*White Paper* ■

# The IAIMS—An Essential Infrastructure for Increasing the Competitiveness of Health Care Practices

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**A b s t r a c t**   The eighth annual workshop of the IAIMS Consortium was devoted to exploring how information technology might provide the tools to allow health care practices to compete in the new health care environment while maintaining independence. The options that were discussed included: optimizing care of the patient in the local setting; reducing practice overhead by improving efficiency and effectiveness; and finding innovative strategies for providing health care and new products.

■ **J Am Med Inform Assoc.** 1997;4:March–April Supplement:S73–S76.

The shift from fee-for-service health care delivery to capitation may force many independent practitioners to sell their practices and become employees of health maintenance organizations or other large for-profit group practice organizations. If this change takes place, freedom to provide education, freedom to participate in research or community service, and freedom to develop new professional skills will be at risk.

The eighth annual workshop of the IAIMS Consortium was devoted to exploring how information technology might provide the tools to allow health care practices to compete in the new environment while maintaining independence.

Forty-five participants from 20 institutions participated in three brain-storming sessions about ways in which information technology could improve practice competitiveness. The first addressed information services to optimize care of the patient in the local setting. The second focused upon opportunities to reduce practice overhead by improving efficiency and

effectiveness. The third identified innovative strategies for providing health care and supporting wellness.

## Optimizing Care of the Patient in the Local Setting

### Integrated Patient Record across Care Settings

When a patient is cared for in a single setting, an electronic patient record may provide only a marginal benefit. If that same patient receives components of care in different settings, an electronic record becomes an essential communication vehicle.

Implementation of a patient record across multiple health care settings requires careful attention to security and mechanisms for limiting access to information based upon authorization. Conflicting write privileges must be managed. A unique patient ID is required, as is standardization or mapping of vocabulary.

The larger challenge stems from competition between organizations and the constant alignment and realignment of facilities and organizations. The patient record must be built over time despite that competition and change. Strategies based upon linking the systems and data within an organization to provide the patient

record are likely to fail. Vendor strategies based upon control of market share through proprietary integration and repository technologies further contribute to the problem.

The integrated record is likely to require that resources be added on top of an organization's systems. World-Wide-Web technology has eliminated many of the technical barriers to an integrated record. Funding to support those resources might be raised through a tax on facilities or through a portion of premiums. However, such funding will not occur unless the integrated record generates benefits that exceed its costs back to each of the supporting organizations. Management of the integrated record and setting of priorities across organizations are problematic. The patient might hold her or his own record, or a neutral body might be required. The problems in integrating records across practice environments and care plans will magnify the complexities of training and support.

### Supporting Providers in Their Practice Sites

It is very difficult to support information technology in the field. We need to begin by providing information services rather than being driven by information technology itself. After we have solved the problem of how to incorporate information access into medical practice, we can try to deliver that support through technology directly.

In order to reach providers in their practices, technology offerings need to be better packaged. Training and relief time have to be considered. Consistency will be required, and must be supported through standards and mass customization strategies. Reliable e-mail and network connectivity will require much more central management than the current Internet. Commercial Internet providers are a decade behind the art-of-the-possible in technology.

Consideration of these issues leads to questions such as, "Could the library system provide a regional help desk?" and, "Who pays for information services?" Current database-licensing practices will not scale up to regional use.

The core set of functions that is needed to make an electronic medical record viable consists of: MEDLINE; the 20% of the record that is used most often; laboratory results; e-mail; EDI for determining eligibility; just-in-time continuing education; linkage to health department reports; outcome monitoring.

### New Models for Practice and Communication

Two of the models suggested to improve practice and communication were:

1. Empower patients to take more responsibility for their own care. Give them access to the information that they need to participate in decision making with their providers.

2. Tie video telemedicine to data systems to deliver a full range of information resources to support rural practice.

Challenges that must be dealt with include: process and work redesign occur at the same time that new systems are being installed; guidelines and pathways run counter to a culture of practitioner autonomy; e-mail can make a conversation part of a legal record.

## Reducing Practice Overhead

### Management Strategies

Documentation by exception of the activity that occurs during a clinical encounter could reduce effort while providing adequate documentation to justify charges, as well as documenting treatment and satisfying other administrative requirements. Capturing transcription might be a first step toward documenting the encounter without work redesign.

Problem knowledge-coupling could provide an alternative to the life-time electronic record. In this model, the electronic record would follow the patient only until a problem was resolved.

Consortial buying could reduce cost by facilitating collaboration among competitors in nonthreatening areas. Knowledge acquisition might serve as an example. Information resources could be purchased at the regional level, with organizations adding to their value through mechanisms of access and interpretation.

Patient education could reduce cost of care. Behavior modification could lead to risk avoidance. Self-care could increase compliance and reduce use of providers.

### Data-driven Practice Modification

Information and data can be used to motivate changes in behavior. For this purpose, providers can be shown how their performances compare with aggregate data or with an anonymous subset of data that represents best practice. A similar strategy might work across organizations. Instead of comparing one organization with another, cases would be compared with all like cases in the region.

Cross-organizational benchmarking magnifies problems related to how people use vocabulary and what

they count in, or exclude from, a sample. Comparison of providers, against themselves, over time is one way to correct for these differences. Outcome research would need to be incorporated into pathway development and into organizational culture. Policies and procedures would have to be in place for data to be used for continuous, nonpunitive feedback.

### Regional Care Pathways

A care pathway provides a detailed map of the care process for a patient who needs to be treated for a problem or who requires a procedure. It outlines the phases, such as preoperative, perioperative, and postoperative. Within a phase, the goals for each day are specified, with the elements of care that should be provided that day. Extension of pathways across organizational boundaries could reduce redundant development, reduce variance in practice patterns, or enable caregivers to plan for the coordination of a patient's care across sites.

Development of a pathway for a single setting requires individuals to work together in new ways. Providers have to learn that pathways are a flexible tool, and they have to learn how to work with each other and with data to identify best practice. Administrators have to learn that variance reporting is a tool for pathway and process refinement rather than a report on the provider. Pathways, other sources of evidence, the electronic record, and outcome data need to be linked in ways that document the reasons for variance.

Can the collaborative processes required to develop a pathway be extended across organizational boundaries? A regional pathway would need to adapt to health plan constraints such as referral patterns and supported services. It might be easier to transfer the process of pathway development and use than it would be to transfer the pathway itself. Likewise, it might be easier to do cross-facility pathway development within a specialty (as has already happened with trauma) than to do intra-institutional development across specialties.

What is the role of national guidelines in pathway development? Can librarians and libraries play a role in the development and management of pathways? How are pathways kept current? How do we know that the latest version is being used? What happens when a provider who has been trained in an environment that integrates pathways into practice moves into a setting that does not have these tools? It might be helpful to link the very detailed pathways to the more general relevant guidelines. A change in a guideline would then trigger review of all related pathways.

### Staff Training

Computer-based training provides a mechanism to support continuous learning/training. An IAIMS infrastructure can support access to learning resources, procedure information, simulations, etc., in the work place. Experience would be self-documented.

It is easier to use the computer for training when the students are comfortable with the technology. A drop-in training facility helps people to reach that level of comfort. Departmental contacts are another source of help for people who are reluctant to begin using computer-based training.

### Critical Components for Use of New Methods of Practice

Activity-based cost accounting is a pre-condition to use of data to support cost-sensitive decisions about best practice. A common denominator is necessary to understand costs across facilities. A relative-value scale might be a way of achieving consistency across institutions while giving the institutions a target against which to manage.

A reimbursement mechanism that rewards process improvement as well as cost reduction is needed. Process improvement might be stimulated by CASE-like tools that help people visualize opportunities for work redesign.

In the new practice setting, systems should be based upon an intranet model. A community master patient index and encounter database would be a key integrative resource. A unique patient identifier would be a first step, and a common set of vocabulary and common data-exchange standards would be required. On-line, real-time resolution of precertification and authorization would need to be possible. A "patient-view" would need to be supported across data sources. Issues related to confidentiality and funding in advance of benefit would have to be managed.

## Innovative Strategies and New Products

### Supporting Patient Involvement

In most current managed care environments, people do not have many options in choosing a physician or in getting a second opinion. They are, therefore, looking for education. Physicians are referring patients to libraries and patients are seeking information in a self-directed manner. What happens when a patient gets articles? Does the patient understand them? A paragraph in a textbook, with guidelines annotated for patients, might be more helpful to a lay person. Alter-

natively, a comprehensive set of information sources could be designed so that physicians could point patients to the correct sources.

Many medical interventions fail because of lack of patient acceptance. Can patients be given information that can help them participate in the selection of options? Information technology can help the patients to visualize the differences between choices, but for such a strategy to work there would need to be a cost-effective mechanism of producing content. Could the task be divided among a set of institutions? Concerns about quality control and competition would have to be worked out. One possibility would be to develop material that had a neutral brand (such as the IAIMS Consortium) and a local brand of the institution from which the patient was receiving care. By contributing to the consortial effort, an institution would be able to brand a resource as if they had developed it, and with a national seal of approval.

### Improving Wellness

Information technology could be used to help patients modify their behaviors to reduce risk by allowing them to directly enter data to monitor progress toward goals. Literacy levels would have to be considered. Primary care providers would need to reinforce goals, review data, and demonstrate concern. Insurance companies attempt to create patient incentives for risk avoidance and prevention, but most managed care contracts are too short-term to promote a focus on wellness.

It is relatively easy to modify behavior once a patient realizes that she or he is sick or has a problem. The entertainment side of information technology could be used to engage people about problems that they do not know they have or perhaps may have as the result of lifestyle behaviors.

### Extending IAIMS to the Consumer's Environment

We need to redefine the role of an academic medical center to reflect a partnership for production and dissemination of health care information to all members of the community. A central index of available resources would be a key integrative resource. The current Internet presents capacity problems. IAIMS institutions should partner with public health departments and employers to find ways to overcome these problems.

### New Products

In the new health care setting, practicing physicians will need new revenue streams in addition to funds from direct patient care. Options could include: industry partnerships for clinical trials and technology evaluation; information interpretation; and fee-for-service education.

## Potential Action Items

- Identify a "floor" of the minimum technology (such as a workstation configuration) that will be supported.

- Benchmark the part of the information technology budget that should be devoted to training.

- Negotiate licensing arrangements that permit sharing.

- Educate academic administration, professional societies, and local medical societies about the opportunities for and obstacles to regional IAIMSs.

- Disseminate information about what works and what doesn't work.

- Include education about collaborative processes in health-profession curricula.

- Develop a reference architecture for a patient record that is independent of facility-based transaction processing systems.

- Develop a model that relates pathways to guidelines, and evidence to both.

- Develop a standard for privacy guidelines.

- Develop a collaborative effort to develop material for patient education.