed to reveal common combinations of features within practices. Our data raise the possibility of classifying practices into a relatively small number of meaningful typologies. Such classifications of practices could be used to identify features that are amenable to change or that might serve as change facilitators.

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REFERENCES

1. Greco PJ, Eisenberg JM. Changing physicians' practices. *N Engl J Med* 1993; 329:1271-4.
2. Schwartz JS, Cohen SJ. Changing physician behavior. In: Mayfield J, Grady M, eds. Conference proceedings, primary care research: an agenda for the 90s. Washington, DC: US Dept of Health and Human Services, Public Health Service, Agency for Health Care Policy and Research, 1990.
3. Davis DA, Thomson MA, Oxman AD, Haynes B. Changing physician performance: a systematic review of the effect of continuing medical education strategies. *JAMA* 1995; 274:700-5.
4. Borkan JM. Changing health provider behavior. In: Crabtree BF, Miller WL, Addison RB, Gilchrist VJ, Kuzel A, eds. Exploring collaborative research in primary care. Newbury Park, Calif: Sage Publications, 1994.
5. Solberg LI, Kottke T, Brekke ML, Calomeni CA, Conn SA, Davidson G. Using continuous quality improvement to increase preventive services in clinical practice—going beyond guidelines. *Prev Med* 1996; 25:259-67.
6. Dietrich AJ, Woodruff CB, Carney PA. Changing office routines to enhance preventive care: the preventive GAPS approach. *Arch Fam Med* 1994; 3:176-83.
7. Jaén CR, Stange KC, Nutting PA. Competing demands of primary care: a model for the delivery of clinical preventive services. *J Fam Pract* 1994; 38:166-71.
8. Stange KC, Fedirko T, Zyzanski SJ, Jaén CR. How do family physicians prioritize delivery of multiple preventive services? *J Fam Pract* 1994; 38:231-7.
9. Lewis CE. Disease prevention and health promotion practices of primary care physicians in the United States. *Am J Prev Med* 1988; 4(suppl):9-16.
10. Kottke TE, Solberg LI, Brekke ML, Cabrera A, Marquez MA. Delivery rates for preventive services in 44 midwestern clinics. *Mayo Clin Proc* 1997; 72:515-23.
11. National Committee on Quality Assurance. The state of managed care quality. Washington, DC: National Committee on Quality Assurance, 1997.
12. Anderson L, May DS. Has the use of cervical, breast, and colorectal cancer screening increased in the United States? *Am J Public Health* 1995; 85:840-2.
13. Stange KC, Zyzanski SJ, Flocke SA, et al. Illuminating the 'black box': a description of 4454 patient visits to 138 family physicians in 84 practices. *J Fam Pract*, 1998; 46:377-89.
14. Stange KC, Zyzanski SJ, Smith TF, et al. How valid are medical records and patient questionnaires for physician profiling and health services research? A comparison with direct observation of patient visits. *Med Care* 1998. In press.
15. Bogdewic SP. Participant observation. In: Crabtree BF, Miller WL, eds. Doing qualitative research. Newbury Park, Calif: Sage Publications, 1992.
16. Weitzman EA, Miles MB. Computer programs for qualitative data analysis. Newbury Park, Calif: Sage Publications, 1995.
17. Crabtree BF, Miller WL. A template approach to text analysis: developing and using codebooks. In: Crabtree BF, Miller WL, eds. Doing qualitative research. Newbury Park, Calif: Sage Publications, 1992.
18. Miller WL, Crabtree BF. Qualitative analysis: how to begin making sense. *Fam Pract Res J* 1994; 14:289-97.
19. Miller WL, Crabtree BF, McDaniel R, Stange KC. Understanding change in primary care practices using complexity theory. *J Fam Pract* 1998; 46:369-76.