

# The Case of the Missing Clinical Preventive Services Systems

**OBJECTIVE.** To examine the presence and comprehensiveness of organized processes and systems in a sample of primary care clinics shown to have high variation in rates of providing preventive services.

**DESIGN.** Survey study.

**SETTING.** 44 primary care clinics recruited for a scientific trial of a quality improvement intervention to improve preventive services.

**PARTICIPANTS.** 647 clinicians and nurses.

**MEASUREMENTS.** The presence of 10 organized prevention processes for eight adult preventive services as reported by those clinicians and nurses on a detailed written survey.

**RESULTS.** In more than 50% of clinics, 7 of the 10 prevention processes were reported to be absent for all eight services. Only the follow-up process was commonly present; this was also the only process that was usually present for most applicable services.

**CONCLUSIONS.** The paucity of recognizable organized processes to support the systematic delivery of adult preventive services in clinics with highly varying rates of providing these services supports the idea that lack of systems may be an important source of the variability and low rates. Most of the existing processes are fragmented and do not function across multiple preventive services.

Despite much attention and considerable controversy about national guidelines for clinical preventive services, even services that are widely acknowledged as important are usually provided at rates well below what most physicians want and believe to be true (1–4). Most recent studies of clinical preventive services suggest that the key to improving these rates lies in implementing well-organized office systems to support their consistent use (5–12). After extensively reviewing the literature, the American Cancer Society’s Advisory Group on Preventive Health Care Reminder Systems has made the best case for this approach (13).

Despite the growing evidence of the need for organized support systems, almost no studies have examined the degree to which these systems may be present in typical primary care settings. We recently described an overall prevention system with 10 component processes that need to be well integrated if they are to be optimally effective in supporting delivery of a broad range of clinical preventive services (14) (Table 1). That description includes a review of the relevant literature and experience supporting each process and is consistent with the approach of the American Cancer Society’s Advisory Group. As shown in Table 1, the key to understanding these processes is to view them as describing a series of steps or actions rather than as a specific product.

We studied the delivery rates of eight important adult preventive services in 44 primary care clinics as part of a randomized, controlled trial of preventive services (IMproving PREvention through Organization, Vision, and Empowerment [IMPROVE]) (15). At baseline in this study, the relative rates at which these services were provided varied widely, both among clinics and among preventive services in each clinic (Unpublished data; 1997). Both the variation and the lower-than-desired delivery rates could be caused by a lack of organized systems in place among individual clinics. Without such systems, delivery of preventive services

## CHRONIC DISEASE MANAGEMENT

### SPECIAL EDITOR

*Edward H. Wagner, MD, MPH*

### LEIF I. SOLBERG, MD

*Clinical Director of Research*

*Group Health Foundation/*

*HealthPartners*

*Minneapolis, Minn*

### THOMAS E. KOTTKE, MD

*Professor of Medicine*

*Mayo Clinic and Foundation*

*Rochester, Minn*

### MILO L. BREKKE, PhD

*Consultant*

*Brekke Associates*

*Minneapolis, Minn*

### SHIRLEY A. CONN, RN, MSN

*Preventive Services Coordinator*

*Blue Plus (Affiliate of Blue Cross*

*Blue Shield of Minnesota)*

### SANNE MAGNAN, MD, PhD

*Associate Medical Director*

*Blue Plus (Affiliate of Blue Cross*

*Blue Shield of Minnesota)*

*St. Paul, Minn*

### GAIL AMUNDSON, MD

*Associate Medical Director*

*Group Health Foundation/*

*HealthPartners*

*Minneapolis, Minn*

*Effective Clinical Practice.*

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TABLE 1

**Processes in a Prevention System\***

**Guidelines:** Sex-specific, clinic-wide guidelines including at least the minimum age at which and frequency that specific preventive services should be provided

**Screening system:** A routine way for staff to identify whether a service is needed for a patient during the course of normal clinic visits

**Status summaries:** A routine way to summarize the status of preventive services on a patient's chart (e.g., chart labeling or a special card or flow sheet)

**Reminders:** A routine way for staff to bring the need for a particular service to the attention of the clinician during a normal clinic visit

**Resources:** Patient education materials or other teaching tools that are easily accessible to the clinician during a normal clinic visit

**Follow-up:** A routine way for patients to obtain all test results and follow-up help as needed shortly after results are available

**Counseling:** A clinic employee other than the physician who is available to provide patients with information and problem-solving assistance regarding risk factors (e.g., diet changes or smoking cessation)

**Outreach:** A routine way to invite relatives of a patient with a risk factor to obtain the preventive services for that factor

**Prevention visits:** Visits focused on preventive services (either in addition to or separate from routine examinations)

**Patient activation:** Methods that help patients recognize their need for preventive services and take action on their own to obtain them

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must depend on the memory, motivation, and time of individual clinicians.

Fortunately, we had also collected data that allowed us to measure the extent to which the organized processes listed in Table 1 are in place for each of the eight preventive services in each clinic. As a result, we are able to present the first report on the frequency of these processes in primary care clinics.

### Methods

We recruited primary care clinics from a pool of 178 clinics that were eligible to participate in the IMPROVE trial. The eligibility criteria for that trial were a contract

with at least one of the HMOs sponsoring the trial, location within 50 miles of the center of Minneapolis and St. Paul, and the desire and ability to participate when the trial began in September 1994. The participating clinics represented 47% of the 71 medical groups that met these criteria and employed 331 primary care physicians (mean, 7.5 physicians per clinic). The recruitment process and further characterization of these clinics have been published elsewhere (15).

The services studied were selected because of widespread agreement on their efficacy and importance and because they covered a wide range of problems and delivery needs. The age and frequency targets for these services were chosen as a compromise between recommendations of the U.S. Preventive Services Task Force (16) and the research need for common evaluation groupings. These targets included clinical breast examination and mammography every 2 years in women older than 49 years of age, Papanicolaou smears every 2 years in women older than 19 years of age, smoking cessation support at every visit for users older than 19 years of age, blood pressure tests at least yearly for patients older than 19 years of age, cholesterol tests every 5 years for people older than 19 years of age, and immunization for influenza (yearly) and pneumococcus (once) for people older than 64 years of age.

The presence of organized systems for providing each of these services was assessed through a survey of the primary care clinicians and nurses in these clinics. The survey was conducted in 1994, just before a survey of visiting patients that was the basis for calculating rates of delivery of these services. These 10 component processes in an integrated prevention system are defined in Table 1 and have been described in more detail elsewhere (14).

The questionnaire used to assess the existence of each of these processes was called the Provider Attitude Survey because it also asked questions about attitudes toward prevention and continuous quality improvement. These other areas and further details about development and administration of the questionnaire have been published elsewhere (17, 18). The survey contained a comprehensive question matrix that asked whether each of 10 prevention processes was "currently in place and functioning in your clinic" for each of the eight target preventive services. This required 73 individual responses (not 80 because 7 of the process-service combinations were not considered applicable, e.g., *follow-up* for immunizations). To answer this question, the respondents were given the definition of each process included in Table 1.

A survey approach was taken to verify that each process was truly functioning in a clinic, because many

processes are theoretically present but are not used or are unusable in actual practice. The existence of each functioning process for each preventive service at an individual clinic was calculated from the percentage of clinician and nurse respondents who answered “yes” to that question on the Provider Attitude Survey. A process was considered present only if the percentage answering “yes” was 75% or greater.

The resulting data were analyzed by using SPSS software (SPSS, Inc., Chicago, Illinois), with the clinic as the unit of analysis. Simple summaries of the data and manual review of the presence of processes sufficed for this descriptive study because too few processes were in place to allow meaningful statistical analysis or comparison with the rates of associated preventive services.

## Results

The Provider Attitude Surveys were completed during February, March, and April 1994 by 647 (65.2%) of the 993 primary care physicians, midlevel practitioners, and nurses in the 44 clinics. These respondents represented 201 (60.7%) of the 331 physicians, 32 (52.4%) of the 61 midlevel practitioners, and 414 (68.9%) of the 601 nurses.

The survey responses document how infrequently these clinics seem to have functioning organized processes to provide preventive services. Only one

process (*follow-up* of test results) was reported to be in place in more than half of these clinics for more than half of the services for which it is applicable, and most of these processes were either not present at all or were present to a minor degree in a few clinics (Table 2). More important, the three processes that should have the most potential to enhance the likelihood of identifying prevention needs and addressing them during a visit—*screening systems, status summaries, and reminders*—were reported to be present in only 11, 10, and 10 of the 44 clinics, respectively.

When these three basic support processes were present, it was only for a few services (Table 3); a single clinic accounted for 16 of the 65 occurrences of these processes (25%). However, even that clinic had all three processes for only four of the eight services. Aside from that one clinic, only one other clinic had all three of these processes for the same service. Finally, although *clinic-wide guidelines* is one of the processes most frequently reported to be in place, only 5 of the 44 clinics reported having guidelines for more than four of eight services, and 15 clinics (34%) did not report having guidelines for any service.

Another way to view these processes is to compare the number present for various services. As shown in Table 3, it is clear that Papanicolaou smears, mammography, and measurement of blood pressure and cholesterol levels have received the most attention.

**TABLE 2**  
**Extent to Which 10 Specific Organized Processes Are Present for Any of 8 Preventive Services among 44 Primary Care Clinics**

| PROCESS                | ABSENT*  |         | GENERALLY PRESENT† |         |
|------------------------|----------|---------|--------------------|---------|
|                        | CLINICS  | CLINICS | CLINICS            | CLINICS |
|                        | <i>n</i> | %       | <i>n</i>           | %       |
| Clinic-wide guidelines | 15       | 34      | 5                  | 11      |
| Screening systems      | 33       | 75      | 1                  | 2       |
| Status summaries       | 34       | 77      | 2                  | 4       |
| Reminders              | 34       | 77      | 0                  | 0       |
| Resources              | 13       | 30      | 10                 | 23      |
| Follow-up              | 4        | 9       | 25                 | 57      |
| Counseling             | 32       | 73      | 5                  | 11      |
| Outreach               | 44       | 100     | 0                  | 0       |
| Prevention visits      | 23       | 52      | 5                  | 12      |
| Patient activation     | 27       | 61      | 6                  | 14      |

\*“Absent” is defined as the process not reported to be in place for even one preventive service by  $\geq 75\%$  of the respondents from the clinic.

†“Generally present” is defined as  $\geq 75\%$  of respondents in a clinic reported that a particular process was in place for a majority of the relevant services.

TABLE 3

### Clinics in Which Organized Prevention Processes Were Present for Specific Services by Report of the Clinicians and Nurses\*

| PROCESS                            | PREVENTIVE SERVICES |             |                   |                    |             |            |           |              | TOTAL PROCESSES |      |
|------------------------------------|---------------------|-------------|-------------------|--------------------|-------------|------------|-----------|--------------|-----------------|------|
|                                    | BLOOD PRESSURE      | CHOLESTEROL | SMOKING CESSATION | BREAST EXAMINATION | MAMMOGRAPHY | PAP SMEAR  | INFLUENZA | PNEUMOCOCCUS |                 |      |
|                                    | ← n →               |             |                   |                    |             |            |           |              | %†              |      |
| Clinic-wide guidelines             | 7                   | 4           | 4                 | 10                 | 19          | 13         | 17        | 7            | 81              | 23.0 |
| Screening system                   | 2                   | 1           | 2                 | 1                  | 3           | 7          | 5         | 2            | 23              | 6.5  |
| Status summaries                   | 1                   | 1           | 2                 | 3                  | 3           | 5          | 8         | 5            | 28              | 8.0  |
| Reminders                          | 1                   | 0           | 1                 | 0                  | 0           | 10         | 1         | 1            | 14              | 4.0  |
| Resources                          | 13                  | 21          | 12                | 22                 | 15          | 9          | 5         | 5            | 102             | 29.0 |
| Follow-up                          | 18                  | 22          | 1                 | NA                 | 31          | 40         | NA        | NA           | 112             | 50.9 |
| Counseling                         | 5                   | 12          | 6                 | NA                 | NA          | 4          | NA        | NA           | 27              | 15.3 |
| Outreach                           | 0                   | 0           | 0                 | 0                  | 0           | 0          | 0         | 0            | 0               | 0    |
| Prevention visits                  | 14                  | 13          | 4                 | 7                  | 8           | 14         | 4         | 4            | 68              | 19.3 |
| Patient activation                 | 7                   | 10          | 8                 | 10                 | 6           | 5          | 5         | 4            | 55              | 15.6 |
| <b>Total processes per service</b> | <b>68</b>           | <b>84</b>   | <b>40</b>         | <b>53</b>          | <b>85</b>   | <b>107</b> | <b>45</b> | <b>28</b>    |                 |      |

\*NA = not available; Pap = Papanicolaou.

†Percentage of possible services in 44 clinics (e.g.,  $44 \times 8 = 352$  as the denominator for guidelines).

## Discussion

Our survey data suggest that most of these organized processes are unusual in most clinics. If present, they usually function for individual preventive services rather than being integrated across many different services. Moreover, there are few examples of fully integrated multiprocess systems for single services. In other words, these processes are infrequent and fragmented and vary from clinic to clinic and from service to service within each clinic (Unpublished data; 1997).

Tables 2 and 3 show that *follow-up* is the only process to occur in most clinics for many applicable preventive services. However, it is our impression from working with these clinics that even this process is usually service-specific rather than integrated across services. For example, the process used to follow up on Papanicolaou smears usually differs from the one used to follow up on mammography results, and neither process has any connection with the less frequently found processes for follow-up on results

of blood pressure or cholesterol level measurement. Using a common follow-up process for many services would probably make it easier to set up and maintain that process.

The almost complete absence of a follow-up process for smoking cessation demonstrates that even clinics that use follow-up processes use them primarily for reporting test results. This absence also suggests a possible reason why tobacco users report so little follow-up support for their quitting efforts, even when a quitting date has been established at a clinic visit (19).

It is clear from looking at a spreadsheet of the processes reported to be present in all 44 clinics that, except for *follow-up* and possibly *clinic-wide guidelines* and *resources*, most of the processes are as variable and fragmented as if they had simply been sprinkled randomly among the clinics. Because none of these three processes (which account for 58% of the total) has much to do with directly assuring that patients will receive the services studied here, it is not surprising that the delivery rates were so low.

It is also not surprising that services in individual clinics varied so widely. Our study of this phenomenon shows that, when each clinic's rates for each service are expressed in quartiles relative to the rate in the other 43 clinics, almost all clinics have rates for some services that are in the top (best) quartile as well as the bottom quartile (Unpublished data; 1997). For example, only 4 of the 44 clinics were in the top quartile for more than half of the services for their patients being up-to-date at the time of a clinic visit, and three of these clinics had rates for other services that were in the bottom quartile among the clinics. This variation was true even for similar types of services (e.g., rates for providing breast examinations, mammography, and Papanicolaou smears).

Thus, the limited use and considerable fragmentation of organized support processes in these clinics before a prevention intervention are consistent with the need for such systems to prevent marked variation in service rates within individual clinics. These findings also suggest that implementing such processes might reduce the variability and increase the rates of preventive services delivered, in keeping with what is known about variation and quality from other businesses and health care. Nevertheless, these findings only support the importance of systems for effective prevention services; they do not prove causation.

Nolan (20) has provided a good basic description of these basic concepts about variation. These concepts include understanding that there are two types of causes for variation in any work process: special cause and common cause. Special causes arise from specific unique circumstances, such as the absence of a key person or equipment usually present. Once these have been eliminated, a process is said to be stable, even though common causes that are consistently present (or absent) may still lead to considerable variation.

The absence of organized prevention processes or the equally damaging fragmentation of those processes is likely to be a common cause. Under such circumstances, the process of delivering preventive services depends on fallible and fluctuating problems that have been well described in studies of prevention: human memory, motivational differences, distraction by more urgent or attention-grabbing problems, and time shortage (21–25).

Our study has some limitations. It is the first effort to quantitatively document the presence of prevention systems in clinical settings, especially at the level of component processes. The clinics studied are probably somewhat unusual in that they have volunteered for a preventive services trial and are presumably more interested in preventive services than the average clinic. If these processes are so infrequent in such clinics, how-

ever, they are probably even less common in clinics that did not volunteer to participate.

The main limitation of our study is probably the method used to measure the presence of processes and the level of affirmation required to determine that a process is present. This method has not been independently verified, although it is not clear what could be used as a gold standard. We chose to require recognition by at least 75% of respondents because we assumed that if at least 25% of those who would need to be involved in a process did not recognize its presence, then it was not there, regardless of what a manager or procedure manual might say about it. We also know that many physician–nurse pairs will establish unique systems to make their own delivery of services more efficient. Although we believe that organizing processes so that they are truly clinic-wide will make them more efficient to set up and maintain, the wording of the question would permit widespread individual processes to be recognized.

Our study needs replication and comparison with other methods of assessing the presence of organized processes. Until these steps have been taken, our findings at least seem consistent with our observations of many practices and the responses of the 50 to 60 clinic teams that we have now helped to develop and implement such processes through the IMPROVE trial. One of the fundamental steps in any improvement process is to gather data to develop a detailed understanding of the current clinical approach to preventive services, including identifying the root causes of any problems. Invariably, those clinic process improvement teams report that the biggest root cause is the lack of any systematic support for the steps in the prevention delivery process.

These findings argue for more efforts to organize these processes to address what may be the common (root) cause for low and variable rates of preventive services in clinical practice. Berwick (26) has described the efforts of health care professionals to do good work in the absence of consistent processes as “wasted energy.” The friction in an unsupported process creates useless heat, a situation in which “flaw is expected; it is no longer a surprise” (26). In the IMPROVE trial, we are testing one approach to producing these processes as an

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integrated whole for all preventive services. Such efforts are needed to develop and implement the missing clinical preventive services systems so that flaws will become surprises.

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## Correspondence

Leif I. Solberg, MD, HealthPartners Research Foundation, 8100 34th Avenue South, P.O. Box 1309, Minneapolis, MN 55440-1309; e-mail: solbergli@healthpartners.com.

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