By Alan Eshleman, MD, MPH

Kaiser Permanente Online: What It Is

In October 1999, Kaiser Permanente (KP) Online became an established program in all nine KP Regions. KP Online is the World Wide Web portal through which KP members can interact directly with the Health Plan and Permanente Medical Groups. The KP Online Web site (http://www.kponline.org) is a place where members can find answers to their medical questions and can interact both with other members and with KP professionals. By the time this article is published, more than 300,000 members will have registered with KP Online. If current projections are correct, close to a million members will be using the service by the end of 2001.

KP Online: One of Several Web Portals to KP

KP Online is sometimes confused with Kaiser Permanente's other Web portals. There are five major portals to KP, two of which are accessed from the World Wide Web, and three of which are accessed from the Kaiser Permanente Intranet:

- KP Online (http://www.kponline.org) is the members' portal. It can be accessed from the World Wide Web and requires that users be Health Plan members who have registered and selected a password.
- The Kaiser Permanente public site (http://www.kaiserpermanente.org) is also accessed from the World Wide Web. Anyone with a Web browser can visit the site and view its content.
- The clinician site (http://pkc.kp.org), also known as the Permanente Knowledge Connection, is part of the KP Intranet and cannot be accessed directly from the Web.
- The employee site (http://kpnet.kp.org) carries news and announcements of interest to KP employees and is also an intranet site.
- The vendor portal (URL not defined at this time) will include e-commerce and supply-chain content.

The best way to understand KP Online is to go to the site and register. To register, you must be a member of the Health Plan, although guest accounts can be arranged for KP professionals who are not Health Plan members. When you register, you can specify a user name and a password and can view the noninteractive portions of the site. A few days after registering, an activation code will be mailed to you.

When you return to the site and enter your activation code, you will then be able to use the interactive features. The activation code need only be entered once.

Once registered, KP Online members are presented with five major options when they visit the site (Figure 1):

- **What's new.** This is a frequently updated review of member-oriented health news.
- **Learn.** Access to a remarkably detailed Encyclopedia of Medical Conditions, a Drug Encyclopedia, and a personal health assessment test.
- **Explore.** This feature presents a guide to KP facilities, listings of health education classes, and a link to the KP public site (http://www.kaiserpermanente.org)
- **Communicate.** This feature contains links to advice nurses, pharmacists, and online discussion groups and a place to book nonurgent appointments for primary care.
- **Using.** This area contains information about security policies, passwords, and searching the site.

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Figure 1. Entry Screen for KP Online. Accessed via the World Wide Web: https://kponline.kp.org/home.shtml [accessible only to members].
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Table 1. Satisfaction with KP Online as reported by users responding to survey(s) (n = 2998 for 1998; n = 3930 for 1999)*

Level of satisfaction	Percentage of survey respondents	
	1998	**1999**
Very satisfied	28	40
Somewhat satisfied	32	33
Neutral	23	18
Somewhat dissatisfied	11	7
Very dissatisfied	6	3

*Adapted and reproduced by permission of the publisher and author from: Maxwell V; Shafer J. Kaiser Permanente Online: 1999 evaluation results. [Oakland, CA]: National Member Technology Group; [2000] p 28.

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Special Qualities, Special Purposes

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KP Online distinguishes itself from the tens of thousands of other "health" sites on the Web inasmuch as it exists to support the clinical mission of the Health Plan and Permanente Medical Groups. Unlike many other sites, KP Online is not a "dot com"—a company which exists to sell a product or to compile data for sale to commercial users. Instead, KP Online is an alternative way for members to access the Health Plan—and this access is a high priority of the organization. Access can take the form of a question to an advice nurse or pharmacist or can be a request for a nonurgent appointment for primary care. In KP Online discussion groups, members can share information with each other and with KP professionals who serve as trained moderators.

How KP Online Came To Be

In the early 1990s, Tim Kieschnick (who now serves as Product Definition Manager for KP Online) authored a white paper discussing the need for an overall organizational strategy to approach the issues of media and technology. At the time, Mr Kieschnick was working for the Northern California Permanente Medical Group Regional Health Education Department. Dr David Sobel and Laura Keranen, each a Director of Regional Health Education, supported his work.

Early on, when Mr Kieschnick and his colleagues realized that the issues relevant to KP Online went beyond health education, other programs became involved. Mr Kieschnick and Bill Caplan (who was working on New Practice Models) formed the Interactive Technology Task Force. The Task Force generated scenarios of "a good future" that included four core elements:

- Lay decision support
- Clinical medicine (telemedicine and remote consultation)
- Psychosocial support
- Member business functions

In mid-1995, recommendations of the Task Force were submitted to Dr Robert Klein, head of TPMG Operations. The recommendations proposed specific sequences of activities and funding levels for a strategic approach to using these new online technologies and resulted in both the funding of the Interactive Technology Initiative (ITI) and the hiring of Anna-Lisa Silvestre as Business Manager. The ITI sponsored and managed a variety of new projects, including several innovative telemedicine projects.

At about this time, the World Wide Web emerged as the dominant mode for digital communication. The ITI began to reformulate its plans to take advantage of the Web. To meet its strategic goals, ITI set a goal of providing a Web site that would have "basic functionality" and that would be available to 1000 members by the end of 1996.

The Netscape Company was hired to build the first ITI Web site, which was first deployed for the KP Santa Clara Medical Center. Members were recruited through mailings to targeted employee groups. The discussion groups, health information, facility directories, and the ability to book nonurgent appointments or to communicate with an advice nurse were in place by the end of 1996.

In 1997, the project was moved to the KP Program Offices. The National Member Technology Group was formed, and KP Online was the Group's main project. Shortly thereafter, the project was expanded to the Mid-Atlantic and Northwest Regions.

In 1998, the infrastructure of KP Online was enhanced by installation of a robust server in Silver Spring, Maryland, to provide Kaiser Permanente's first secure Internet service based at the KP Data Center.

In 1999, the rollout of KP Online was completed in all nine KP Regions.

Who Uses KP Online—and Why They Do

The Web's impact on health care cannot be ignored. According to the US Department of Commerce, 116.5 million Americans had access to online services in August 2000, and more than half of all Americans will have Internet connectivity by 2001.[1] Moreover, 52 million Americans have used the Web for medical information.[2] Of Kaiser Permanente members Programwide, 72 percent have Internet access, ranging from 82.7 percent in the Mid-Atlantic Region to 50.7 percent in the Ohio Region.[3]

The approximately 117,000 KP Online users in 1999 had the following characteristics:

- Forty-two percent of members who registered on the site are aged between 45 years and 64 years, and 32 percent are aged between 30 years and 44 years.[4:18]
- Overall, 57 percent of KP Online users are female, and 43 percent are male.[4:19]
- One fourth of KP members who registered on the site have belonged to the Health Plan for less than two years, and one fourth have been members for two to five years.[4:20]
- Many KP Online users work for large and strategic employer groups.[4:21]
- The number of Medicare members registered on the site ranged from 4 percent to 12 percent in KP Regions where data were available.[4:21]

Initial e-mail surveys of our members who have used KP Online suggest that they are generally satisfied with the site (Table 1)[4:28] and that their trust in the information on the site is heightened by knowing that it is an official service of our organization.

During 1999, 68 percent of the 749 members responding said that KP Online was helpful to them, and an additional 12 percent reported that the site was helpful to others.[4:29]

We were not surprised that the most popular features of the site were the convenience features that allow members to communicate with pharmacists and advice nurses and to schedule appointments online. Eighty-eight percent of 437 members responding were satisfied with the pharmacist questions feature;[4:46] 80 percent of 591 members responding were satisfied with the advice nurse function;[4:39] and 73 percent of 526 members responding were satisfied with the appointment request feature.[4:53] Figures 2 and 3 summarize members' reports of how these services were helpful.

Requests and Concerns

Kaiser Permanente members are nearly unanimous in what they want next from KP Online. From member responses to monthly surveys, several themes—more convenience, more connectivity, and more customized information—have emerged. Members want to view laboratory results and medical records; make appointments in more departments than just Medicine, Obstetrics-Gynecology, or Pediatrics; and communicate directly with their physicians and other providers via e-mail. They also want to view provider biographies online and to use these biographies to guide the choice of personal physician. Members also want to fill and refill prescriptions online.[4]

Although all these transactions are technically fea-

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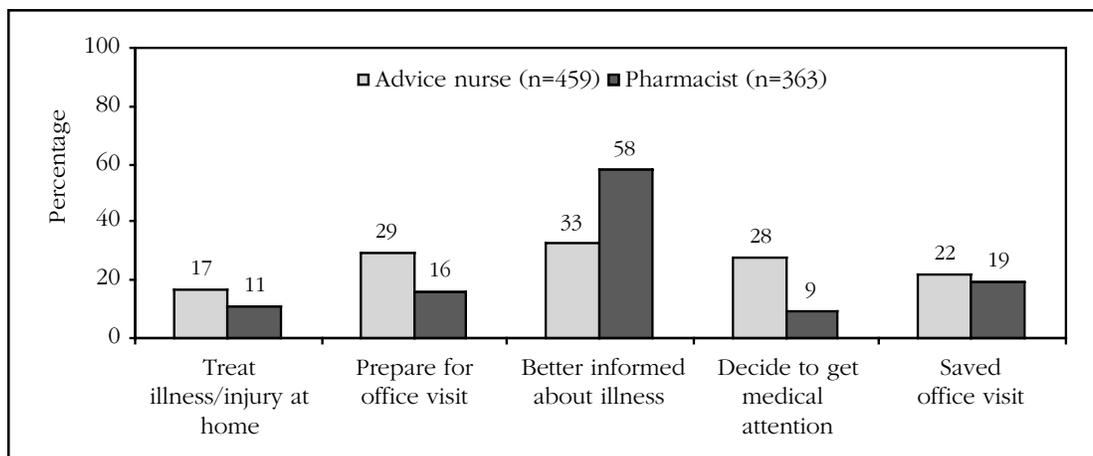

Figure 2. Graph shows ways in which users of KP Online surveyed in 1999 found the service helpful.
(Adapted and reproduced by permission of the publisher and author from: Maxwell V, Shafer J. Kaiser Permanente Online: 1999 evaluation results [Oakland, CA]: National Member Technology Group: [2000] p 29, 30.)

sible using the hardware currently available, implementation is definitely not—as some members believe—simply a matter of "just throwing a switch."

First and foremost, any new portal between our members and our providers must be secure. Further, such new services should not increase the workload. Replying to e-mail, for example, can take as long as a routine office visit; if even three or four such messages reach a provider in a single day, the workday becomes an hour longer. Some system must therefore be set in place to triage incoming messages so that only the most crucial ones reach providers. Moreover, members must understand that having an e-mail portal does not guarantee unlimited access. And providers need to learn online communications skills and develop procedures for rapidly responding to frequently asked questions.

Having lab results available to members online also poses formidable problems, including, again, security. How will we communicate to members the clinical significance of "normal" and "abnormal"? Many clinicians, I'm sure, have had the experience of having a distraught patient fixate on an abnormal lab value of no clinical significance—for example, an aspartate transaminase of 41 (upper limit of normal is 40). How do you explain to such a patient that there is no problem despite the "abnormal" asterisk next to the result? Or how to release x-ray results? Radiologists are in the habit of including a differential diagnosis in their reports, and some of these differentials can include rather terrifying (or unclear) terms such as "cannot exclude neoplasm" or "spondylolisthesis." Can we devise a system that works as well as a calm, face-to-face presentation of lab results?

KP Online and KP Clinical Information Systems (KP CIS) are working together to plan for how CIS data will be shared with members. A major piece of the technical infrastructure to be developed is known by the acronym MUMU, which stands for Member Universal Messaging Utility. MUMU is intended to be the switching network that routes clinical data, appointment information, and member inquiries. KP Online will develop the application that allows members to view the data, receive personal health prompts, update their own personal health records, and exchange messages with their care team.

Building the "virtual medical center" is an exciting challenge. The impact of the forms we develop will be as transforming for clinical medicine as the telephone was in the late 19th Century—perhaps even more so, because the Internet has grown explosively over a much shorter period than the telephone did.

This year, KP Online began to feature online prescription refills (for the KP Northwest Region and the California Division), Automated Appointments (for parts of KP Northern California), and Provider Selection and Empanelment (also for parts of KP Northern California). During the summer of 2000, KP Online conducted pilot studies on online care management of diabetes, congestive heart failure, and chronic pain— priorities of the KP Care Management Institute.

Our organization's heavy investment in hardware, in software, and in the human beings who manage this technology creates the business imperative to show a return on our investment. Will having a world-class interactive Web site help retain members? Can health education or chronic disease management be performed effectively online? Does the ability to connect
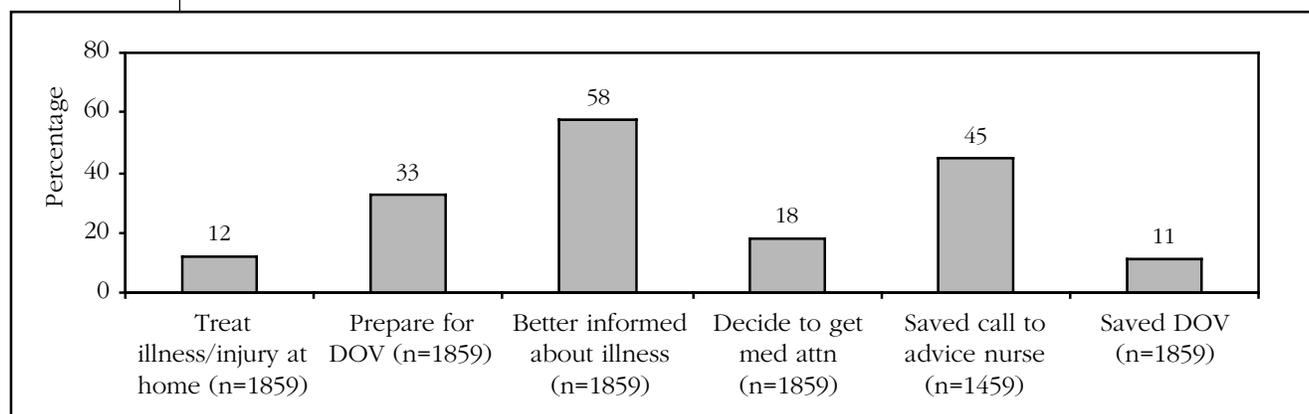

Figure 3. Graph shows percentage of users of KP Online surveyed in 1999 who reported being helped by its advice nurse and pharmacist features. (Adapted and reproduced by permission of the publisher and author from: Maxwell V, Shafer J. Kaiser Permanente Online: 1999 evaluation results [Oakland, CA]: National Member Technology Group: [2000] p 43, 49.)

with providers or with other members online reduce the demand for office services or decrease telephone traffic? How can our older members or lower-income members—the groups that now stand on the other side of the "digital divide"—gain access to KP Online? Might it make sense to give some members a personal computer with Internet connectivity?

These questions form the basis for a great deal of research that has yet to be done. It is fitting that Kaiser Permanente, so long a leader in developing the forms of high-quality, reasonably priced medical care, has the chance to be a leader here, too. ❖

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Disconnected Strangers

"If you get too large, you don't have enough work in common.
You don't have enough things in common, and then you start to become strangers
and that close-knit fellowship starts to get lost."

Malcolm Gladwell, "The Tipping Point," Little, Brown, and Company