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## **HEALTH CARE REFORM: THE IMPLICATIONS FOR HEALTH DATA SYSTEMS**

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Health care reform, whether at the state or national level, will require greater attention to health care data base development. Regardless of the operational specifics of an eventual reform plan, thorough planning will be needed to establish an information system sufficient for the needs of policymakers, consumers, providers and third-party payers alike. The process of system planning and operation will demand policy decisions at many levels: national, state, local, public and private.

This short paper is not intended to cover all possible policy issues that may arise in the development and operation of health care information systems. Rather it is intended to review many of the issues that have faced states as they strive to implement health care data bases and thereby draw policy implications for national systems development. This review should also reveal that policy debates around health care reform and health care information systems represent more than arguments about the best methods of health care finance and delivery. They embody a national discussion about the way we view ourselves as a nation and about the basic values we want to guide our social interaction.

The issues raised here represent a mixture of concerns that are both applicable to the health care sector specifically and to the development of any information system generally—be it health care, automobile manufacture or financial control of a large corporation. The schemata outlined here are not presented as the only viable approach. They serve primarily as a point of departure for the further refinement of policy analysis in the area of information system design in the support of health care reform.

Health care reform, both at national and state levels, has proceeded with reference to three guiding principles: Quality, Access and Cost. That is, reform should improve access to care without lowering its quality. Indeed, reform should include improved methods of quality control. Additionally, reform should control costs of care and enhance public understanding of the factors driving the costs of care. At the state level, these principles have generally been embodied in information system development. The following set of issues surrounding national health reform information system devel-

opment should be considered in the context of these same principles.

### **Purpose**

The general purpose of the information system must be clearly understood by policymakers, system managers and users alike. Is the system's primary (or only) purpose that of program administration, control and planning? Or is it also intended as a resource for medical, social science and other types of research? What are the possible purposes for which the system will be used?

In general, an information system exists to answer questions that its users may pose. In the early stages of system development, planners should consider as many questions as possible that its users could advance. The nature of the questions will help inform the purpose and content of the information system.

### **Scope**

The issue of scope, both in terms of information system content and data acquisition responsibility, is paramount. Many single-payer-style and managed-competition-style health reform plans foresee "national data clearinghouses." The policy questions associated with national entities such as these refer to the extent of centralization that will be required for health reform information systems to be effective. Will clearinghouses or similar types of organizations be the repositories and managers of centralized, national systems or will they serve as coordinators and consultants to a less centralized arrangement of regional and/or state information systems?

Regarding the content of the information systems, policy decisions will need to be made regarding the type of information that will be gathered. Will the information be primarily oriented toward health care service utilization? Will the system include information on other kinds of information such as health delivery system structure as well? That is, will existing resources such as medical equipment, physician numbers and specialty distribution be included?

The scope of system content will largely determine the scope of reporting responsibilities. That is, if scope were limited to utilization data, providers would probably have primary responsibility for reporting to the system. In some reform plans, third-party payers would also bear reporting responsibility for utilization. Depending on reform plan—single payer, managed competition, play or pay or some other—and depending on the scope of data content, reporting responsibilities will differ.

## **Control and Integrity**

Operational control and integrity of a health information system are no less important than that of any other data system. Beyond the technical issues of data base control that occupy systems managers (e.g., hardware compatibility, data structures, record linkage, appropriate software, system security), there are public policy questions that must be addressed regarding data acquisition and data use. They range from agency responsibility to user authorization.

In order to manage information systems as significant as those which will be required under health care reform, the designation of a responsible agency (or agencies) will be important. It will be decided whether existing agencies can handle the role or whether one or more new agencies will need to be established. Additionally, decisions will be made regarding the amount of power those responsible agencies will acquire to control the system and enforce compliance with its rules.

The designation of system control and reporting responsibilities will determine, in part, the reporting channels that data suppliers will use. In a centralized system, it is more likely that data suppliers would report directly to national level agencies. Decentralized systems may require that data suppliers report only to their state or regional agencies.

National health reform will require a greater uniformity in data collection. Managers of a national system will likely release reporting guidelines that will demand uniformity of data elements. Decisions will be made standardizing the definitions of each data element collected.

The standardization of data elements is related to the need for system flexibility. As the health care delivery system itself changes, or as demands by data system users change, it will be necessary to change the data system. System managers and policymakers will be pressed to ensure that inflexibility in the information system does not inhibit flexibility and change in the health delivery system it is intended to support. Improved and more efficient methods of health care delivery should not be impeded because the elements of an information system cannot be changed to accommodate their existence.

The issue of user access to a national health care information system will no doubt constitute a major public policy issue. Currently there are innumerable proprietary health care data bases belonging to insurance companies, hospital associations, government agencies and other organizations. The degree to which these organizations allow access to their systems varies greatly.

In contrast to the current array of proprietary data sets, the ultimate user of a national information system will be the public. However, the degree of access any individual or collective user will enjoy must be determined. Who will be allowed access to the data and the degree to which they have access will be important public policy decisions. Users permitted direct access to raw data will likely have an advantage over those limited to uniform data extracts or sets of standardized reports in electronic or printed form. How user rights and responsibilities are distributed will be the subject of significant public scrutiny.

### **Consumer/Patient**

The information requirements of a national health system concerning the individual and family consumers of care will surely increase. The greater the requirements for individual information, the greater the likelihood that individual privacy could be compromised. Yet, for the health delivery system's protection, for the individual's protection and for the ability of the system to provide useful information, many delicate decisions concerning the amount of information to collect about individuals and families will be made.

The collection of consumer and family information will begin with eligibility to be covered under the plan. Decisions concerning consumer eligibility for access to the system will be necessary. Most current health reform plans require citizenship or some form of legal residency before an individual will be deemed eligible for coverage.

Health data systems generally require unique consumer and/or patient identifiers, usually a number. The unique identifier will be required to track each individual's use of the health delivery system. For instance, in a system with benefit portability wherein individuals retain coverage as they change employers, it may be the case that the individual will also carry along deductibles and benefit limits as he or she moves. Today, if an employee changes employers and thereby insurance coverage, the new insurer will usually begin accounting deductibles and limits anew regardless of the individual's prior payment history. A national health information system will require more uniformity in the tracking of the individual's use of the health care system and will retain a longer memory concerning individual utilization.

Beyond individual data collection, decisions will be made regarding the extent to which a national health information system will keep population-based information for use in more systematic health analyses. With universal coverage, demographic, health status and epidemiological information will become even more important when identifying populations at risk for clinical attention. In addition, social and economic information about individuals and populations may be required to anticipate the degree to which clinical need is

translated into economic demand for services. Depending on the payment mechanisms in force under health reform, failure to correctly anticipate system utilization could cause serious financial problems for any national health system. Policy decisions will be required to establish the degree to which a national health care information system will be used for such purposes.

### **Provider**

A national health information system will require certain information about health care providers. How much information and how detailed it should be will be subjects of ongoing policy debate. As with consumers, unique identifiers for providers will be a necessity. The identifiers will apply to both individuals (e.g., physicians) and corporate entities. It may be an important distinction to determine whether a free-standing clinic is independently owned or part of larger entity (e.g., owned by a local hospital). If it is not independently owned, it may receive the identifier of its parent organization. How these kinds of corporate relationships are tracked will be the subject of some policy decision. The identification method will likely need to be uniform throughout the country regardless of the health plan implemented.

### **Structure**

The way in which the structure of the health care system is monitored under health reform will be very important. Under the designation of system structure come such things as the type and location of existing physical plants (e.g., hospitals, clinics, nursing homes) and the mix of services available. It includes the type and location of equipment as well as health care personnel and their skill levels.

Decisions about the methods used to keep up-to-date inventories and system profiles of health service delivery structures will be subject to ongoing review. The way in which health service shortages are remedied under whichever health reform plan is implemented will be related to the method used to assess delivery system structure. This and other system adjustments will be associated with the way policymakers perceive the status of the health care delivery structure.

### **Process**

The way in which the process of health delivery and consumption is monitored will be a central function of any information system under health reform. The functional definition of process used to inform the information system will greatly influence the types of data collected. Similarly, the actual data elements chosen as part of the process will limit the scope of process measurement and evaluation.

Utilization data lie at the center of information about the process of health care delivery. Utilization data elements could include patient visits to physicians, the number of hospital admissions, diagnosis and procedure information, among others. Each delivery setting—inpatient, outpatient, etc.—has a number of possible data elements that could be used for measuring utilization. Beyond the problem of limiting the myriad possibilities of data elements that could be included in process measures lies the problem of uniform collection instruments. Uniform hospital billing forms, such as the UB-82 form used for Medicare prospective payment, have been advocated as the basic instrument for gathering inpatient information. The efficacy of collecting information and developing uniform reporting instruments for different types of care and other aspects of the health care delivery process, such as hospital financial details (e.g., gross revenues, debt structure, operating and capital expenses) will undoubtedly undergo lengthy policy discussion.

Of course information about the process of care cannot overlook issues of cost and payment. The problem of measuring service cost can be broken into two parts. If the collection of health cost data takes place at the point of service delivery, information will pertain to the price charged by the provider which, in turn, becomes a cost to the consumer. Health cost data collection could also cover provider inputs. That is, the price hospitals pay for equipment, nurses' salaries and the like might also be collected to measure the input costs of producing medical services. Different types of policy decisions will be required depending upon whether cost data is collected on service inputs, outputs or on both.

The problem of collecting information on payment for service becomes more complicated as one moves from single-payer plans, to managed-competition plans, to other forms of insurance coverage reform. Decisions regarding the collection of information about payment methods will be difficult as well. Different types of information will be needed for capitation payment, fee-for-service, or Preferred Provider Organization (PPO) strategies. Related to the way third-party payers make payment is the issue of collecting information about the premiums they charge for coverage and the costs they incur managing the payment mechanism.

The identification of appropriate process measures and the associated collection of data elements would likely represent the bulk of health information system development. It is at this stage that issues of cost containment, case management, as well as service type and distribution, will receive the greatest attention. Most of the information used to address issues of health system management will come from process-type data collection.

## **Outcome**

Outcome measures and outcome data refer to the end result of care received. They include such things as the management of

chronic illness, appropriateness of care or the occurrence of adverse results such as mortality.

The interpretation of outcome data with respect to health system performance can be exceedingly complex. For instance, a hospital that takes more patients with advanced stages of a serious disease may have higher mortality statistics by that cause of death than a hospital that only treats patients in the early stages of the same disease. It may be improper to use outcome data, measured by mortality statistics alone, to infer that the first hospital is not as “good” as the second hospital with respect to the treatment of the disease.

The difficulty of using many outcome measures to evaluate health system performance in the treatment of acute care has limited their use in health system management. On the other hand, in the evaluation of the delivery of preventive services, outcome measures, such as immunization rates, have received greater acceptance. However, it is safe to say that no general agreement has yet been reached concerning the best use of outcome data in health system evaluation.

Despite the lack of a broad array of generally agreed-upon evaluation techniques based on outcome measures, managed competition places greater emphasis on outcome as an indicator of comparative health plan efficiency and effectiveness. There will be significant policy issues raised regarding the development of outcome measures for a health care reform based on managed competition. The types and uses of outcome data included in health information systems will be of much greater importance.

## **Quality**

An overriding principle guiding the development of health-care-reform-inspired data systems will be that of health care quality. Health data systems will be called upon to provide information to be used in the assessment of health delivery system quality and in the improvement of health system quality. In the context of universal access to care, policy definitions of quality care will receive increasing attention. Policymakers and health system managers will demand that the data elements of their information systems reflect their definitions of quality and enable their evaluation of the quality of health systems.

## **Conclusion**

The impact and consequences of health care reform on health information system development will be significant. Important policy decisions affecting the implementation, control, content and use of such systems will be required at all levels of government as well as in the private sector. The scope of data collection, especially with respect to the processes of care, will most likely be the subject of most

policy activity. It is likely that the wide array of consumer, provider, third-party payer and government agency interests regarding the process of health care delivery will not always be compatible. The possible detail of information about process needed by health system users could cause conflict with the providers of the information. As a result there will most certainly be policy decisions made with the intent to limit and prevent conflict in the development, updating and use of health information systems supporting health reform implementation.

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