IT Potential in Health Care

by Donald W. Simborg, M.D.

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On June 13, 1994, Donald W. Simborg, M.D., kicked off the MTA Annual Meeting in Reno, Nevada. He pioneered the concept of open architecture in health-care systems and was instrumental in the founding of HL7 (Health Level 7), the most widely used application-level data-interchange standard in health care. Following are remarks from his keynote address.—Editor

Introduction

A local-area network made its first appearance in a hospital in 1975 at the University of Vermont. Five years later, in the medical center of the University of California at San Francisco, we introduced the first peer LAN in a hospital using fiber optic cables and network interface units our team built. At that time, we had our first taste of the need for data-interchange protocols. It wasn't until almost ten years later that the first health-care standards organizations were created and now, a full twenty years after the first hospital LAN, we are finally getting value from that technology. We are at a similar point now to the 1975 LAN with regard to the National Information Infrastructure (NII), but I don't think it will take twenty years to get value from it.

The real value of the NII will not be its capability to pass messages among all players in health care. The real value will be what people do with those messages. Today's buzzwords, like CPR (computerized patient record), probably will become obsolete. Such concepts that seemed reasonable a few years ago are no longer cost-justifiable in today's changing world of health-care reform.

Recent Changes in the Framework of Health Care

First, let's define the three main players that are important in the health-care industry: consumers; providers—increasingly large integrated health systems vying for managed-care and capitation contracts; and buyers—employers, government, health plans, and alliances among them.

Second, are the measures of success. These are *outcomes*. The four outcomes of health care are cost, clinical, functional, and level of satisfaction. The latter two are important because they do not require a clinical outcome for measurement—they are things that can be asked directly of the consumer, such as the ability to work and carry out everyday activities or a subjective impression of one's care.

What has changed? For one, the provider is changing. Vendors must think of integrated health systems, not hospitals. Second, the role of the insurance company is evolving from third-party administrator to provider networks and managed-care organizations. Finally, the buyer has emerged as the dominant force—those employers, alliances, managed-care organizations—those who buy on behalf of the consumer. The buyers used to be passive. Now, they are in control—a dramatic shift from only four years ago.

For vendors selling software to providers, there are only two things that are important to their customers: getting business by winning contracts and keeping costs within the contracted prices. The cost problem has been with us for awhile. The "getting business" part will require more than just having the lowest price. The buyers will drive the price to a narrow range in each market. These buyers will then ask, what value am I getting for that price? That value will be measured by functional and satisfaction outcomes, which the buyers will measure themselves and compare across their providers. For example, the employers will ask how the providers are doing in getting their employees back to work.

And that's where the NII will become important and that's why our industry is important. If the only problem were lowering the cost, we would not be spending the billions of dollars we're spending on systems.

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Focus: **Changes in the M Workplace**

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January 13, 1995
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June 1995
November 1, 1994 (early submission to special committee)
Annual Meeting Proceedings

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Goal of a National Information Infrastructure for Health Care

The goal is not to minimize provider cost nor to maximize quality outcomes. The goal is to optimize value, i.e., to find the optimal point on the curve between cost and quality outcomes. Lowering provider costs too far will not only impact clinical, functional, and satisfaction outcomes adversely, but it will actually increase buyer costs through increased disability, worker's compensation, and lower productivity. On the other end of the spectrum, there is a limited return in outcome improvement with additional health-care expenditure and, in fact, in many cases doing more is actually harmful. Discovering that optimal point requires information—information not available today. It will require increased cooperation between buyers and providers sharing information across the NII.

Achieving the Information Systems Goal

To achieve the optimal balance, we must change the behaviors of two populations: physicians and consumers. Both tasks are difficult.

How do we change physician behavior today? Our typical utilization-review process involves arraying utilization data for each physician and comparing length of stay, charges, and mortality for each diagnosis-related group (DRG) or procedure. It is focused on inpatients and is retrospective. Although this has some value in changing outlier behavior, it is short-lived and affects only a small portion of care.

We must evolve from retrospective utilization review to concurrent case management. More importantly, we must evolve from comparisons of variance from mean (average) behaviors to variance from desired behavior. In this way, we will impact every physician's behavior—not just those who are perceived as outliers from the average. Finally, under capitation and managed care, we will focus on the ambulatory phases of illness and even the pre-illness or wellness phases. Under capitation, an admission is a bad outcome in most cases for the patient, and certainly financially for the provider at risk.

This implies we have practice guidelines of some type against which to measure variances. In today's world, the guidelines are being developed largely from the expert opinion of local clinicians. Although this has value and is the best we can do in most cases, it tends to "standardize" current practices. What we need are guidelines that optimize value. That cannot be done until we have the quality-outcomes data in the same database as the utilization data. These guidelines need to optimize the dependent variables of interest to the buyers and

these increasingly will be functional and satisfaction outcomes—much of it collected by the buyers. This requires linkages of buyer and provider databases, a key potential use of the NII.

In summary, I see four key information functions—all of which will use the NII. First, collect data across the full spectrum of care, including outcomes data. Second, analyze the data to understand the current practices and discover the optimal practices. Third, develop the guidelines against which to monitor and feed back to clinicians. Fourth, the feed-back mechanisms or case-management systems themselves.

This feedback is not only for clinicians. It is for consumers as well. The NII will play an increasingly important role in allowing very targeted and timely information to feed back to a consumer regarding options and choices with respect to his or her current condition. Furthermore, that condition will increasingly be a "wellness" one.

The Most Difficult Parts

Achieving all of the above functions will not be easy. We will have to solve some fundamental problems. The most basic one is simply identifying a person consistently, whether patient or provider. We still cannot do that without significant error. Without that identification, we cannot create longitudinal records. Data-mapping and coding standards are yet to be widely accepted. Practice guidelines in a computer are complicated because patients rarely come with single problems. Making those guidelines flexible and adaptable to individual cases while retaining the ability to monitor for variances is a complicated problem. Dealing with the physician's office remains an unsolved problem. How do we get enough detail about the physician's clinical process in her office to even begin to collect the data we need for practice-guideline development and monitoring? Finally, there is the problem of risk adjustment. Outcomes data that are not validly risk-adjusted for likelihood of a poor outcome are of little value. Risk adjustment needs data not currently widely available.

Conclusion

We are evolving away from the information system concepts of the past, like CPRs, to a more outcomes-oriented approach. With the NII, we will build outcomes management systems, not CPRs. M

Dr. Simborg is the chief product strategist of the Medicus Systems Corporation. He is the former chief executive officer of Bell Atlantic Healthcare Systems, where he began his involvement nationally in crafting the health-care aspect of the developing NII, or national data superhighway.

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