

OFFICE SYSTEMS MANUAL

**Screening and Diagnosis of Breast Cancer
for Primary Care Physicians**

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Additional Resource Materials:

**“Improving and Maintaining Preventive Services, Part 1: Applying the Patient Model” by
Forrest A. Pommerenke, MD and Allen Dietrich, MD
The Journal of Family Practice 34:86-91 (1992)**

**“Improving and Maintaining Preventive Services, Part 2: Practical Principles for Primary
Care” by Forrest A. Pommerenke, MD and Allen Dietrich, MD
The Journal of Family Practice 34:92-97 (1992)**

**“Tools, Teamwork, and Tenacity: An Office System for Cancer Prevention by Patricia
A. Carney, RN, MS; Allen J. Dietrich, MD; Adam Keller, MPH; Jeanne Landgraf, MA;
and Gerald T. O’Connor, PhD, DSc
The Journal of Family Practice 35:388-394 (1992)**

THE GAPS APPROACH TO DEVELOPING OFFICE SYSTEMS FOR DELIVERING BREAST CANCER PREVENTIVE SERVICES IN PRIMARY CARE

Step 1

Set GOALS for breast cancer early detection

Clinical Breast Exam

- What age to start?
- How often? (May vary with age)

Mammography

- What age to start? (40 or 50)
- What age to end?
- How often? (q. 1 or 2 years?)

Step 2

ASSESS your current office systems for breast cancer early detection

Perform a mini audit of 10 charts
(Audit form in manual)

Tools

- Health history forms*
- Flow sheets*
- Patient reminders
(Tickler file and postcards*)
- Physician reminders
(Post-it notes* to flag charts)
- Prevention prescription pad*
- Patient held Health Diary*
- The periodic health exam

Office staff responsibilities

- Reviewing and updating charts at time of visit
- Counseling patients about mammograms and breast exams
- Coordinating prevention activities (Preventive Champion)

* Items contained in Put Prevention Into Practice Office Kit

Step 3

PLAN how to modify existing routines and identify responsibilities for the office staff regarding breast cancer screening.

Develop systems to Identify patients in need of services

Tools	Actions	Office Staff
Health History Form	Distribute or mail to new patients	Receptionist
	Review reported health maintenance history	Nurse
Flowsheets	Insert blank flowsheets into chart	Receptionist
	List recommended services on flowsheets based on age and risk	Nurse

Develop systems to Monitor Patient Status

Tools	Actions	Office Staff
Flowsheets	Record initial status based on review of health history form	Nurse
	Update at time of each visit and/or at time of periodic health exam	Nurse

Develop systems to Reinforce/Promote Desired Patient Behavior

Tools	Actions	Office Staff
Educational materials	Place in waiting rooms and exam rooms	Receptionist
	Distribute to patients	Nurse/Physician
Counseling	Counsel patients about needed services	Nurse/Physician
Reminder cards	Maintain tickler file Mail cards as needed	Receptionist

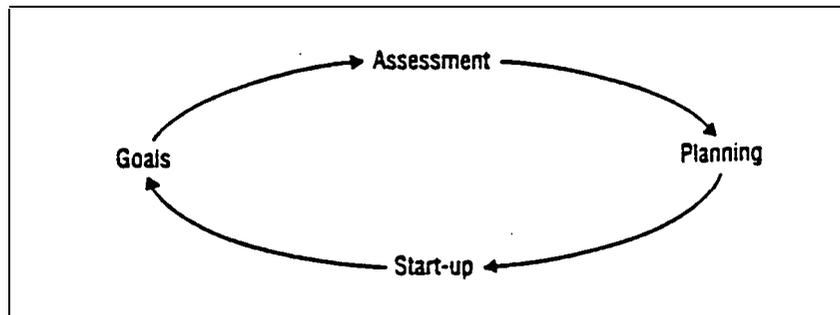
Step 4

IMPLEMENT modifications.

Feedback system performance

Perform another Mini Audit a few months after you make changes in office systems to find out if they are working.

The GAPS Cycle



“Changing Office Routines to Enhance Preventive Care” by Allen J. Dietrich, MD, Charlotte B. Woodruff, and Patricia A. Carney, RN, MS
Archives of Family Medicine 3:178 (1994)

Mini-Audit Form

Date _____

Patient Group Age Range _____

Patient	Date of Last CBE	Date of Last Mammogram	Date of Last Periodic Health Exam

Name
D.O.B.
No.

Adult Preventive Care
Flow Sheet

PUT PREVENTION
INTO PRACTICE

Year															
Age															

Health Guidance

(Circle if appropriate)	Aspirin (A)	Physical Activity (P)	Date												
	Drugs/Alcohol (D)	Sexual Behavior(S)	Type(s)												
	Estrogen (E)	Tobacco (T)	Date												
	Folate (F)	UV Exposure (U)	Type(s)												
	HIV/AIDS (H)	Violence & Guns (V)	Date												
	Injuries (I)		Type(s)												
	Nutrition (N)		Date												
	Occupat. Health (O)		Type(s)												

Examinations and Tests

Mammogram	Date														
	Result														
Clinical Breast Exam	Date														
	Result														
	Date														
	Result														
	Date														
	Result														
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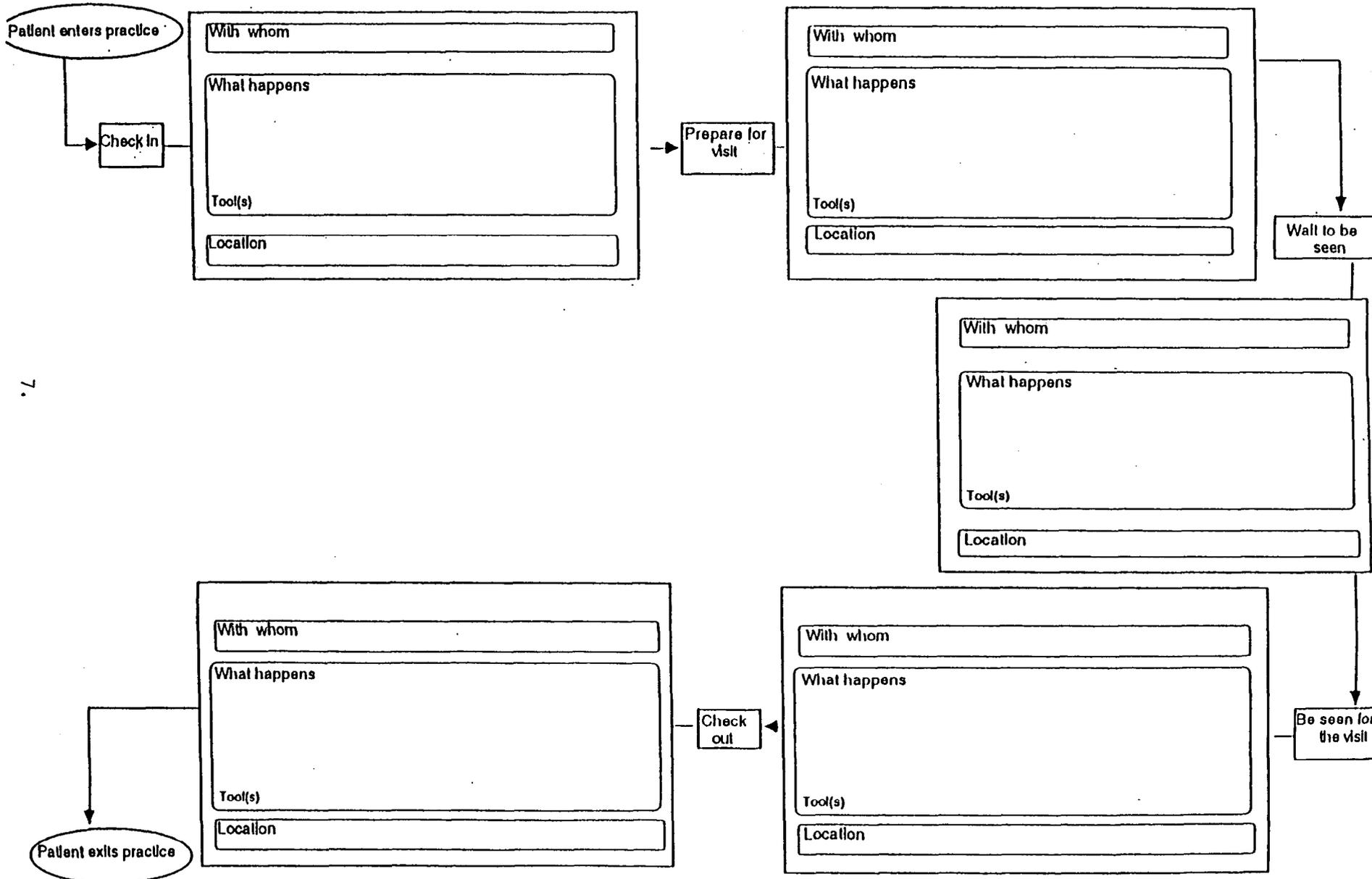
Suggested Result Codes: O = Ordered N = Result Normal A = Result Abnormal R = Refused E = Done Elsewhere * = Next Due

Immunizations

	Date														
	Manuf. & Lot No.														
	Date														
	Manuf. & Lot No.														
	Date														
	Manuf. & Lot No.														

Revised Patient Path Worksheet

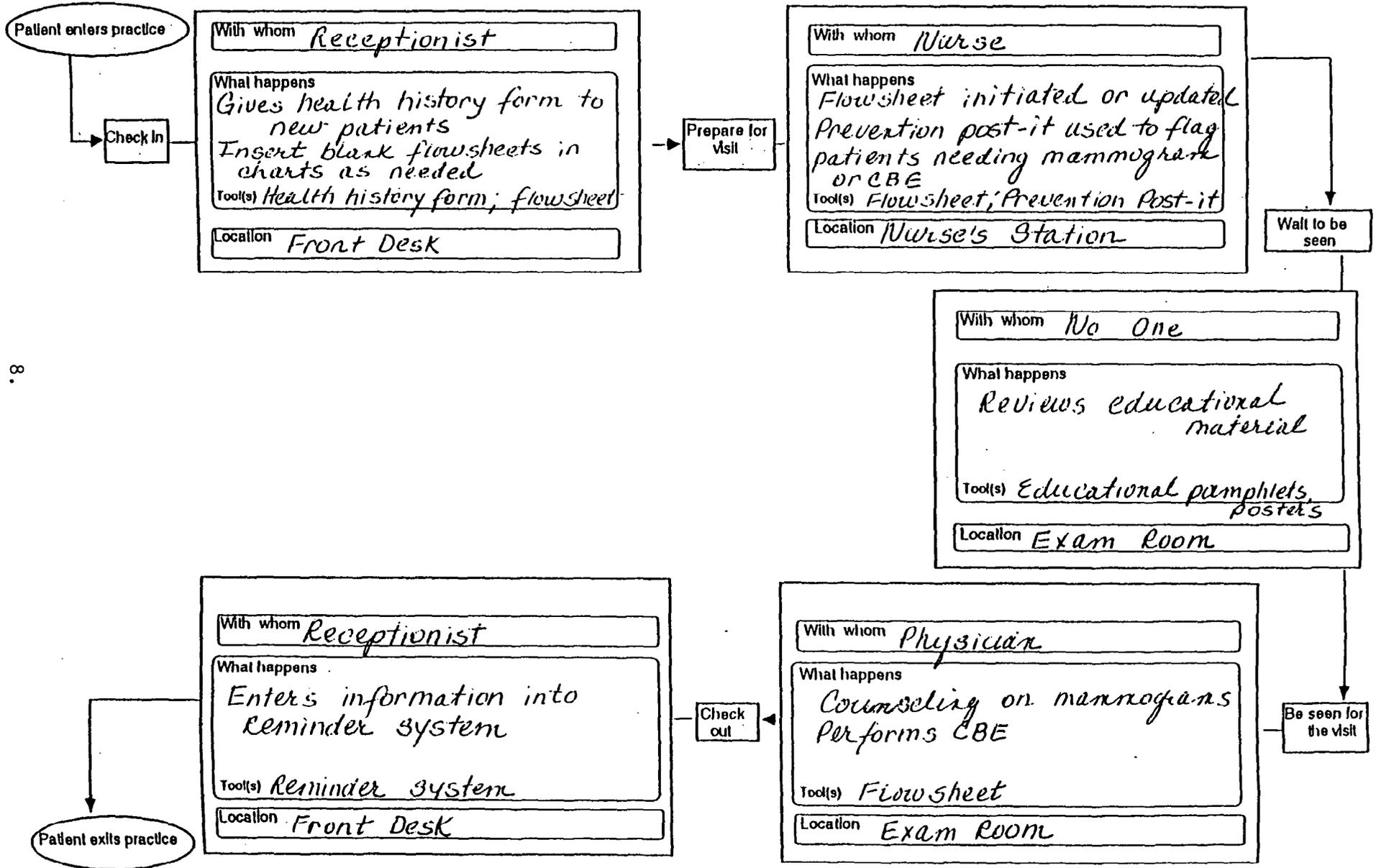
In the spaces provided below, describe how a patient currently moves through your practice, with whom s/he meets, and what happens during each interaction. (refer to the sample)



7.

Revised Patient Path Worksheet

In the spaces provided below, describe how a patient currently moves through your practice, with whom s/he meets, and what happens during each interaction. (refer to the sample)



Developing an Office System Based on Quarterly Reports on Mammography Use by CMHC and Pilgrim Patients

The Quarterly Mammography Report

Beginning in June or July you will be receiving quarterly reports on CMHC and Pilgrim Health Care patients in your practice, who may be overdue for a mammogram. The report lists women who met one of the following conditions during the quarter prior to the generation of the report:

- 15 months since the last mammogram OR
- 26 months since the last mammogram*

These women have has been sent at least one mailed reminder to encourage them to get a mammogram.

The list is not cumulative. Thus a woman who continues to fail to get a mammogram will appear on the list only once a year in the quarter she receives her annual reminder to get a mammogram.

** Once a woman gets on the Quarterly Report for being overdue by 26 months, she will tested again every 12 months as long as she does not get a mammogram.*

Suggested Office Systems

One way to encourage women on this list to get a mammogram would be to have one of your staff call the women to ask them to consider getting screened and help them set up an appointment.

Here is a suggested system for organizing these calls:

- Determine your criteria for designating a woman as “overdue” for a mammogram.
- Set up a folder or a loose leaf binder for the Mammography Reminder System and keep the Quarterly Mammography Reports together there.
- Check the charts of women on the list to be sure they are really overdue for a mammogram according to your criteria.
- Cross off the names of women who have recently received a mammogram according to your records.
- Have someone on your office staff call women who have not had a mammogram and complete a brief record of the call using the Mammography Report Form attached.

- Repeat the process each quarter when a new Mammography Reminder System report arrives.

Options for the Office System

- Sending a letter to women before making a phone call may be more appropriate for your practice. Even though women have already received a reminder, they may be more responsive to a personal letter from their physician
- Calling women without checking their record for a recent mammogram may save time. If the woman reports that she has had a recent mammogram, the caller can give her positive feedback for her behavior.
- Use the information on the Mammography Report Form to contact women who have agreed to get a mammogram but have not followed through after a period of 2-3 months. This would require a periodic review of the Record Form
- Have the office staff making the calls use a counselling protocol or receive some training in patient-centered counselling (e.g. review with you the training materials on counselling from this conference)

SAMPLE

MAMMOGRAPHY REPORT FOR WOMEN AGED 50-80 YEARS QUARTER ENDING 1/31/95

PROVIDER: JAMES DOCTOR, MD

Our records show that the patients listed below are overdue for a routine screening mammogram. You are the Pilgrim primary care physician of record for these patients. They have received a reminder from Pilgrim, but you may wish to contact them to encourage them to get a mammogram.

2 years or more since last mammogram

Name	Date of Birth	Telephone.	Date of Last Mammogram*
Joan Patient	12/15/30	777-777-777	10/20/92
Anne Patient	2/5/40	888-888-8888	9/24/92

15 months since last mammogram

Name	Date of Birth	Telephone	Date of Last Mammogram*
Mary Patient	2/3/31	666-666-6666	9/20/93
Lynne Patient	3/4/34	555-555-5555	9/1/93

* A missing date indicates that the patient has not had a mammogram since enrolling in Pilgrim Health Care. Estimation of time since last mammogram for these patients was based upon date of enrollment.

Improving and Maintaining Preventive Services Part 1: Applying the Patient Model

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Research in the past two decades has made remarkable progress in determining the variables that affect preventive care within primary care practices. The level of preventive care that a patient receives is largely determined by factors within the medical office setting. Many of these factors can be modified by physicians to encourage preventive care. An overview of these factors, presented as

the Patient Path Model, can provide a framework for systematic practice evaluation. This model can be applied to almost any office setting to help identify opportunities to enhance and improve preventive care.

Key words. Preventive medicine; physician-patient relations; physician practice patterns. *J Fam Pract* 1992; 34:86-91.

Physicians are generally familiar with recommendations for preventive care,^{1,2} particularly in regard to the early detection of cancer and the need for increased efforts in smoking cessation. A most important problem, however, is how to actually implement these recommendations into routine clinical practice. Adopting new practice patterns is not easy. Even when physicians agree with preventive care recommendations from major consensus groups, performance is generally less than expected.⁴⁻⁶

The daily practice habits of physicians and their office personnel are a powerful force for maintaining the level and type of services within a particular practice.^{3,7} This factor is especially apparent when efforts are made to improve the performance of a number of preventive services (eg, mammography or flexible sigmoidoscopy). Initially, and often with little effort and planning, performance rates can improve. With time, however, performance usually returns to baseline levels.⁸ The status quo is difficult to change, and medical practices are no exception. The importance of this problem cannot be overemphasized.

Physicians who wish to emphasize preventive medicine more in their practices should have an understanding of how practice characteristics, office systems, and habits affect the quality and patient use of the preventive services that they provide. An awareness of these factors

is an important prerequisite for improving preventive services and maintaining these improvements permanently.

This paper presents a review of the characteristics of a representative primary care office to identify opportunities for enhancing preventive care. The Patient Path Model is introduced to provide a conceptual framework for this review. Early cancer detection procedures and smoking cessation counseling are used as examples to illustrate how the model can be applied in clinical settings.

A second paper (Part 2 on page 92) outlines several principles for improving and maintaining preventive services. The model (Part 1) and principles (Part 2) have been developed from the authors' personal experiences and from a review of recent primary care intervention research. Both can serve as guides for physicians to use in overcoming practice-related barriers and in capitalizing on potential opportunities for preventive care.

The Patient Path Model

The Patient Path Model was developed using a process called *critical path analysis*, a common technique used in many nonmedical fields.^{9,10} The steps in the manufacturing process encountered on a typical assembly line, for example, can be analyzed as a series of potential problem areas. Difficulty at any point along the assembly line may affect the pace of production or the quality of the product. The path of a patient through a typical medical encounter in a health care facility can be studied in much the same way.

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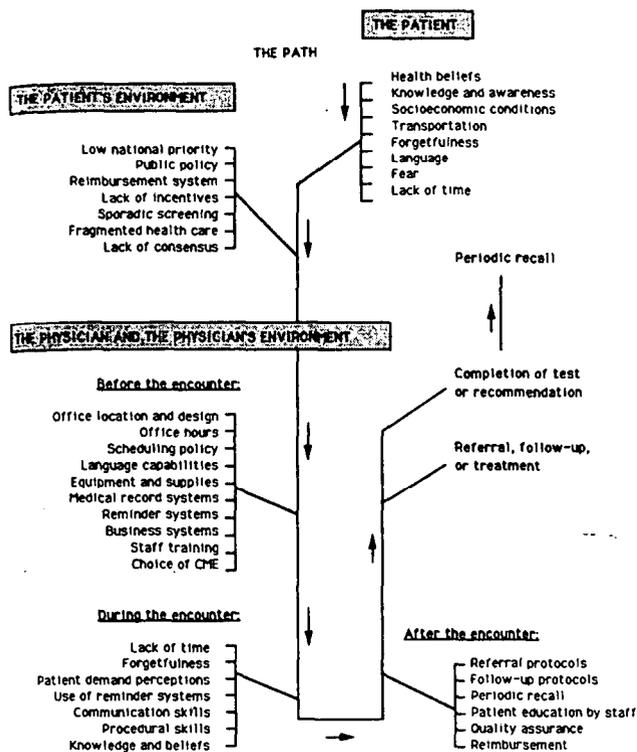


Figure 1. The Patient Path Model. This schematic diagram of a patient's path through the health care system sequences most of the major factors known to influence the provision of preventive services. Almost every known barrier or facilitator of preventive care, whether it be federal health policy or a physician's office hours, can be placed within this model.

Although simple in concept, the path of a patient through a medical encounter entails many interactions, most of which can be quite complex. These interactions have been the subject of many separate and intense studies over the past two decades. Therefore, the Patient Path Model was developed to provide a concise and systematic framework in which to review, understand, and apply this important research.

The Patient Path Model starts with the patient and then proceeds through a representative physician-patient encounter (shown schematically in Figure 1 and diagrammatically in Figure 2). Intersecting this path are the many opportunities for, and barriers to, providing preventive care.

The path crosses four spheres of influence that affect patient care. Using mammography as an example, these spheres of influence include:

1. The *patient*, who may not have knowledge of the benefits of mammography or the money to pay for the procedure;
2. The *patient's environment*, which may not provide the facilities or the encouragement for screening

(physicians have little control over this sphere of influence);

3. The *physician*, who may not be aware of the patient's family history or may not recommend the procedure;
4. The *physician's environment*, which may not include reliable reminder and follow-up systems. (Physicians can make several modifications in this environment to make mammography a routine part of their daily practice.)

The model provides a detailed look at the patient's path through an office visit (before, during, and after an encounter). The patient's path intersects almost every known barrier or facilitator of preventive care, whether it be federal health policy or a physician's office hours. Of all the spheres of influence, *the physicians practice environment probably the man important. That if where preventive services are provided.*

The Practice Environment: The Key to Prevention

One of the most important ideas to evolve from recent primary care research is that the delivery of preventive services can be improved by certain modifications in the physician's practice environment. Preventive services need not be a burden to physicians and patients, or be perceived as services added on only after routine care is accomplished. Rather, through modifications in the practice environment, preventive medical care can become a standard part of everyday practice. This environment can be defined as the sum of its components, which include practice characteristics, patient care systems, protocols, and even personnel.

Practice Characteristics

The most basic components of the practice environment include office hours, location, and physical structure.^{7,11} Even these basic considerations can present very real obstacles for women who might benefit from mammography or other preventive procedures. For example, working women may "pay double" if they have to miss work to see a physician for a referral, and then miss additional work and perhaps travel long distances to obtain the mammogram. Similarly, patient compliance with certain screening procedures, such as clinical breast examinations and sigmoidoscopy, may be encouraged if private dressing areas, gowns, and other arrangements for patient comfort are provided.

Patient Care Systems and Protocols

Other, but by no means less important, components of the practice environment include the wide variety of medical record systems, office furnishings, and medical equipment necessary to provide effective preventive care. Flow charts and checklists of preventive procedures streamline chart review by summarizing patient history and preventive needs.¹²⁻¹⁵ Brightly colored stickers call attention to high-risk patients who need to be screened more frequently. Innovative medical record systems¹⁶ and effective referral and follow-up protocols (preferably written) can help to ensure that patients at high risk of developing a disease are identified, offered appropriate screening procedures, informed of abnormal findings, contacted about missed appointments, and recalled periodically for additional screening tests.

The Physician and the Office Staff

Finally, the skills, perceptions, and attitudes of the physician and the office staff are important variables that greatly affect preventive care.^{7,17} For example, office-based smoking cessation programs rely heavily on the participation of properly trained staff to encourage patients and to reinforce the physician's efforts.^{18,19} The false perceptions that patients may not want preventive services such as smoking cessation counseling ("rarely successful") or mammography ("too expensive") will not be conducive to a successful preventive medicine program. Physicians and their office staff should be aware that recent surveys indicate that the majority of patients are interested in disease prevention^{20,21} and will comply with most recommended services if appropriately offered by a physician.⁴

Applying the Patient Path Model to a Practice Environment

The Patient Path Model is a tool that physicians can use to help perform self-audits on their practice environment. Just as a systematic review of charts, sometimes called a self-audit, can provide many valuable insights,^{22,23} a systematic review of the practice environment using the Patient Path Model can also be enlightening. When applied to an actual practice setting, the model provides a systematic and practical approach for conducting such a review.

Many schematic models that are intended to simplify complex information are difficult to apply to real-life situations. With that potential criticism in mind, we elected to superimpose the model over a series of office

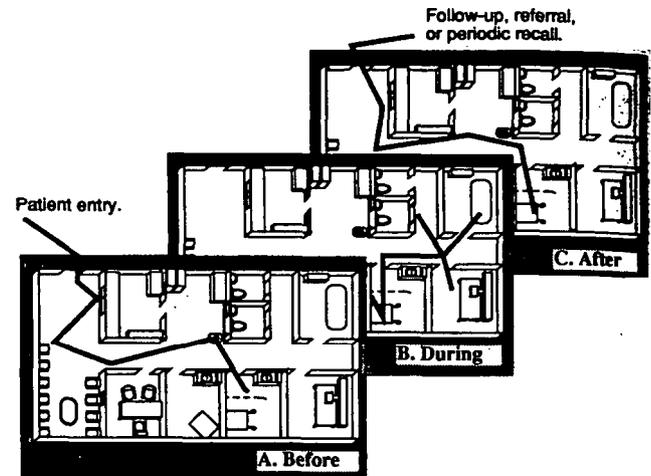


Figure 2. The Patient Path Model applied to a clinical encounter: *A. before the encounter*, patient-related factors and office-demographics are initial barriers. Once within the practice, note, initial impressions, introduction to business systems, educational messages, waiting time, and prompt attention from staff. *B. During the encounter*, factors influencing preventive care, include office organization (protocols), equipment and supplies, physician and staff reminders, procedure skills, counseling skills, and provisions for patient comfort and privacy. *C. After the encounter*, many factors continue to influence preventive activity, including patient education, attention to insurance provisions and codes, referral and follow-up protocols, and considerations for periodic recall.

diagrams as an example of how the model can be applied to an actual clinical setting (Figure 2). Through these diagrams (overlapped for clarity), the model becomes less a schematic and theoretical construction, and more a tool that physicians can apply, with appropriate modifications, to a variety of medical settings. Every point on the schematic model in Figure 1 can be found or added to the diagrams of a representative medical office in Figure 2.

Basic office design, office supplies and systems, and personnel (briefly described in the preceding paragraphs) are the components of the practice environment and the foundation for practice patterns. These components can be analyzed by following the patient from the time that he or she decides to seek medical care until the time that he or she completes the medical encounter, including follow-up and periodic recall.

Before the Encounter

The patient and the patient's environment serve as the starting point for the Patient Path Model (Figure 2A). The patient's cultural background, lifestyle, health beliefs, and economic status may create many barriers to preventive care.²⁴ Similarly, elements of the patient's

environment such as public health policy, insurance regulations, and even national politics can also affect the care that an individual might receive from a physician. Most of the factors relating to these spheres of interest are generally beyond a physician's ability to control. Physicians can, however, take steps to minimize some of these barriers. For example, evening or weekend office hours can be added to accommodate those who work weekdays, often benefiting the physician as well as the patient. Physicians can also hire office personnel who are fluent in a second language to help overcome patient communication barriers.

Once the patient actually enters a physician's office (the physician's environment), another series of factors are presented that can influence the content of the encounter. A "smoke-free" waiting room will help condition patients to expect and perhaps be receptive to physician advice about smoking cessation.¹⁸⁻¹⁹ Similarly, posters and table cards with educational messages can help activate patients to initiate discussions with their physicians regarding screening procedures.

If the patient's first contact with the physician's environment (usually speaking with the receptionist and business personnel) is negative the patient may be reluctant to discuss services beyond his or her most pressing needs.²⁵ The length of time that a patient must wait and the tone of the initial contact with medical personnel may also influence the content of the medical encounter before the patient ever sees the physician. The quality of the medical records^{12,16} and reminder systems,¹³⁻¹⁵ staff training,^{14,17} and physician skills²⁶⁻³⁰ significantly influence the content of the actual patient-physician encounter. Without careful attention to these details before the actual encounter, a discussion of preventive services may be overlooked, avoided, or postponed.

During the Physician Encounter

A number of the practice-related factors previously discussed can have a direct influence on the quality and content of the actual face-to-face medical encounter (Figure 2B). If, for example, a patient's current smoking status is recorded along with his or her vital signs, a physician with specific training in state-of-the-art smoking cessation counseling will be prompted to work a brief, but appropriate, intervention into the course of the encounter with those patients who smoke.¹⁸⁻¹⁹

Similarly, if a nurse-initiated reminder system¹⁴ alerts the physician to a patient's need for mammography and a clinical breast examination, the physician can approach the encounter in a way that will address not only the immediate care needs of the patient, but also the demands of a busy practice. To do this most efficiently,

physicians need the communication skills to comfortably discuss and offer the procedures,^{26,27} as well as the procedural skills to ensure that the clinical breast examination or other early cancer detection procedures are performed competently.²⁸⁻³⁰ A trained and organized staff can facilitate this process by preparing the patient for the procedure (in this case a clinical breast examination), and by providing information to the patient on breast self-examination, mammography, and the location of low-cost screening facilities. In contrast, a disorganized office and poorly motivated staff will inhibit preventive care regardless of the physician's procedural skills and good intentions.

Poor physician communication skills may be one of the most important and overlooked barriers to preventive services.²⁶⁻²⁷ Physicians with similar training who care for the same patient populations do not necessarily perform many early cancer detection procedures at the same rate.¹² Furthermore, physician sex, age, health benefits, and knowledge do not consistently account for these differences to any clinically significant extent.³¹ All else being equal, differences in physician communication skills may account for the differences in the performance of certain preventive procedures.²⁷ In many cases, communication is the intervention: "As your physician, I must advise you to stop smoking now."¹⁹ "Have you had a Pap smear or breast examination within the last 2 years?" [If not,] "I'd recommend you schedule an examination soon."⁴

The basic physical layout of an office, which has been briefly discussed, can also affect the provision of preventive services during the patient encounter.¹¹ For example, a door that opens in a direction that exposes an examination table can inhibit the performance of certain procedures, especially when patient comfort and modesty might be jeopardized. Design features that can encourage preventive care include physician-nurse communication systems, separate toilet facilities for special procedure rooms (facilitating sigmoidoscopy and other procedures), and the availability of frequently used educational materials in each examination room.

After the Encounter

Even after the patient leaves the presence of the physician, practice organizational systems continue to influence compliance with screening recommendations (Figure 2C). The provision of preventive services can break down following an apparently productive office visit in spite of the physician's previous efforts and intentions.³²⁻³³ For example, patient compliance with the collection of specimens for fecal occult blood tests is a frequent problem. A trained nurse might improve com-

pliance by providing the patient with careful and explicit instructions for collecting the sample. For referred procedures, such as mammography and sometimes sigmoidoscopy, written protocols will assist office staff making the appointment and providing the patient with instructions and directions to the facility.³³ Follow-up protocols will help ensure that a patient complies with the physician's referral for screening procedures and that the results of the test will be reviewed by the physician and discussed with the patient.

Careful attention to insurance provisions and billing codes, flexible payment schedules, and up-to-date knowledge of low-cost screening facilities (particularly for mammography)³⁴ help minimize the financial barriers that patients may confront. Furthermore, sensitivity to these matters will encourage patients to comply with physician-referred services, and to return for follow-up and subsequent periodic care.

Summary

The habits and routines of every clinical practice are unique and contribute greatly to the level and quality of preventive health care activity within that practice. Even after problem areas within a practice have been identified, making the changes that are necessary to provide effective preventive health care services is not easy. Nor will these problems be greatly affected by the development and even the acceptance of a list of recommendations. That is why knowledge of preventive care guidelines is not enough.

The first step toward improving the preventive health care services within a clinical practice should include a thorough review of current performance. Next, the Patient Path Model can be used to identify opportunities for resolving any problems that exist. Once these problems and the appropriate opportunities for their resolution are identified, long-term goals can be established. Several principles for improving preventive services in primary care practices are discussed in the following companion article. Those principles and the Patient Path Model (Figures 1 and 2) should help physicians identify and avoid many of the pitfalls that can frustrate efforts to improve preventive care.

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April 25-29, 1992

25TH ANNIVERSARY ANNUAL SPRING
CONFERENCE

Celebrating Our Past, Creating Our Future

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Improving and Maintaining Preventive Services, Part 2: Practical Principles for Primary Care

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Recent research has recognized several themes that have been common to many successful projects for increasing cancer screening and other prevention activities the most common of these themes have been condensed into "principles for implementation," in-

tended to help physicians and other health care providers to improve the provision of preventive medical care within their practices.

Key words. Preventive health services; primary care. *J Fam Pract* 1992; 34:92-97.

In 1974, *The Lancet* published a landmark series of 19 articles on screening for disease.¹ Since then, physicians have been presented with authoritative preventive recommendations from several major organizations^{2,3} and consensus groups.^{4,5} In addition, there is increasing evidence that preventive recommendations will be given greater emphasis as new formulas for reimbursement are developed.^{6,7} Clearly, physicians have a growing body of credible information and incentives relevant to the provision of preventive services.

In the past decade, most of the barriers that inhibit the adoption of preventive services have been documented.⁸⁻¹⁶ Methods to overcome many of these barriers have also been reported¹⁷⁻²⁵ but, seldom have these methods been summarized in a concise format for use by practicing physicians.

The recent literature on the implementation of preventive services reveals several common and generally accepted concepts. For example, the benefits of office reminder systems have been firmly established through many studies.¹⁹⁻²⁴ Similarly, the importance of counseling skills, particularly in regard to smoking cessation, are well documented^{17,18} and have recently been reemphasized by the National Cancer Institute and others.^{25,26} To build on these studies and other recent reviews,^{27,28} we summarized a number of these recurring concepts into practical principles. This format will allow physicians to

review the more salient conclusions from a large body of recent primary care research (Table 1).

Each of the principles has been derived from the attributes of successful programs to improve the provision of preventive services in primary care practices. Some have been substantiated by randomized trials or have a solid basis in behavior and organizational theory. Others represent the opinions of leading researchers in the field of implementing preventive services. In short, there is good evidence that these principles, if conscientiously applied in appropriate situations, can enhance the performance of preventive activity by primary care physicians in a variety of practice settings.

The Principles

Identify baseline performance rates. ". . . simply put, one cannot begin to deal with an unidentified problem."²⁹

An accurate description of the current state of activity is fundamental for most managerial decisions,³⁰⁻³¹ including the decision to improve preventive services.²⁹ Baseline levels of performance identify problem areas and help set realistic goals. Progress in achieving these goals is tracked by comparisons to these baseline levels. Accurate baseline levels of performance also serve as reality checks, distinguishing actual performance from estimated performance, which is often overly optimistic.^{19,32}

Example: A primary care physician estimated that 90% to 95% of her adult women patients had received a Papanicolaou test within the previous year or two. After a review of 100 randomly selected charts, the physician was surprised to learn that only 50% of the women over the age of 50 years had been screened in the previous 2 years. Of the remaining

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Table 1. Principles for Implementing Preventive Services in Primary Care Practices

1. Identify baseline performance rates for preventive activities.
2. Set reasonable goals that can be measured, and periodically review progress.
3. Develop a comprehensive plan to achieve and maintain goals.
4. Give high priority to staff training and participation.
5. Be sure office systems, organization, and design facilitate preventive care.
6. Use every opportunity to perform preventive services.
7. Use reminder systems to ensure that patients at risk are identified, screened, and followed.
8. Consider CME with emphasis on skills that can be applied in clinical practice.
9. Develop state-of-the-art counseling and communication skills.
10. Keep cost issues in perspective. and minimize economic barriers for patients.

women, some of whom were seen infrequently, a large proportion had no documented Papanicolaou test in the first place.

Example: An internist reported that he advised all of his patients who smoked to quit. A chart review revealed, however, that no mention of the "current" smoking status of the majority of the patients had been documented. although blood pressure, weight, and pulse had been dutifully recorded. Patient encounters during which advice to quit smoking had been given were rarely recorded except in conjunction with a patient's initial comprehensive history and physical, or following serious acute illnesses.

Set reasonable and measurable goals for preventive activity and periodic review progress. "If you don't know where you're going, any road will take you."³³

Once baseline levels of preventive services are known, goals can be developed. Realistic goals are those that are compatible with practice philosophy, scientifically valid, and within the capacity of a practice to achieve, and for which progress toward accomplishment can be measured.²⁹⁻³¹ Fulfilling these criteria may result in goals that seem modest. However, even modest improvements can make a significant impact on the health of a practice population if the improvements are maintained over time.²⁵

Example: An internist performs a self-audit of his charts and a review of his referral log and finds that only 30% of the women over the age of 50 years have had a recent mammogram, and that an average of only five patients per month are referred for the procedure. Based upon this baseline infor-

mation, he decides that a reasonable goal would be to annually screen 60% of the women age 50 years and older. Increasing the referral average from 5 to 10 referrals per month would accomplish this goal; one that is realistic and easily measurable.

Example: Recording a patient's current smoking status takes less than 5 seconds and can be done at the same time that all vital signs are being measured. A reasonable goal for improving smoking cessation efforts would be to have office staff record the current smoking status of each patient along with patient vital signs. Achievement of this goal could easily be measured by repeat chart audits.

Provisions for periodic review of progress toward accomplishing goals is an important part of the planning process. If progress toward goals is not measured and reviewed, unanticipated problems may not be identified and corrected before old habits return or inefficient patterns become established.

Develop a comprehensive plan to achieve and maintain practice goals. "A nearly magical enhancement of a manager's personal capability can be achieved nine times out of ten by an intelligent emphasis on planning."³⁰

Practice habits are developed over months and years, with physicians and staff gradually settling into patterns that resist change. Consequently, well-intentioned but inadequately planned efforts may initially increase preventive activity; however, a gradual return to baseline levels of performance often occurs.¹⁴⁻¹⁶ True planning is a formal, time-consuming, and sequential process that can be applied to almost any organization or goal.^{30,31}

Example: After attending an informative weekend CME meeting on breast cancer imaging and staging, a busy family practice physician resolved to increase his referrals for mammography. For the first 2 weeks, referrals increased an average of 150% over baseline levels. One month later referrals were 75% above baseline, and the physician resolved to try harder. Two months later, referrals were back to baseline levels. Concerned about this lack of progress, the physician scheduled a series of meetings with his office staff to develop a formal plan for increasing and sustaining the percentage of his female patients referred for mammography and other preventive services.

In planning preventive services, thorough attention to small details yields optimal results. Clearly defined goals, written job descriptions for the staff, and written protocols for referral, follow-up, and recall are just a few of the details that will help the busy physician mentioned above.

Give a high priority to staff training and participation. ". . . nurses represent a readily available and valuable ally to the physician interested in providing more educational and preventive services."³⁴

By nature, preventive services must be repeated. Patients need to be recalled and examined periodically. This process is most effective when protocols have been established and responsibilities have been delegated to office staff.

Example: A busy primary care physician appointed her office manager as the office smoking cessation coordinator, and together they attended a smoking cessation training session. Within a few days, the manager had used material from the training session to create a "smoke-free" office. She also trained the office staff identify patients who smoked and to place reminder stickers prominently on the charts of those patients. The entire office staff soon recognized and supported smoking cessation as an integral part of the physician's practice.

The participation of office staff is crucial to the success of any plan to change existing practice patterns.²⁹⁻³¹ The subtle resistance of those excluded from the decision-making process can frustrate even the best efforts to change practice patterns.³⁰

Be sure that office systems, design and organization facilitate preventive care. "Traditionally, clinical environments, designed on principles of efficiency, have neglected their therapeutic potential."³⁵

Improvements in practice performance are difficult to maintain unless the improvements are institutionalized into organizational systems and patterns of behavior.^{14-16,28} Physicians wishing to improve preventive activity within their practices might consider modifying many of the components of these organizational patterns to facilitate preventive care. These physician-modifiable components include such diverse matters as office design, personnel policy, job descriptions, procedure protocols, business and patient care systems, and protocols for follow-up and referral.²⁸ Critical path analysis, which in this case is the path of a patient through a physician's office (described in Part 1 of this paper), can be used to systematically review these components.³¹⁻³⁶

Example: An internist noted that her medical assistant carried on an active dialog with patients as their vital signs were taken; however, the conversation was void of any health-related discussion. She encouraged the assistant to maintain her friendly manner but asked that she also update the patient's preventive services status²⁰ while obtaining vital signs. The assistant's job description was also revised to include this responsibility.

Use every opportunity to perform preventive procedures. "The Periodic Health Examination translated into encounters with primary care for whatever reason . . . could prove to be the 'voie royal' to health"¹⁰

Most patients do not schedule periodic examinations during which preventive screening and case finding is commonly provided. Most people however, regularly see physicians for other reasons. Therefore, integrating preventive activities into a variety of patient encounters is a realistic strategy.^{10,21,24} However, certain organizational steps need to be taken before such a combined encounter to ensure that these additional services are not disruptive to practice routine.

Example: A 70-year-old patient, accompanied by his wife, was being prepared by the medical assistant to have a minor laceration sutured. While determining the injured patient's tetanus immunization status, the assistant asked if he or his wife had ever had a pneumococcal vaccination. Since neither had, the assistant discussed the benefits and risks of the vaccination. As a result both of the patients decided to have the immunization during that visit.

Use reminder systems to ensure that patients at risk are identified, screened, and followed. "Other fields have long recognized the frailty of the human mind and provide memory aids (for example, the pilot's preflight checklist). If physicians are serious about achieving their stated ideals they should do likewise."²¹

Reminder systems help overcome two of the most important barriers to clinical preventive care in primary care practice: lack of time and forgetfulness. Such systems relieve the physician of the time consuming and repetitive task of reviewing the entire patient history to ascertain a patient's risk status. Flow charts, computerized reminders, chart stickers, and chart review by staff are examples of useful systems that, if used and maintained, alert physicians and their staff to the individual preventive service needs of their patients.^{16,19-24}

Example: A small group of physicians decided to purchase a computer system in order to cope with the increasing complexity of managing their practice. The wide variety of excellent practice management systems complicated their search. Once the group targeted their search to those systems that could easily generate useful patient reports and reminders, they were able to narrow their choices and select a system that was right for their practice.

Reminder systems do not need to be elaborate or sophisticated to be effective. A complete medical chart that is well organized and maintained serves better than an outmoded computer system that is incapable of generating concise reports of preventive activity. In short, the usefulness of the reminder system is more important than its sophistication.

Consider continuing medical education programs that emphasize skills that can be applied in clinical practice. "It does not appear that increased levels of continuing education per se will lead to specific changes in performance."¹¹

There is no doubt that traditional continuing medical education (CME) programs increase knowledge. However, there is little evidence that traditional CME significantly influences physician behavior or patient outcomes.^{37,38} Therefore, physicians should not assume that simply increasing their knowledge about preventive recommendations will improve their performance of the same.^{11,39}

Continuing medical education programs that emphasize the development or enhancement of skills, such as flexible sigmoidoscopy,⁴⁰ clinical breast examination,⁴¹ and smoking cessation counseling,^{17,18,25} in contrast, have been effective in improving physician behavior. Physicians should search for CME programs that can actually help facilitate the implementation of preventive activity within their practices, in contrast to programs that increase knowledge but have little practical application to daily clinic routines.

Example: After attending several CME courses dealing with the staging, prognosis, and latest treatment for colorectal cancer, a physician decided that flexible sigmoidoscopy should become a part of his practice. He performed several sigmoidoscopies under the supervision of a colleague before implementing the procedure in his practice. Because the procedure took so long, he soon found that he was doing the procedure less and less. Following an intense CME tutorial, which focused on the development of hands-on skills, the physician was able to decrease the time needed for the procedure. Eventually, he was performing the procedure more frequently with less disruption of his usual practice routine.

Example: While attending a "hands-on" continuing medical education course, a physician who had been in practice for several years was given the opportunity to test his diagnostic skills with recently developed models of the breast and prostate. To his surprise, he was unable to identify several prominent lesions. With slight modifications in his technique, however, he easily taught himself to identify these lesions. He was then able to apply these newly acquired skills immediately in his practice.

Develop state-of-the-art counseling and communication skills. "Despite . . . the evidence that at least 50% of doctors' time with patients is spent in talking, few medical schools have introduced specific training in communication."⁴²

Highly developed communication skills are vital for educating patients about early detection procedures, smoking cessation, diet modification, and other important aspects of health care.^{43,44} For example, physicians with special training in smoking cessation counseling, a communication skill, are more successful in changing their patients' behaviors than physicians without similar training.^{17,18}

Brief, carefully worded communications are probably more effective and better received by patients than time-consuming, medically detailed lectures. The goal of

enhanced communication is not to take time, but save time.⁴⁵ The following quotations are examples of brief, specific messages that physicians might adopt to discuss early cancer detection and smoking cessation with patients.

Example: "I recommend yearly mammography for women over 50 years old to detect small breast cancers that can't be felt. Would you be interested in having a mammogram scheduled?"²⁴ (Discuss the American Cancer Society guidelines if indicated by the patient's response.)

Example: "Do you smoke?" "How much?" "Are you interested in stopping smoking?" "As your physician, I must advise you to stop smoking now."²⁵

Keep cost issues in perspective, and minimize economic barriers for patients. ". . . ensuring adequate reimbursement coverage for preventive care services may be a necessary, but not sufficient, step to their more widespread application."⁴⁶

Although cost and reimbursement are frequently cited by physicians as major barriers to preventive services, most patient surveys do not find cost to be a preeminent barrier to preventive care.⁴³ Although concerns for costs should never be discounted, physicians should not assume that procedures are unwanted, unnecessary, or ineffective on the basis of cost and reimbursement alone, especially with the current medicolegal climate.⁴⁶

Physicians can, however, take steps to minimize the problems associated with reimbursement and costs. Within a physician's practice, careful attention to reimbursement provisions and coding benefit both the patient and the physician. Flexible payment schedules and bundling of preventive services into economically attractive packages may be alternatives for those not covered by third-party payers. Low-cost screening facilities have been found to provide accurate test results, and when available, these facilities should be supported.⁴⁷ Similarly, specifically ordering a screening test may avert a facility from proceeding with a more expensive, but identical, diagnostic test.

Example: A gynecologist regularly refers her patients for mammography to a radiology clinic that is located a few blocks from her office. This facility is convenient for her patients, provides prompt and courteous service, and charges competitive fees. With growing frequency, however, she is referring her patients to a low-cost breast imaging center that is across town. Scheduling is not as flexible because of the higher volume, but the quality of the service is equal to the local facility, and the reduction in cost for her patients is significant.

Summary

The principles for improving preventive services and the examples given are not intended to represent a consensus on methods to implement recommendations, nor is the list intended to be complete. The principles are simply intended to be a concise and practical guide. The principles are based on the cumulative experiences of many research efforts to overcome barriers to preventive services. Physicians and other health planners should, therefore, at least consider these principles as they plan changes in the preventive content of their practices.

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Tools, Teamwork, and Tenacity: An Office System for Cancer Prevention

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Background. Despite national priorities in cancer control, the number of people with established ongoing medical care who do not receive indicated preventive services is substantial. Proven strategies to optimize preventive care in community practice are limited.

Methods. In the Cancer Prevention in Community Practice Project (CPCP), 50 primary care providers were randomly assigned to receive an "office system" intervention. The intervention led to reorganization of office operations based on four functional core components: identifying patients' needs for services; monitoring their status over time; providing positive reinforcement to patients; and establishing an internal feedback component consisting of a brief audit to assess how the system is operating. Implementation of the CPCP system in each practice was accomplished using trained facilitators, and involved incorporating one or more tools developed to meet the functional components of the practice.

Results. One hundred percent of the practices were successful in implementing some changes in their office

operations that met CPCP office system functional criteria. All study practices implemented customized flow sheets, while use of other office system tools was incorporated at between 32% to 75% of study sites. Identifying patients in need of preventive services was performed most often by the clinical staff (39%) whereas monitoring patients' receipt of preventive services over time and reinforcing positive patient behavior were performed most often by physicians (63% and 46%, respectively). Changes made in practices were maintained for at least 12 months.

Conclusions. Primary care practices in community settings can implement significant and lasting changes in their practice environment that will improve their performance of preventive activities. The function components of the CPCP office system design proposed and tested here are applicable to a wide variety practice settings.

Key words. Primary prevention; cancer control, cancer prevention and early detection, office system
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The challenge of controlling cancer by early detection and prevention is an appropriate task for primary care providers. The National Cancer Institute's Working Guidelines¹ and the US Preventive services Task Force² provide direction in this area. While many physicians agree with these recommendations, only about one half provide them to asymptomatic patients.³ Altering this situation by changing physician behavior is a difficult task.⁴ Barriers to cancer control in primary care practice include attitudes and lack of knowledge on the part of

physicians and their patients and skills, confidence, interest in prevention, time, support services and reimbursement.⁵⁻⁷ To overcome these barriers, reminder systems have been shown to be efficacious. These, however, have most often been implemented in training settings so their generalizability may be limited.⁸⁻¹³

Developing and implementing interventions to ensure the performance of preventive services in routine primary care practice requires an understanding of obstacles in practice settings where the focus is commonly disease treatment. The Cancer Prevention Community Practice Project (CPCP) developed a systematic multi-component approach to address the obstacles described above and implemented it in 50 New Hampshire and Vermont primary care practices. The office system intervention developed in the Cancer Prevention in Community Practice Project was a manual

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system based primarily on the use of a customized flow sheet kept in patients' charts and assignment of responsibility by practice members directed at meeting practice goals for prevention.

Methods

Cancer Prevention in Community Practice Project

The purpose of this randomized controlled trial was to evaluate the impact of two interventions on physicians' cancer control behavior. The recruitment and methods of the study are described elsewhere,¹⁴ as are the characteristics and baseline activities of participating physicians.¹⁵ Briefly, 98 general internists and family practitioners in New Hampshire and Vermont volunteered and completed the study. Characteristics of physicians were not significantly different between those in the office system intervention group and those in the comparison group. Fifty practices received the office system, and 48 served as comparison practices. The mean ages were 42.2 years in the intervention group and 41.3 in the comparison group. Forty-six (92%) of those in the intervention group were men; there were 46 (98%) men in the comparison group. Seventeen (35%) of the physicians in the intervention group specialized in internal medicine and 33 (66%) family medicine, whereas 16 (34%) of the physicians in the comparison group specialized in internal medicine and 32 (67%) in family medicine. Thirty-eight (76%) of the physicians in the intervention group and 44 (92%) in the comparison group were certified. One half (25) of the physicians in the group that received the intervention were in solo practice and the other half were in partnerships. Twenty-two (48%) of the physicians in the comparison group were in solo practice and 24 (52%) were in partnerships. The baseline performance of cancer control activities from this sample was similar to that reported previously.³

Cancer control target areas included: early detection breast, cervical, and colorectal cancer and counseling for nutrition and smoking cessation. The National Cancer Institute's Working Guidelines¹ and others^{16,17} were followed for procedure-specific recommendations. The interventions were based on social cognitive theory,^{18,19} which postulates that there is a reciprocal relation between cognition and environment that influences behavior. The interventions were examined independently and in combination using a 2 x 2 factorial design. One intervention involved an interaction educational program to influence cognition) and is described in detail elsewhere.²⁰ The office system intervention (to influence

practice environment, implemented in 50 practices, is described here. The study's main officers were evaluated using patient exit questionnaires and record review. Methods for evaluation and results of the study's main effects are presented in detail elsewhere.²¹ Briefly, main study results indicated that in practices in which the CPCP office system was implemented (as compared with those in which it was not), increases in all target services were seen. Mammography increased approximately 33%, from less than 60% of women served to almost 80%. Home stool occult blood testing, clinical breast examination, breast self-examination advice, and smoking cessation advice were 20% to 25% higher, which lasted during the study's 12-month evaluation period.²¹

The Cancer Prevention in Community Practice Study was based at the Dartmouth Primary care Cooperative Information Project, a research network of primary care physicians in private practice who have been performing office-based research for the past 12 years.²² Experience in physicians' offices served as the foundation for the development of the office system intervention.

The Office System Intervention

An office system was defined as a series of routine activities that are consistently done for a specific purpose by multiple people within the practice. One example is an office billing system. Patients do not leave the physician's office without a bill being generated, and this process usually involves the receptionist, physician, and billing clerk.

Four core functional components of the CPCP system were developed to provide structure for study purposes, while flexibility in meeting practice needs was seen as vital in actual system implementation. The core components include:

- Identifying patients in need of services
- Monitoring patients' receipt of services over time
- Reinforcing positive patient behavior
- Providing feedback to practice members on how the system is working in order to reinforce its use.

A set of tools was developed to meet each of the functional components of the CPCP system. The tools served to incorporate the system's functional components into office practice. Therefore, the core components of the system were common across practices, but tool use was customized to meet the individual needs of practice settings. The available tools and the office system components they were designed to meet are outlined in Table 1. Incorporation of all tools was encouraged for establishment of the "ideal" office system. Practices were re-

Table 1. Office System Components, Tools, and Functions

Identify Patients in Need of Services	<ul style="list-style-type: none"> • <i>Customize patient intake form</i>, a questionnaire designed to determine patients' personal health habits, past medical history, and receipt of preventive services • <i>External chart identifiers</i>, Day-Glo stickers to remind physician that patients are at high risk or may be in need of services
Monitor Receipt of Services Over Time	<ul style="list-style-type: none"> • <i>Flow sheets, crack-and-peel stickers, or rubber stamps</i>, different methods to track receipt of services or recommendations for services over time; customized to meet the needs of each individual practice • <i>Preprinted prevention Post-it Note</i>, to prompt the provider to discuss or recommend the service
Reinforce Positive Patient Behavior	<ul style="list-style-type: none"> • <i>Prevention prescription pad</i>, a larger version of a medication prescription pad used to provide specific instructions to patients • <i>Health Diary</i>,²³ a patient-held chart that lists preventive services in conjunction with a grid showing the intervals at which preventive actions should be performed according to the patients age; used to encourage patients to share in the responsibility for obtaining preventive procedures
Feedback Information to Practice Members	<ul style="list-style-type: none"> • <i>Chart audit</i>, a brief record review that evaluates tool use and procedures either performed or recommended to patients; initiated by CPCP project staff, but eventually taken over by practice staff

quired, however, to incorporate at least one tool to meet each function. The first 2000 flow sheets and all other selected tools were provided free to the practices by the CPCP for the study period.

An office system agreement was developed by each practice to identify both the tools chosen by individual practices and the preventive goals for patients needed to meet their system requirements. Identifying preventive goals involved delineating age and sex-specific variables and the percentage targeted to receive services, which were later used to score the office system audits. Participating physicians and their staff members signed the agreement, which served to reinforce their commitment both to cancer control and their office system.

Office System Implementation

THE OFFICE SYSTEM COORDINATOR

The method used in CPCP to facilitate implementation of the office system was based on the work of Fullard and colleagues,^{24,25} who used facilitators to set objectives and assist primary care practices in undergoing changes that improved their cardiovascular preventive activities. The facilitators were known to the practices in CPCP as office system coordinators. The office system coordinators had organizational and group process skills as well as a working knowledge of primary care practice. Seven coordinators were hired and trained to implement the office system. Training involved an orientation to the CPCP and office system components. The coordinators then developed and implemented systems in three pilot test sites before working with study practices.

The role of the coordinators was to present the CPCP office system concepts to practices, assist them by

facilitating group process in the development and implementation of their system, and provide consultation to identify and overcome difficulties with their system. Practices were assigned by geographic location, and each office system coordinator worked with between 5 and 12 practices. All CPCP communications were directed to a designated office contact from the staff of each practice. The steps leading to full office system implementation are outlined in Table 2.

PRACTICE ORIENTATION

Practice orientation was a 90-minute, highly interactive introductory meeting involving the physicians and staff members having patient contact in the practices. At this meeting the intervention was briefly described and current office operations were analyzed using a patient flow approach. The details of the CPCP office system components were explained and tools were introduced. The coordinator then facilitated a discussion among office staff and the physicians about what they wanted to change in their current office organization to meet the functional criteria of the CPCP office system. Decisions involved which tools to use in their practice and who would take responsibility for ensuring that the use of the tool was carried out. Practice personnel also decided on a flow sheet design, completed the office system agreement, and chose a start date for implementing outlined changes at the orientation session.

After orientation, the coordinator developed a customized manual for each practice that included: a patient flow diagram illustrating the activities that would now be incorporated into new and established patient visits, a responsibilities outline, which summarized all practice members' duties regarding the use of the tools they

Table 2. Steps to Office System Implementation

Project Activity	Week Performed*	Method	Practice Members Involved
Orientation	Before implementation	Visit	All having patient contact
First follow-up	3	Telephone	Designated office contact
Mini-audit	5	Visit	designated office contact
Second follow-up	6	Mailed report	All with CPCP office system responsibilities
2-Month audit	12	Visit	designated office contact and designated audit staff member
Third follow-up	13	Mailed report	All with CPCP office system responsibilities
7-Month audit	32	Visit	Designated audit staff member
Fourth follow-up	33	Mailed report	All with CPCP office system responsibilities
12-Month audit	52	Internal	Designated audit staff member

*Start date was considered the first of week 1.

selected, and an office system tools sheet, which identified the selected tools and outlined how they met the functions of the office system components. The manual also contained a copy of the office system agreement for reference regarding the practices' preventive goals. It later served to orient new employees, especially in practices where staff turnover was frequent. The office system coordinator delivered the selected office system tools and customized office system manual approximately 3 days before the designated start date for the implementation.

FOLLOW-UP SUPPORT

low-up support consisted of practice visits and telephone follow-up performed at the discretion of the coordinator. AU practices were telephoned within 2 days after their designated start-up dates to establish that practice changes were instituted on the predetermined and all practices received visits at the first two chart-audit feedback points.

Two weeks after the implementation date, an audit performed by the coordinator. The purpose of the audit was solely to provide feedback to practice members in how the office system was meeting the practice's goals. It was not used as an evaluation method for study outcomes. The first audit was based on 7 to 10 charts of patients over age 20 years seen the day before the audit. criteria for evaluation of the office system using the audit involved assessing the number of flow sheets in patients' charts that were in active use. The audit scores were derived by assessing the number of eligible patients who were either provided with or recommended to have the

cancer control activity. A formal audit report was sent to each practice and was followed up with a telephone call. Revisions in the practice activities were made in response to problems identified in the audit, and the manual was altered correspondingly.

More substantial audits were performed at 2 and 7 months after the implementation date. these audits were based on 30 charts of patients over age 40 years seen 1 or 2 days before the audit date. A designated office staff member took over the auditing procedure. This designated person was responsible for collecting the charts for audit by selecting names of patients over age 40 years from the appointment book in reverse chronological order until 30 had been selected. The 2- and 7-month audits were performed by the office staff member with the office system coordinator's assistance. At 12 months postimplementation, the auditing procedure was internalized and performed at intervals designated by the practice.

Approximately 12 months after implementation, meetings were held in key geographic locations in order to give practice members the opportunity to share their experiences with the office system intervention. Sixty percent of the practices were represented at one of these meetings. The sharing of ideas and experiences further reinforced system use.

EVALUATION

Specific instruments were developed to assess the process of office system implementation. At 2 and 7 month post-audit, questionnaires were completed by the coor-

Table 3. Percentages of Practices (n = 50) by Member with Primary Responsibility for Office System Functions at 7 Months

Office System Function	Practice Member			
	Physician	Clinical Staff	Shared Physician and Clinical Staff	Administrative Staff
<i>Identify</i> patients	30	39	17	13
<i>Monitor</i> services	63	9	28	0
<i>Reinforce</i> patient behavior	46	22	30	2
<i>Feedback</i> to practitioners	0	43	0	57

dinator after the performance of these feedback functions. These instruments assessed changes in tool use and office system responsibilities as well as office system adoption levels at the given times. Finally, questions evaluating other process components, such as commitment to prevention and quality of interoffice communication, were obtained from both physicians and office staff members of all participating practices at 1 year postimplementation of the intervention. These questionnaires were pilot tested in the practices where pilot testing of the office system took place.

An activity index was derived by adding the total number of patients seen per day and dividing by the total number of full-time practice members (summations were made of part-time positions to make full-time equivalents). This index was developed to attempt to identify predictors in personnel-patient configurations that were associated with success or failure of the office system.

Results

Practice characteristics varied widely. The number of patients seen per day at each practice ranged from 10 to 80, with a mean of 33.4. The number of full-time and part-time providers (including physicians, physician assistants, and nurse practitioners) ranged from 1 to 9, with a mean of 2.2. The number of clinical office staff (including registered nurses, licensed practical nurses, and medical technicians) ranged from 0 to 10, with a mean of 2.3, and the number of administrative staff (including receptionists, bookkeepers, and transcriptionists) ranged from 0 to 8, with a mean of 2.3. The activity index ranged from 2 to 10, with a mean of 5.0. No personnel-patient configurations were found to be associated with success or failure of the office system.

Full adoption of the CPCP office system was defined as use of flow sheets to address at least 8 or more of the 10 target areas in 75% or more of audited charts, use of all tools as outlined in their agreement, and attainment of 80% or more of practice goals. Full adoption of the office system at 2 months postimplementation was apparent in

74% of practices. Partial adoption was defined as use of flow sheets to address 6 or 7 target areas in 50% to 74% of charts, use of one tool to meet each of the functions outlined in their agreement, and attainment of 50% to 79% of practice goals. Partial adoption was apparent in 26% of participating practices at 2 months postimplementation. At 7 months postimplementation, 81% of practices had fully adopted their CPCP systems, with partial adoption in the remaining 19%. The average overall cost of implementing the office system tools (not including coordinator and follow-up support) was approximately \$186 per practice.

IMPLEMENTATION OF THE OFFICE SYSTEM

All 50 practices implemented changes in their practice that met the core functional components for the CPCP office system. Ninety percent of participants implemented their office system within 8 days of the date they selected to begin. Study practices required approximately four visits (including orientation, audit, and other visits to reach full implementation. This did not differ significantly in the group that received the CPCP education intervention²⁰ before the CPCP office system intervention. However, the mean number of follow-up telephone calls was significantly, less in the group that received the educational intervention (13.6 and 21 calls, respectively

The practice members who were primarily responsible for each of the four office system functions are identified in Table 3. As illustrated here, physicians and clinical staff either independently or in collaboration took primary responsibility for identifying, monitoring, and reinforcing office system components, while the administrative staff took primary responsibility for the feedback component.

Responsibility for office system functioning examined. This involved ensuring that all practice members were informed about office system activities as well as coordinating all interpractice meetings relevant to the office system. The person with primary responsibility for overall office system functioning at implementation was the physician only 50% of the time. Forty-five

Table 4. Practices (n = 50) Using Office System Tools at Baseline and 7 Months After Implementation

Office System Tool	Baseline, %	7 Months After Implementation, %
Flow sheets	21	100
Patient education materials	50	75
Prevention posters	7	59
Health maintenance diaries	0	43
Prevention prescription pads	0	41
Prevention Post-it Notes	0	34
External chart identifiers	7	32

the time, the physician shared primary responsibilities with the clinical staff. This remained essentially unchanged at both 2 and 7 months after the implementation date.

Tool use at baseline and 7 months after the implementation date is shown in Table 4. As illustrated here, some form of flow sheet was implemented in all practices.

Discussion

Primary care practices can institute major reorganization to overcome barriers to providing preventive services. As the Cancer Prevention in Community Practice Project has shown, flow sheets of customized format (as well as other tools) can be implemented and used over time to document and prompt performance of preventive procedures. In addition, expanded use of techniques to reinforce positive patient behavior such as distribution of health maintenance diaries and prevention prescription pads was well accepted by practices. We believe that taking control of decisions made in the division of responsibilities and tool use reinforced the practice's commitment to instituting change and increased both the teamwork and tenacity with which prevention was addressed in practice. In addition, we believe that taking on more tool use and thus responsibility for implementing that tool was not necessarily better. Rather, an exploration of where gaps occurred and addressing how to fill them with current practice members resulted in much improved efficiency in office operations. It is therefore not appropriate to make comparisons between higher and lower levels of CPCP office system effort, since what worked in one practice would not necessarily, work in similar practices.

The negotiation of responsibilities among practice members regarding the system components can and must be successfully accomplished for change to occur. Our experiences taught us that collaborative methods using the CPCP office systems approach to address preventive procedures was acceptable and successful in assisting the

practices to accomplish their preventive goals. The teamwork that practice personnel illustrated was evident in the sharing of primary responsibilities. Teamwork was especially strong between providers and clinical staff in monitoring patients' preventive services status and reinforcing positive patient behavior. Monitoring preventive services status and patient education reinforcement are two activities that can be and are often performed by both nurses and physicians. These activities may have been ineffectively undertaken before the clear delineation of roles that occurred as part of this investigation.

Studies examining the role of clinical staff in primary care are limited. One survey of registered nurses working in primary care revealed an underutilization of nurses' training and skills.²⁶ Another survey administered in Minnesota revealed that nurses in community-based practice have strong professional interests, and a majority would welcome job changes that would allow more time and responsibility in patient care.²⁷ Professional associations and organizations that guide practice for physicians have long been established in primary care (American Academy of Family Practice, American College of Physicians). Similar organizations that would guide nursing practice are just developing in primary care (American Association of Office Nurses), and these should soon encourage office nurses to take a more active role in patient education and in monitoring performance of preventive activities. A collaborative approach toward prevention initiated by these professional organizations, as intermediaries, could potentially assist in the implementation of programs such as the one developed and tested in the CPCP study.

The use of computerized reminder systems has been examined by McPhee¹² and MacDonald,¹³ and their co-workers, in academic settings that include community practice faculty, and have been shown to increase the performance of preventive procedures substantially. The generalizability of these findings may be limited with respect to accomplishing the same result in community practice. McPhee and colleagues²⁸ recently completed a randomized controlled trial examining computer-generated prompts in a community practice setting. They achieved significant results in the group that received the computerized prompts compared with controls for nine target areas including stool for occult blood, rectal examinations, pelvic examinations, Papanicolaou smears, breast examinations, smoking assessment and counseling, and nutritional assessment and counseling.

The implementation of changes that are intended to affect a significant number of patients in primary care settings is a dynamic process that takes time to incorporate successfully. In addition, it is an important challenge that cannot be undertaken by physicians alone. Physi-

cians and staffs, both nursing and administrative, when given the appropriate tools in a collaborative environment, can work together to ensure that preventive procedures are offered to patients. Furthermore, the development of a strong teamwork approach can promote a tenacious commitment toward prevention. Questions that are now appropriate to ask include whether practices can institute the magnitude of changes made here without the support and intense follow-up that was provided by the office system coordinators. Such facilitators were deemed necessary in this study since the CPCP office system as an organizational intervention had not been proven. The inference that successful changes leading to important increases in preventive performance can be made in a wide variety of practice settings is compelling and may be motivation enough to persuade physicians to undertake such a program. The flexibility of the office system approach undertaken here is key to its acceptance in community practice.

Another question involves what format would be required to disseminate an office system approach such as the one developed here toward cancer prevention in primary care as well as prevention in other subspecialty areas. We find that our approach is highly exportable using a packaged approach. Because the results of the study's main effects are compelling, we feel that implementation of a similar office system can be accomplished with less intense strategies, such as using an intermediary organization to facilitate the process of office system introduction and follow-up. We also feel that the cost of office system tools (\$186 per practice) would not be prohibitive, and that use of an intermediary organization to facilitate implementation could also be cost-effective. The dissemination question will soon be answered. Dartmouth recently received funding to evaluate dissemination strategies for a combined office system and educational intervention, using the American Cancer Society as an intermediary organization.

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