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# Identification in Healthcare

Is there a place for Unique Patient Identifiers? Is there a place for the Master Patient Index?

> Gerard Freriks TNO-pg, Leiden, The Netherlands

**Abstract:** The Unique Patient Identifier is debated. This presentation will present the problems associated with this concept. The unique number is used for identification of persons and documents and thereby creates a severe security risk.

The Master Patient Index file is a possible solution.

#### 1. Introduction

The Unique Patient Identifier (UPID) is thought to be the solution healthcare needs in order to link medical records.

Four functions are attributed to the UPID[1]:

1- identification of records,

2-identification of patients,

3- securing privacy and

4- reducing cost.

Literature often states as a fact that the UPID performs these functions in an optimal way. This presentation will question whether the UPID is able to fulfill the expectations. It will conclude that it doesn't.

The Extended or Augmented Master Patient Index is the optimal solution.

# 2. UPID versus MPI

Why people think an UPID is useful

Case a: Patient A visits his doctor. He provides his name and address on request. The doctor uses this Identifying Information (II) to locate and obtain the records. The name of the patient is J. van Gaalen. The doctor made a typing error and used as Identifying Information (II) J. van Galen. The system could not locate the proper record.

Case b: Patient A is referred to a hospital. They register patient A using the name J. Gaalen van. An electronic message sent from the hospital to his doctor can not be matched in the system of this doctor because the names do not match.

"Reliance on names, date of birth, identification numbers including the Social Security number are, in our experience, fraught with inaccuracy and error."[2] The problem is the fact that the same patient is registered under various names and address variants. Information changes to often because of marriage, divorce or change of address.

Case c: Patient A has a UPID. Let's say: "1234" When records belonging to Patient A have this UPID attached to it, as Identifying Information, then they match nicely with the Identifying Information. All the records can be linked.

The UPID is thought to be the solution for the problem of matching and linking records.

Why the use of the UPID creates problems?

Case d: UPIDs are distributed to all patients. Patient A visits his doctor. The first time the UPID can not be used for the Matching/Linking process. The old and less reliable Identifying Information like name and address will have to be used to attach the UPID to the record. The same must take place at all places where information is kept.

This phenomenon is named: "the UPID Implementation Paradox". The problematic way of matching/linking is used to provide the solution.

Case e: Patient A visits the hospital. He is unable to provide his UPID. The less discriminating Identifying Information (without the UPID) will have to be used. With UPIDs in use, there will be a need for Master Patient Indexes.

Case f: An impostor Z provides the UPID of patient A. The information about Z is added to the record of A.

It can be concluded that the UPID identifies the record and not a patient. The UPID will not prevent fraud.

Case g: A patient provides its UPID as identification. The caregiver enters this number and gets access to the information of this patient.

It is an interesting and disquieting phenomenon that the UPID is used as if it is a password that on one hand helps to identify persons and at the same time operatess like a name-password combination. But with one important difference: this password is public! When a UPID is used as password in a very public way, then the UPID never can be used reliably in an identification process of a person.

Using the UPID in the described way, as an identifier of a Patient, a person, constitutes a severe security risk.

Case h: Patient A is a well-known society figure and wants to use a pseudonym. Since he has one UPID tied to his real identity, he is not able to register with a caregiver using his pseudonym.

New technology that prevents the freedom of patients to be registered with pseudonyms must not the sacrificed without an extensive explicit discussion.

Case i: UPIDs are known in other sectors because the same UPIDs are used to record non-medical information. The insurance company holding insurance related information matches this using the UPID with medical information from a subsidiary company that is an Healthcare Maintenance Organization.

UPIDs that are used outside one sector make it possible to link information about one or many persons. Thereby using information for other purposes than it was recorded with the permission by the person.

The cases show why the UPID has some problems:

- The UPID doesn't identify patients

- The UPID identifies records belonging to one patient

- The UPID doesn't prevent fraud

- The UPID is performing several functions: linking records, identifying persons, password-name combination

- The UPID used in the process of identifying a patient as a person constitutes a severe security risk

- The UPID prohibits the use of pseudonyms

- The UPID has to be implemented for the first time using less optimal matching/linking information. The Implementation Paradox.

Why standards might help?

*Case j: The Identifying Information is stored in the MPI using a standard.[3]* By using a standard which specifies the content and format of the data set (Identifying Information like: names, addresses and data of birth) that is used to query the MPI the efficacy can be improved. Why a Master Patient Index solves problems?

When all systems use the Master Patient Index then this repository will become the 'golden standard'. Gradually all systems will start to use the preferred spelling of name, address, etc.

Why an Extended Master Patient Index solves problems ?

Suppose there exists a Master Patient Index that records all the pseudonyms a patient has used. Including all spelling mistakes, alternative names and normal changes of name or address.

Case k: Patient A visits his hospital he is unable to provide his UPID. Via Matching/Linking and the Master Patient Index (MPI) his records are retrieved.

Because the Extended MPI records the preferred variant and all known other variants and pseudonyms of the patient plus the location of all the records the information about the patient can be found easily. Most of the problems of the UPID are circumvented.

Case 1: Patient A provides the wrong address. The MPI treats this a pseudo-identity. Case m: Patient A wants to use a pseudonym. The MPI is able to link, if needed and allowed, all this Identifying Information to one person.

Why an Augmented Extended Master Patient Index solves problems?

Case n: The medical problem list is added to the Extended MPI and becomes an Augmented Extended Master Patient Index. Patient A is referred to a specialist. When asked Patient A provides his Identifying Information. The secretary is able to locate the information in the MPI. The medical information stored in the problem list will enable the secretary to ask identifying questions in order to authenticate the person. Patient A answers the questions and his identity is established.

An Augmented Extended Master Patient Index is an alternative

- This Master Patient Index is able to locate all records
- This Master Patient Index is able to enable the identification of patients using medical information
- This Master Patient Index enables the use of pseudonyms

# 3. Identification in Healthcare

In healthcare medical information is stored in records. It is information derived from, and about, one patient. It is recorded by a caregiver in a medical record: the EPR. Three actors are involved that process identifyers:

- the patient:
- the caregiver and
- records in a computer system, constituting the EPR.

The information stored belongs both to the patient and the caregiver. The information will be stored in several places under several jurisdictions. Not always the patient will be present when a caregiver needs access to the record. The caregiver then operates as the proxy of his patient. There are three security domains because each actor operates in its own domain. Within its own domain it exercises its security and privacy.

Outside the healthcare sector most of the times there are only two actors involved dealing with records. One author and one computer system. The author 'owns' the information stored. Most often information is stored in one place. Once the identity is established by the system his access rights allow him access to all of his 'own' records. There are two domains. One in the context of the author and the other in the context of the record stored in the computer system

Security methods, procedures and solutions used in the latter will be different from those in healthcare. Identification of persons and records, and access to records, in healthcare will be differently employed. The reason is that in health care there are three actors.

In healthcare the three actors operate in three security domains. For a secure operation it is not necessary that all domains know the exact identity used in the other domain. Most often it is sufficient to know that the identity has been established without knowing the identity used in the other domain. E.g.: the caregiver does not have to know the 'real' governmental administrative identity of a patient, as long as he knows that the identity, as presented, is one belonging to this person. E.g. knowing that an insurer or bank accepts the presented identity for reimbursement will be sufficient.

Master Patient Indexes will track and secure, like a Trusted Third Party, all the identities of the person (the patient) Plus it will be able to track all locations where information is stored about the patient.

The Augmented Master Patient Index will hold discriminating medical information as well.

The rules that apply to the process of identification (authentication) will be the same for all three actors in healthcare. Authentication can be accomplished through biometric identifiers (e.g., fingerprint, retinal scan, voiceprint); use of a smart card, token, or other physical thing one possesses: a password; or a combination thereof. One of the most prevalent means of user-identity authentication used in health care system is the entry of passwords. However, if they are stored on the system they must be encrypted. Consideration should also be given to the pros and cons of user assignment vs. random assignment of password components. All passwords should be scheduled to expire at routine intervals.

The way UPIDs are usually deployed in healthcare is that in each security domain they replace the name-password combination. The non-secret UPID gives access to all identities of items in all three security domains.

Therefore UPIDs used in this unsecure way constitute a severe security risk.

Plus UPID's produce a very weak, unsafe, provider of identity while making rightful use of pseudonyms impossible.

### Problems the Master Patient Index doesn't solve

The UPID Implementation Paradox as described above can't be solved by the Master Patient Index.

Augmented and Extended Master Patient Indexes contains more privacy-restricted information. More stringent security measures will be needed.

#### 4. Conclusions

A Unique Patient Identifier is nothing but an alternative for the name, address or date of birth.

Unique Patient Identifier is not the optimal solution in healthcare for the problem of:

- 1. Identifying records in a secure way
- 2. Identifying patients in a secure way
- 3. Providing security
- 4. Cost effectiveness

Even with a Unique Patient Identifier in place the Master Patient Index is needed. A Master Patient Index that operates as a Trusted Third Party makes illegal linking of medical records more difficult.

The Master Patient Index is the optimal solution.

## References

- ASTM the Standard Guide for Properties of a Universal Healthcare Identifier (UHID) 1995. ASTM. <u>http://www.astm.org</u>
- [2] Chute Ch. Testimony in *Hearings on the Unique Health Identifier for Individuals*. National Committee on Vital and Health Statistics. Subcommittee on Standard and Security. 20 July 1998.
- [3] AS Interchange of client information. Australia Standard AS 4590-1999.