

A Universe at Your Fingertips: The Clinical Library and KP HealthConnect

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Imagine you're in the middle of a Kaiser Permanente (KP) clinic visit and wondering if there's any evidence for using aspirin in members with heart failure. Or when you next need to see the person for whom you're prescribing an antidepressant medication. Or how long your patient with diabetes needs to be NPO before a colonoscopy.

What Do You Do?

Here's a likely scenario—before the implementation of KP HealthConnect. You instantly decide how important your question is. You only have time to pursue critical information, because three more patients are waiting to be seen. So the question about aspirin gets sidelined; you'll look it up later. You guess that six weeks is about the right interval for a return visit. But you have to know how to help your patient adjust insulin, so you leave the exam room and make a quick call to the GI lab.

Thanks to Web-based resources provided by KP's National Clinical Library (<http://cl.kp.org>), KP HealthConnect can provide the answers to these questions—and an infinite number of others—almost instantaneously. In the exam room with your patient, you run a quick Google™ search of the site and find no evidence to support adding aspirin for your patient with heart fail-

ure. You click on a hyperlink within the visit page to go directly to the section of the depression clinical practice guideline pertaining to follow-up, then ask your patient to return in a month. You click on a link to your personal home page, MyEpic, and find links to departmental home pages. Two more clicks take you to the prep instructions for colonoscopy.

The Clinical Library (CL) makes sure that all the information clinicians need is only a click or two away. From a single user interface, KP care providers can deliver and document care and quickly find reliable, up-to-date medical knowledge.

Portal to Resources

The KP CL, sponsored by the Care Management Institute (CMI) and the Regional Permanente Medical Groups, is a clinical knowledge Web portal and the Web-based reference library in the KP HealthConnect environment. Formerly named Permanente Knowledge Connection (PKC), CL has long been the reference library resource link for KP clinicians. In keeping with the CMI mission of "making the right thing easy to do," CL/PKC houses a rapidly expanding base of clinical knowledge that is available to KP clinicians, researchers, and employees KP Programwide. The new name

reflects a merger between PKC and online clinical libraries in KP Northern California (KPNC) and KP Northwest (KPNW) and a nod to regional constituencies that both use and fund centralized CL resources.

Long before KP HealthConnect was identified as the electronic health record vendor, CMI staff ensured that the CL would be compatible with whatever application eventually supported patient care documentation. Instead of embarking on a plan to embed CL resources into KP HealthConnect, planners pursued a portal strategy. While a Web site has static pages that are designed and posted, a portal links users to other sites as well as having content directly on the site. The CL functions as the gateway between KP HealthConnect and an expanding universe of medical knowledge.

It's a largely invisible gateway though. Unlike previous versions of PKC, no log-in is required except for online continuing medical education. The CL provides a seamless interface between the processes of caring for KP members and finding rapid, precise, and reliable medical knowledge.

That knowledge is in the form of KP-created clinical content like national, CMI-sponsored clinical practice guidelines, content from the KPNC, KP Southern California,

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and KPNW regional clinical libraries, and other internal content. The CL also provides third-party resources such as more than 1200 full text journals and 180 textbooks, OVID, and a secure link to Clin-eguide, a proprietary subsidiary of Wolters Kluwer Health with evidence-based and consensus guidelines for 300 conditions that are tailored specifically to Permanente Medicine. Ultimately, the Clin-eguide content alone will bring 84,000 pages of KP-modified documentation to clinicians.

In terms of cancer care alone, for instance, clinicians can access CMI-generated tools like an oncology resources page with links to internal and external sites and content resources. There are guidelines; member education resources; and reference links to textbooks, data-

bases, and all noteworthy national organizations—all focused on oncology and hematology care.

The CL functions as a database that links to all these data sources. Each source document is categorized along criteria such as keywords, approving body, clinical category, intended audience, type of document, and so forth. Whereas Google™ returns results ranked by relevance, the CL search functionalities can return results sorted by any of these criteria in combination. One particularly useful search process pulls up documents by type. For example, a clinician could quickly find diabetes-related documents that are patient education tools.

Personalizable

KP HealthConnect includes a page called MyEpic within the visit navigator. MyEpic is like a personal

home page from which clinicians can link directly to the Web-based information and services most important to them. Access to the CL will appear here, and in hyperlinks throughout the KP HealthConnect environment.

CL is rendered as one of eight regional and a single national version, depending on the physical location from which clinicians access it. All sites have the same look and feel, but each Region decides what to put on their version of the MyEpic home page. For example, the KPNW CL site emphasizes protocols and provides call lists to serve up the kind of operational information clinicians need (see sidebar). With MyEpic, individual clinicians can further customize their Web access by adding links to clinical practice guidelines, OVID, or any other Web-based resource.

What Kind of Information Do Clinicians Really Need?

Early on, the CL Advisory Board asked a fundamental question. *What kind of information do clinicians need?* A CMI-sponsored study examining the information-seeking behavior of KP clinicians provided insight. Researchers found that clinicians sought four general kinds of information, as depicted below.

	Patient-specific	Nonpatient-specific
Medical	Patient medical record	Medical science
Nonmedical	Social/demographic	Operational

- Patient Medical Record—Medical questions about the individual patient in a clinical visit
- Social—Nonmedical questions about a specific patient
- Medical Science—Clinical questions of a general nature. This is the domain of most decision-support systems. Most previous studies of clinical questions have been limited to this question type.
- Operational—General nonmedical questions that often have to do with workflow issues.

KP HealthConnect will provide patient-specific medical information key to any clinical encounter. How important to clinicians are the other types of information?

Operational information about topics like how to refer a patient for a particular service, which physicians are on call, and what services are covered is the most frequent type of query for clinicians. This finding helped identify priorities for the MyEpic page of KP HealthConnect.

Social information is also quite important, allowing clinicians to ascertain whether they've seen a particular member before, to plan care that's appropriate to the context of the member's life, and to build effective relationships.

When medical science information was sought, it was important to clinicians that the process reliably yielded meaningful results. To that end, the CL assembles top-of-the-line medical resources and makes them optimally accessible to clinicians through hyperlinks embedded in KP HealthConnect and familiar search tools like Google™.

Special Feature

SOPHISTICATION

Interoperability

Simultaneous computer applications typically run in parallel fashion; you can't work on a PowerPoint presentation, for instance, from within a Word document.

Interoperability is the opposite of parallel operation, and maximizing interoperability between KP HealthConnect and the CL is the ultimate goal. Users can already run Web-based searches from within the KP HealthConnect environment, and much work has gone into making that happen.

For a start, the two programs have a vocabulary that allows them to "talk" to each other with precision. Convergent Medical Terminology (CMT) is the lingua franca between KP HealthConnect and the CL. CMT is the result of nearly a decade of work within KP that began as an effort to create a terminology database to serve the needs of KP Colorado's clinical information system. Leaders in that effort embarked on a collaboration with the developers of SNOMED (Systematized Nomenclature of Medicine) to enhance its usefulness for KP, so CMT and SNOMED developed as closely related systems. Years later, SNOMED CT emerged as

the lexicon of choice for electronic health records and resources.

This base of common terminology forms the foundation for more complete interoperability between KP HealthConnect and the CL, which, in turn, offers considerable potential for streamlining high-quality patient care.

The Future of the Clinical Library

Active clinical guidelines are an interoperability function looming in the not-too-distant future. Here's how they might work: A clinician, working in KP HealthConnect while seeing a patient with diabetes, enters SmartText pertaining to the patient's cardiovascular status. An icon labeled "evidence-based guideline" pops up. The patient clicks on it and goes directly to the portion of the diabetes clinical guideline addressing the role of aspirin, lisinopril, and lovastatin in preventing adverse cardiovascular events.

Referring to the guideline for statin use, s/he decides it's indicated for the patient and clicks on the suggested medication and dose. This information appears in the patient's record as a pending order. The cli-

nician signs off on it, and a prescription is generated in the pharmacy two floors down.

Still working in the patient's record, s/he initiates a patient-specific CL query built automatically by KP HealthConnect, selecting patient education tools as "document type" from a pull-down menu. S/he finds a handout that covers starting statins and prints it out for the patient.

Building the interoperability to enable this scenario takes imagination, time, and clinical and information technology expertise, but this kind of workflow-integrated knowledge resource is the ultimate goal of the CL.

Initially, users may feel hard-pressed to use even the Web portal functions available when KP HealthConnect goes live. Their priorities will necessarily be on mastering key tasks: accessing the patient record, charting care and entering orders, diagnoses, and level of service. As their comfort with KP HealthConnect grows, though, they'll find more use for the knowledge efficiencies built in. And, as user sophistication increases, so will the sophistication of interoperability between KP HealthConnect and the CL. ❖

A Moment

There's a moment coming. It's not here yet.

It's still on the way.

It's in the future. It hasn't arrived.

Here it comes. Here it is ...!

It's gone.

— George Carlin, b 1937, comedian