

A Voluntary Approach Can Solve the Healthcare Personal Identifier Dilemma

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A voluntary national healthcare identification (VNHID) system could address many of the clinical information fragmentation and privacy problems currently facing the healthcare industry. This voluntary approach, based on an existing ASTM healthcare identifier standard (see Note 1), addresses virtually all the objections that have stymied the creation of a national patient identification system and does so in a cost-effective manner. For a more in-depth discussion of the design and function of the VNHID, see "The Case for a Voluntary National Healthcare Identifier," *Journal of ASTM International*, February 2006, Vol. 3, No. 2, available online at www.astm.org.

Key Findings

- Healthcare information is fragmented across many locations as well as automated and paper records.
- No mechanism is available to correctly identify the same patient across these scattered records.
- A VNHID system working in conjunction with a national health information network (NHIN) provides an infrastructure that can address both information aggregation and privacy concerns.
- A VNHID is the most cost-effective way to create a national healthcare identification system.
- A voluntary approach avoids the need for a "big bang" implementation simultaneously across the entire country.

Prediction

- Only a voluntary approach to the creation of a national healthcare identifier has a chance of succeeding in the U.S. through 2015 (0.8 probability).

Recommendations

- Healthcare stakeholders should press forward with plans to create a regional health information organization (RHIO) in their geographical area, to obtain the benefits of a complete aggregate medical record on patients that would be made possible by adopting a VNHID.
- Paper-based healthcare practices must move aggressively to adopt automated systems.

- All healthcare stakeholders should promote the benefits of a VNHID based on their internal analysis of its potential.

STRATEGIC PLANNING ASSUMPTION

Only a voluntary approach to the creation of a national healthcare identifier has a chance of succeeding in the U.S. through 2015 (0.8 probability).

ANALYSIS

Overview

Healthcare information for the average American exists in a highly fragmented state. The typical American has moved several times and therefore has medical information stored in various geographic locations by several private physicians and hospitals. If he or she has had any significant medical problems, several specialists have likely been involved in delivering treatment, and each typically has information on the patient in a separate system. In addition, certain medical conditions involve situations that a patient chooses to keep private. These private medical records represent yet another fragmentation of the overall clinical information on that individual.

As a result of these and similar influences, it is not unusual for the clinical information relating to a person to be scattered across dozens of healthcare systems and stored in both paper and electronic form. Making matters worse, there is no consistency across these systems in how a patient is identified. The lack of an identifier that uniquely identifies each patient's information makes it virtually impossible to accurately retrieve information on a person from all these locations and treatment settings.

This fragmentation of clinical information becomes problematic when a physician needs to treat a patient. How can the physician know if he or she has all the information that is relevant to the patient's care? What if the patient has a diagnosis, medication or an allergy recorded in another medical record that is not accessible to the treating physician? How can the physician obtain a comprehensive view of the patient's medical situation to develop the optimum strategy for treating the current medical problems without an extensive, time-consuming, error-prone and effort-duplicating attempt to reconstruct the patient's complete medical history?

A key to solving this set of clinical record fragmentation problems would be to issue each person a unique national healthcare identifier (or set of unique identifiers). This unique identifier could then be used as the "key" to aggregate all clinical information on an individual across all treatment sites. Although it would be most effective in helping to aggregate information from automated systems, it could also assist in identifying relevant paper-based information.

This healthcare identifier approach was mandated as part of the HIPAA legislation passed in 1996. At that time, however, the creation of a national healthcare identifier became very controversial. Because of concerns about privacy, security, identity theft, costs and insurability, that HIPAA mandate has not been enacted. As a result, virtually no progress has been made on the subject of a national individual healthcare identifier for more than 10 years, and progress at the federal level appears unlikely for the near future. Therefore, any progress toward creating a national healthcare identifier will likely have to be made outside of the HIPAA legislation and without requiring congressional action. The VNHID proposal meets these requirements.

Two major objections to the creation of a national healthcare identification system have involved cost and privacy. It has routinely been asserted that implementing a national healthcare identification system would cost billions of dollars. This is largely based on an analysis of what it would take to "fix" the Social Security number for use as a healthcare identifier. It is also

commonly believed that an NHID would represent a significant security risk, because it would represent a single target for hackers and unauthorized users.

Recent plans to create a national health information network by interconnecting regional health information organizations makes feasible an entirely new approach to this issue — based on the concept of a voluntary national identifier approach that would be built on top of the capabilities of the NHIN and its participating RHIOs. This approach enables a dramatic reduction in the cost of the system, and the VNHID can be incrementally constructed with no additional risk to the security of healthcare clinical information. The strategy for creating an NHIN is to promote the formation of RHIOs as facilities supporting the exchange of clinical information between a set of local healthcare organizations. The NHIN would then be formed by linking these RHIOs together. To perform patient identification services within a RHIO and across the NHIN, the services of an enterprise master person index (EMPI; see Note 2) would be used. EMPIs are already frequently used to facilitate data exchange within enterprise computer-based patient record (CPR) systems and integrated delivery networks.

Operation of the VNHID

The VNHID would be implemented as a secure Web site (or set of sites) communicating solely with the EMPI systems of RHIOs. This approach means that the VNHID can build on already-established RHIO mechanisms for sharing data, ensuring security, identifying participants and managing clinical data. It also means that the number of sites that the VNHID must communicate with remains manageable. Because the EMPI will already have established the infrastructure necessary to communicate securely with its constituent automation systems, the VNHID need only implement secure communication with the RHIO EMPI for the identifiers that it generates to be available across all components of the RHIO.

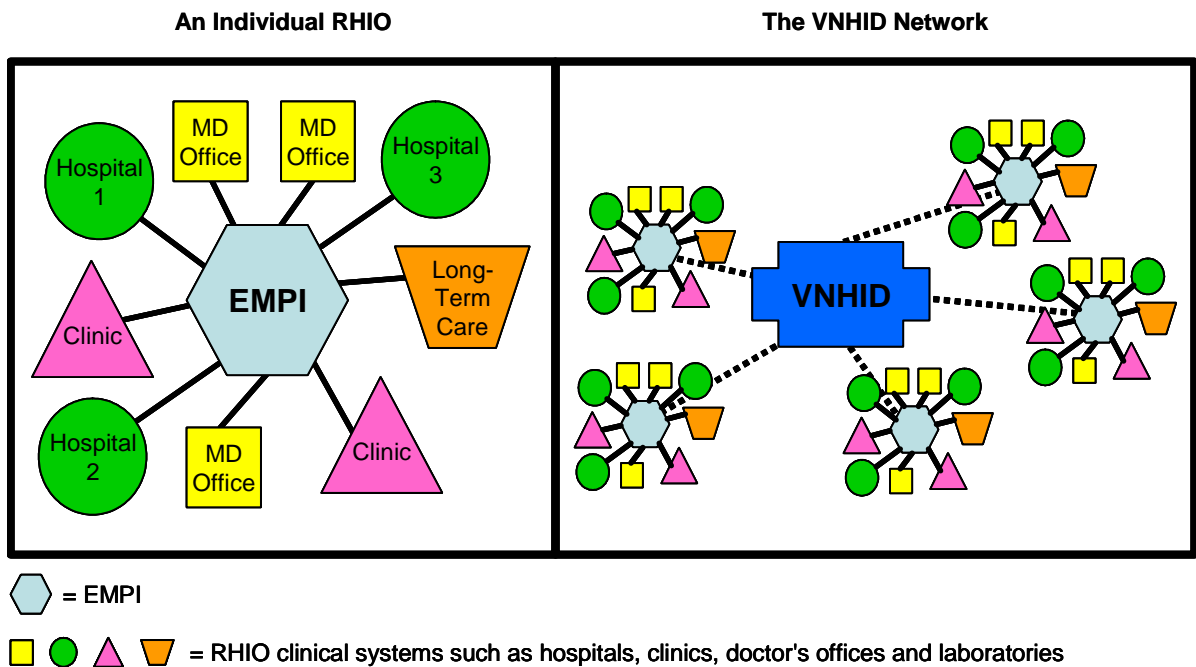
As a result, initial implementation of a VNHID does not require software changes to the thousands of installed clinical information systems. However, because of procedural changes relating to the issuance and verification of VNHID identifiers, many of the individual automation systems participating in the RHIO may eventually choose to make software adaptations to directly use the identifiers issued by the VNHID as a native data element. Because of this Web site design, implementing the VNHID is quite inexpensive compared with alternative schemes (see Note 3). This low cost, in turn, means that the VNHID could be created using funds from private healthcare granting agencies, obviating the need for federal funding (or approval).

Figure 1 shows the structure of a typical RHIO and how a VNHID would interact exclusively with the EMPIs of the various RHIOs constituting the NHIN. When a patient requests issuance of an identifier in a physician's office, the request is passed from that healthcare provider to the EMPI for the corresponding RHIO. The EMPI verifies that the person is known in its database and does not already have an assigned VNHID identifier. It then sends a request (excluding any associated patient identification or clinical information) to the VNHID, which returns a "guaranteed unique" healthcare identifier known as a UHID. The EMPI associates this identifier with the patient in its database and returns it to the requesting caregiver.

Note that all communication between any component of the RHIO and VNHID would occur using the EMPI system as an intermediary. This means that the VNHID has only a limited number of systems with which to communicate. This vastly simplifies the task of providing robust, error-free and secure operation of the VNHID network. Also note that the EMPI needs to perform only a single demographic match on patient information at the time the identifier is first issued. From then on, the identifier can be used without the need for associated demographic information. This eliminates the errors that can accumulate if one repeatedly uses demographic matching for identification purposes. Finally, note that, since the VNHID interacts only with the EMPI of each RHIO, no other software changes are required in the other clinical automation systems

participating in the RHIO at the time the VNHID is implemented. Some of the RHIO clinical automation systems may choose to begin directly using the VNHID-issued identifiers and implement some of the enhanced privacy functions this makes possible, but this is an optional strategy that can be implemented system by system over a prolonged period if necessary.

Figure 1. Structure of Typical RHIO and VNHID Network



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Source: Gartner (March 2006)

Analysis

The proposal to implement a national healthcare identification facility on a voluntary basis eliminates virtually all the barriers that have previously prevented progress on this issue.

People who choose for any reason not to participate in the VNHID system would continue to use the NHIN system and its associated EMPIs based on demographic matching. Because the VNHID is a voluntary system, it is assumed that there will always be a fraction of the population that would choose this option. This voluntary approach makes it possible to implement the VNHID gradually over time.

People who do choose to participate in the VNHID system would experience fewer errors, improved privacy and fewer redundant requests to supply information. Specific benefits include the following:

1. Failures resulting from repeated EMPI matching on patient demographics would be eliminated. Matching on a VNHID-issued identifier is an exact mathematical process that eliminates false positives, false negatives and uncertain matches.
2. To establish identity, patient demographics would not have to be transmitted repeatedly to a variety of destinations. Instead, only patient identifiers would be transmitted. This means that a person's identifier, *not the person's identity*, would be at risk if an error or

malfeasance occurred at one of the receiving entities. An identifier can be replaced with a new one if necessary. A patient's identity cannot be replaced.

3. Patient privacy could be improved if the participating RHIO automation systems are enhanced. The VNHID has the ability to issue encrypted identifier classes (see Note 4) to support improved privacy of patient information.
4. Patients would not have to repeatedly supply their demographic information to clinical systems. Instead, they would use their UHID, and the RHIO EMPI would supply the complete and accurate corresponding demographic information when needed.

Objections to the VNHID on the basis of privacy concerns should be minimal, because patients can opt not to participate in the system. It is possible to prove that the VNHID does not represent an identity or privacy risk, because it never handles patient demographic or clinical information. In fact, because of its ability to issue encrypted identifiers, use of the VNHID can actually enhance the privacy of clinical information over time.

Because the VNHID is a cost-effective and voluntary system, it can be implemented in a short period of time with a limited amount of funding. It is not necessary to achieve a national consensus or federal funding prior to beginning work on the system. Implementation of the VNHID can be incremental, because it is assumed that there will always be some patients that choose not to use the identifiers it issues. It is not necessary to implement the scheme simultaneously across the entire country; instead, patients can be added to the system as RHIOs form and their participants individually decide to join. Similarly, clinical systems can be gradually enhanced over time to provide improved information privacy using the EUHIDs issued by the VNHID.

The VNHID system would be dedicated exclusively to functions supporting the healthcare system, to ensure that it is operationally feasible and can be fully trusted by the patients and providers choosing to use the system. The only requirement for a person to be issued an identifier would be that they have requested one through an established RHIO.

The initial benefit that patients will realize from the use of a VNHID is that they will no longer have to provide their demographic information repeatedly. A hidden benefit is that, because the demographics are not being processed repeatedly at multiple sites, there is less risk of data misuse, including identity theft. Over time, as use of encrypted identifiers increases, patients will also benefit from improved privacy control of their healthcare information. It is the realization of benefits such as these that should eventually drive adoption and use of the VNHID proposal in the general population.

Summary

The potential benefits resulting from issuing a unique healthcare identifier to each person for use in aggregating health information have long been recognized. What has been lacking is an implementation plan that would be practical in light of the many valid objections to a national healthcare identifier, including privacy, security, operational and financial concerns. Because of the design of the VNHID as a Web site and the novel approach it takes to issuing "guaranteed unique" patient identifiers, the VNHID appears to be in a position to succeed at this daunting task. It is important to note that even a fully functional VNHID will leave many problems unsolved. In particular, policy questions will remain, such as, "How should information that the patient wishes to remain private be treated when a clinician requests this information?" A properly implemented VNHID represents a flexible infrastructure that should be able to support a wide variety of possible policy options as these are formalized over time.

Healthcare stakeholders should actively promote plans to create a RHIO in their area. They should also initiate a series of discussions and evaluations to explore the potential for creating a VNHID capability. If a system such as this is implemented, healthcare in the United States will benefit substantially.

RECOMMENDED READING

"E1714-00 Standard Guide for Properties of a Universal Healthcare Identifier," ASTM, 2000

"The Case for a Voluntary National Healthcare Identifier," Journal of ASTM International, February 2006, Vol. 3, No. 2

Acronym Key and Glossary Terms

EMPI	enterprise master person index
EUHID	encrypted universal healthcare identifier
HIPAA	Health Insurance Portability and Accountability Act
NHID	national healthcare identifier
NHIN	national health information network
RHIO	regional health information organization
UHID	universal healthcare identifier
VNHID	voluntary national healthcare identifier

Note 1

ASTM Healthcare Identifier

The ASTM standard describing the necessary properties for a healthcare identifier can be found in "E1714-00 Standard Guide for Properties of a Universal Healthcare Identifier," published by ASTM International and available at www.astm.org. This document describes a proposed implementation of a national healthcare identifier and indicates how it can be used to meet the needs of the healthcare community. The standard includes options to protect the security and privacy of healthcare information that should not be public, as well as a proposed implementation that enables a recipient system to verify that a patient identifier has not been inadvertently corrupted.

Note 2

EMPI Function

An EMPI functions by comparing demographic information on a patient supplied by a healthcare organization to stored demographic information retrieved from a database. If the two sets of information match sufficiently, the EMPI system will determine that these represent the same person. Although this matching function is reasonably accurate, it has known false-positive and false-negative error rates. In addition, situations occur where it is not possible for the EMPI to determine whether a match should be made. Once a match has been established, the EMPI is responsible for linking various identifiers that pertain to each individual, to facilitate retrieval of the various information sets that are stored on that person across the RHIO.

Note 3
VNHID Cost

The VNHID system proposed in this document requires a secure national Web site and a small supporting staff. Any mandatory NHID system would require a much more complex infrastructure and a vastly larger staff to ensure compliance of all potential patients with the mandatory aspects of the system. It also would involve significantly more bureaucracy to manage the establishment of eligibility for and assignment of healthcare identifiers. The cost of such competing national identifier systems is generally estimated to be in the billions of dollars.

Note 4
Encrypted Identifiers

The VNHID system is designed to be able to issue encrypted universal healthcare identifiers (EUHIDs) as well as open UHIDs. These encrypted identifiers can be used to aggregate sensitive information without identifying the person. The use of these encrypted identifiers is an option that becomes available once the VNHID Web site is established, and it offers another layer of protection for medical information that is deemed to be private and sensitive. The paper referenced in Note 1 provides additional information on this topic.

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