

## **HIT AND HSR FOR ACTIONABLE KNOWLEDGE: DESCRIPTION OF PARTNERING HEALTH SYSTEMS**

### **PARTNER: Kaiser Permanente**

#### History, Structure, and Size

Kaiser Permanente (KP) is a not-for-profit health plan and integrated health care delivery system serving eight regions that cover California and selected parts of Colorado, the District of Columbia, Georgia, Hawaii, Maryland, Ohio, Oregon, Virginia, and Washington. The health plan opened to the public in 1945, having grown out of Kaiser Industries' internal health care programs for its workers during World War 2. KP currently provides care to 8.6 million members and employs approximately 175,000 people including 14,600 salaried physicians at 35 hospital medical centers and 431 outpatient medical offices. In addition, Research Centers, associated with each KP region, collectively employ over 1000 investigators and staff, and sustain ongoing research programs in clinical practice, health promotion, and policies to improve health care and health. The Research Centers collectively perform over \$100M in externally funded research annually.

#### HIT Systems

After over 30 years of regionally based and largely independent HIT initiatives, in 2002 Kaiser Permanente contracted with Epic Systems Corporation to create and implement a program wide integrated EHR, KP HealthConnect. Features include inpatient and outpatient clinical decision support; Web-based access for patients and providers; pharmacy and clinical laboratory support and reporting; emergency department (ED) management; scheduling and billing; and interfaces to other systems, such as archiving and population care management. A web site, <http://www.kp.org>, allows members to access portions of their medical record, send secure messages to clinicians, schedule appointments, and refill medications, as well as to find health information, advice, and tools such as health risk appraisals and interventions for smoking cessation, stress management, and dietary and exercise counseling. An Epic-based system similar to KP HealthConnect has been implemented in Kaiser Permanente's Northwest region beginning in 1994.

While the overall EMR is from a common source and has national governance, each KP region's instance(s) of KP-HealthConnect are somewhat unique due to local needs and implementation choices within those geographies. Substantial effort has been directed at maintaining common data definitions and semantic interoperability through an internally developed medical terminology solution, Convergent Medical Technology (CMT). CMT is semantically congruent with the Systematized Nomenclature of Medicine, Clinical Terminology (SNOMED CT) (and with laboratory Logical Observation Identifiers Names and Codes, or LOINC, and First DataBank drug terminology).

Analytic groups, based in both the Permanente Medical Groups and the Kaiser HealthPlan and Hospitals organizations, are located at the facility, regional and national levels to help use data from the HIT system to improve the quality and efficiency of care.

Traditionally, these groups have been mainly organized to address regional operational and quality improvement needs and have maintained little direct collaboration with each other at a national level. With some exceptions, the operationally oriented analytic activities have also generally been quite separate from the formal clinical, behavioral, and health services research infrastructure of the regionally located research centers. KP is currently trying to break down these barriers. 3 examples include:

- The National Research Council, which includes all of the KP regionally based research centers; a particular new area of alignment and collaboration is the support of Comparative Effectiveness Research
- The nationally based Care Management Institute which has developed an analytic network for performance reporting on aspects of chronic condition care
- A national organization, the Utility for Care Data Analysis, has formed to organize and position for more efficient access and use the vast data being generated by the HER and associated systems.

The full range of types of data collected by each KP regions HIT system are: coded and free text information related to (1) patient demographics, enrollment and benefits, (2) appointments scheduled and kept, (3) encounters (e.g. - outpatient, emergency department, inpatient) including associated diagnosis and procedure codes, (4) medication prescriptions and dispensings, (5) laboratory test orders and results, and (6) longitudinal records of patient vital signs drawn from multiple encounters and, in some cases, patient self-reports (e.g. - height, weight, blood pressure, etc.). There are also detailed data related to specific conditions (e.g. - tumor registries for cancer). Of these, all of these data sources currently get leveraged for research.

Within each KP region, data reside in multiple transactional source systems. Some Regions have created integrated data warehouses that bring together data from multiple source systems to support operational analytics (clinical and financial) and research. (centralized repository, distributed network, hybrid.) Other important features of KP's HIT capabilities include: KP is both a care delivery system and an insurer that pays claims for services provided by non-KP providers. The challenge of integrating data from both these functional areas affects nearly all informatics efforts at KP.

#### Organization of Research Functions

The embedded QI analytic groups are funded to both create and maintain routine periodic reports and also respond to ad hoc internal KP requests from Health Plan and Medical Group leadership at the facility, Regional and Program levels. This investment has not been formally summarized but likely amounts to several 10's of millions of dollars annually. The staffs are generally made up of professionals with the following background and experiences: BS/MS in a quantitative and/or health-related field. Many have MPH degrees. A small number have PhDs. The process for making requests for analysis is not standardized at all, either within Regions or at the Program-level.

Some of the ways in which KP is working to increase communication and collaboration with the formal research infrastructure are:

- Research into Health Disparities

- Research and characterization of the uses and value realization from implementation of KP-HealthConnect
- Impact of insurance benefit designs on the care seeking behavior of patients
- Facilitate access to KP clinical information through Regional Health Information Organizations
- Involvement of KP Centers within Evidence Based Practice Centers
- Organization for supporting Comparative Effectiveness Research

Applications of HIT (i.e. ways your organization describes utilization of electronically generated data)

Examples of the use of HIT data for systems improvement currently underway or recently completed include:

- The reduction in unwarranted variation in care through the use of EHR dashboard tools supported by analyses of patient panels. In particular, panel support tools for primary care clinicians.
- Using web-based tools for HEDIS measurement and feedback to clinicians. For example, POINT in SCAL, HealthTracker in CO, primary care dashboard in NW.
- Analysis to describe particular patient populations by linking patient descriptors with particular locations. For example, we are developing standardized algorithms to associate members with facilities at the Medical Office Building level. This will enable us to stratify standardized measures (e.g. - HEDIS) by facility.
- We've also geo-coded KP member addresses; this enables us to integrate member information with external data (e.g. - from census) on environmental influences on health.
- Research to better understand how and which medical personnel use the HIT system.. For example, the Core Value Metrics Report includes information about how Permanente physicians and other clinicians utilize KPHC including, for example, use of after visit summaries, delays in closing encounters, encounter mix (face-to-face office visits, phone encounters, email usage).