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Brazilian National Standard for Electronic Form Interchange among Private Health Plan and Healthcare Providers

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Abstract

Since 1988 the Federal Constitution of Brazil declared health care as a public right to be provided as a duty of the state[1]. Thus the Unique Public System ("Sistema Único de Saúde-SUS"), Ministry of Health, a comprehensive health care system with full coverage, was created since then. But the private sector has nevertheless also been operating since 1960s but without any government regulation at all. It serves approximately twenty-five per cent of the Brazilian population (estimated at 180 million of people).

The National Supplementary Health Agency – NSHA ("Agência Nacional de Saúde Suplementar- ANS") was created in 2000 and is in charge of regulating and assisting the private health plan organizations. The public sector has been structuring its information systems for almost 15 years, defining standard schemes, such as the National Health Card Project, in order to institute a national unique identifier health care and to construct a national repository of health records.

The lack of widely common information standards in the private sector, however, and the difficulties involved in the complex information interchange among private health plan organizations and health providers have caused NSHA to work out a proposal for a national standard for electronic form interchange proposal, based on XML technology, known as the supplementary health information interchange (TISS – "Troca de Informação em Saúde Suplementar"). The TISS project aims integrating healthcare information nationwide; therefore it was developed in accordance with the National Health Card Project, using the same unique identifiers and others standard sets proposed by the Ministry of Health, such as unique identifiers of providers.

NSHA has presented the TISS project successfully to all stakeholders and is going to introduce legislation to enforce the standards. There are more than two thousands private health plan organizations in the whole country and more than ten thousands hospitals and clinics. Private health practioners, including dentists, will also have to adopt the standard. As a matter of fact, the TISS project not only focuses on the patient billing but also on epidemiological information. And the TISS project is not only for health provider claims, but also to all kinds of events such as consultation and exams.

Keywords:
Medical Informatics; Information Technology, Electronic Data Interchange, Health Information Systems, Health Plan Management, Health administration;

1. Introduction

The National Supplementary Health Agency (NSHA) was instituted in 2000 to regulate private health plan organizations and also to evaluate health care services [2]. This private sector has been operating since 1960s, even a little before, without any government regulation at all. There are different kinds of organizations such as physicians' and dentists' groups, insurance companies, employer sponsored, professional associations, philanthropic and odontological care organizations. All these kinds of organizations differ mainly in their forms of management. Some of them aim no profit, some share their profit within the group, and some do not provide a medical network but only free choices. Information asymmetry has led NSHA to acquire economic, demographic and epidemiological information from all the organizations.

Due to the complex relationship between private health plan organizations and health providers the reliability of the information collected about patient assistance has been extremely poor. With the Interamerican Development Bank (IDB) sponsor, which had defined only eleven months for the project development, the TISS project has been built and has established the electronic standards for information interchange related to such assistance. The beginning of the project was on August 2003 and ending on July 2004. NSHA adopted the strategy of researching some standards established in Brazil and also from abroad [3, 4, 5, 6, 7, 8, 9, 10], for instance, ISO/TC 215 [11], CEN/TC 251 [13], Health Level Seven [14] and OpenEHR [15]. The unique keys to identifying beneficiaries, health plan organizations, health plan characteristics (types of coverage and regions code), providers and so on were a priority in the project. Afterwards the standards were presented to stakeholders who have found the project very important for defining strategic actions throughout the private health sector and even minimizing administrative costs.

The TISS project defined seven types of standard billing forms, covering consultation, exams and hospitalization data. The electronic technology chosen for the interchange was XML (Extensible Markup Language) because it is a simple and very flexible text format derived from SGML (ISO 8879) [16]. Originally designed to meet the challenges of large-scale electronic publishing XML is also playing an increasingly important role in the interchange of a wide variety of data on the Web and elsewhere. The DTD (Data Type Definition), which is a formal description in XML Declaration Syntax of a particular type of form, was defined with a list of elements for all seven types of billing forms. In addiction to the billing forms, a standard form as a return (called return-form) from the private health plan organizations to the providers was also designed. Nowadays few providers receive any describing what is going to be paid, or not, by the private health plan organization. The return-form also has a DTD to describe all the data covered.

2. Material and methods

More than fifty forms that are interchanged among private health plan organizations and providers were analyzed by NSHA. A matrix was designed containing all information in order to ascertain which are common ones. Several visits were also made to hospitals, clinics and private health plan organizations to permit identifying how the information interchange works. Many stakeholders were interviewed as well.

Some public health information systems were also analyzed to identify the national unique keys already in use in Brazil [17] such as:

- National Health Card [18], in order to adopt the same national unique beneficiaries identifier;

- national providers database [19], in order to adopt same national unique identifier for the providers. This database includes all types of medical and odontological providers: physicians, dentists, clinics, hospitals and so on.

Some private health information systems were also analyzed (these systems are developed by NSHA for information collection from the private health plan organizations) to identify the unique keys already in use in the private market such as:

- private health plan organizations database, in order to adopt one same national unique identifier for the health plan organization;
- health plan registration database, in order to adopt one same national unique identifier for the health plan.

Chart 1 shows private health information flow among private healthcare providers, health plan organizations, NSHA and SUS (Unique Public System).

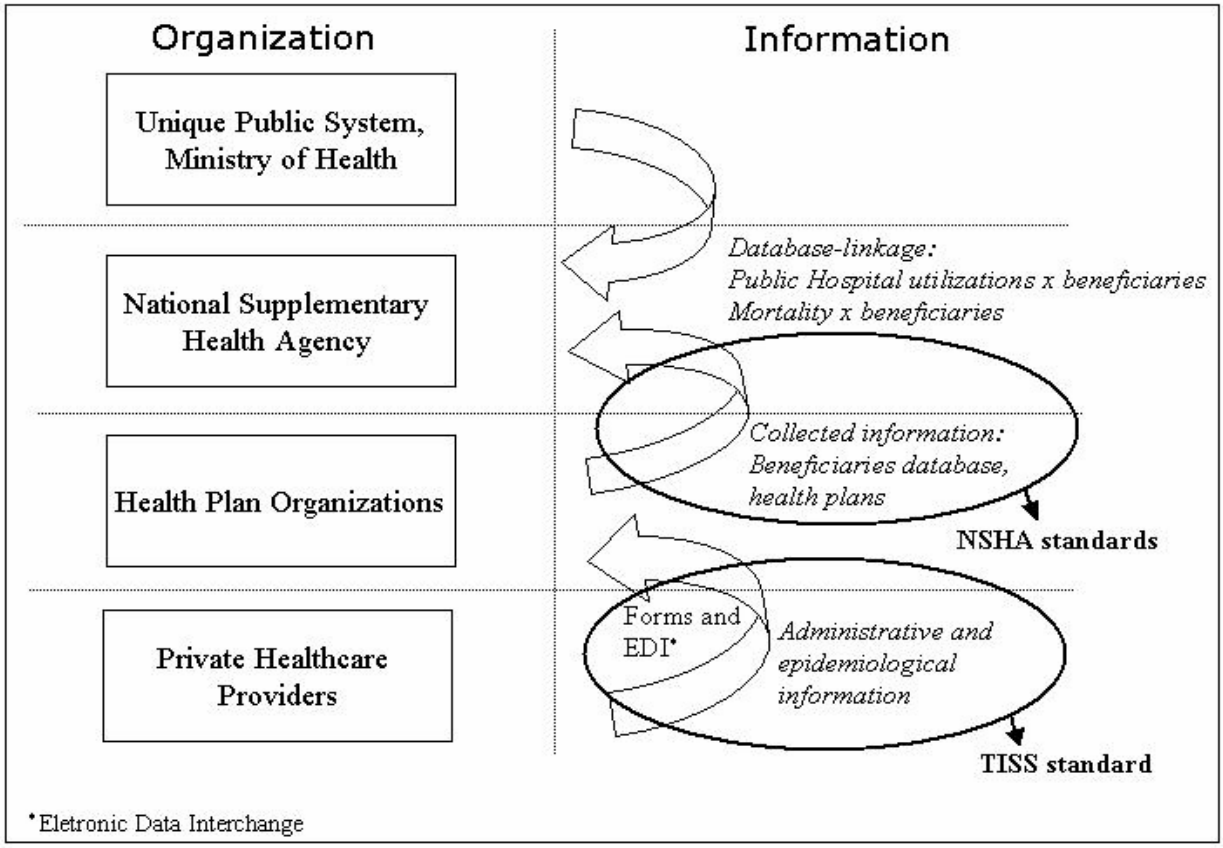

Chart 1 – Private health information flow

The TISS project also includes the development of downloadable and free software to permit those organizations to adopt the electronic standard interchange and have any difficulty in developing an information system. The TISS software is available for both private healthcare organizations and health care providers. The software is divided in two different kits:

- kit one: specifically for the private health plan organizations;
- kit two: specifically for all types of medical and odontological providers.

The kit one permits XML export for the return-form and import of the standard billing forms. The kit two permits just the opposite: XML export for the standard billing forms and import of the return-form. Web-based technology has not been chosen considering that this kind of technology would be difficult for some organizations because it would be necessary

to maintain a great security structure. Delphi Borland compiler with Interbase database was the selected technology.

As eleven months were a short period for the project development it was necessary to choose an appropriate methodology. The use case methodology, associated with the relational database model, was then selected to define the requirements of the system, to act as a springboard for the software design, to validate the software design, for software test and quality assurance and also as an initial framework for the on-line help and user manual. Each kit contains around a hundred use cases. This methodology has been considered extremely relevant for the success of the software development, considering the short period of time for assembling it.

3. Results

The TISS project was then presented to stakeholders as a first approach to create a national standard for the claim forms and electronic interchange in the private market. Four seminars have held in different regions in Brazil since August 2004: Northeast region (State of Ceará), South region (State of Paraná), Southeast (States of Rio de Janeiro and São Paulo). NSHA has published claim forms and DTDs in its Web site. The software is still being tested in some organizations.

Several electronic mails have been received by NSHA with respect to the project, considered one of the most important projects for strategic purpose in the private health plan market. Nowadays few organizations interchange billing information electronically, even being aware of the gains in terms of administrative costs or as a factor for rationalization and for clarification of transactions among players. Some organizations have already changed their billing forms to adapt them to those ones proposed by NSHA.

Even the software, which at the beginning was considered not relevant to the standard, is now being requested by the organizations. Not only to use it, by also to analyze how the functions were defined and how the data model was built up to implement all the standards keys. Organizations consider that, in future, performance indicators will be much more easily established and even comparability among health plans for quality assurance19.

The TISS standards will probably change the format of the information systems in the health organizations. So far NSHA has spent about 300,000 US Dollars in the project. It is still difficult to estimate the total cost so that all players become TISS standards-compliant because they can either adopt the TISS software or another low-cost software or, on the other extreme, pay much money to update their information system. NSHA is now actively working to determine what the savings will be and expects them to be substantial since the adoption of the standardization will improve the efficiency and quality of health care.

A permanent committee on health standards will be set up so that experts should discuss all possible changes in depth. The permanent committee will have to face some challenge in the coming years, for instance: adequate safeguards for the security and privacy of the information, the acquisition of indicators to measure performance, the information dissemination to society and so on. The permanent committee shall include representatives of private health plan organizations, providers, consumers, purchasers and policy- makers.

4. Discussion

NSHA is not itself a standard producer organization. Its intention is to stimulate the adoption of national information and terminology standards and unique keys identifiers in order to permit interoperability between different information systems throughout the

public health system and the private sector in the country, minimize variability and data interpretation. This incentive will certainly support the national health information network. It is relevant to mention that NSHA already uses database-linkage methodology to identify beneficiaries of private health plan in the National Vital Statistics on Mortality [21] and in the SUS Database of Hospital Utilization [22].

Standardization is recognized as an essential discipline for all players within the economy, and Electronic Data Interchange (EDI) is increasing more and more. The expansion of EDI has occurred due to the expansion of techniques and technology. EDI has been adopted in many activities such as banks or information routes. In Brazil banks have already adopted a standard information interchange for compulsory use.

It is not different in health activities. Effective and efficient information interchange in health can certainly improve quality of healthcare. In the Unique Public System (SUS) all hospital claims are interchanged in electronic way. However in private health sector, EDI is far less common. The TISS project has started a nationwide discussion about this matter. Oftentimes all players have tried to implement a national standard information interchange, but with no success. It is now expected that NSHA will not only intermediate this discussion, but also enforce the adoption of national mandated standards, based on the premise that voluntary conformity leads to hybrid, with dilutes the proposal of standards 23. The proposed version of the TISS project standards was submitted to a two-month stakeholders comment on February 2005.

5. Conclusion

A standard electronic data interchange (EDI) on private health sector will enforce preparation for health organizations. It will probably demand some time before it is adopted, but it is strongly recommended in this sector. The TISS project has defined electronic standard for information interchange, but another standards will be necessary in the future: terminology, private classification of interventions and so on. Next steps should be related to the security information interchange concerning mainly the international code of diseases, which will also be interchanged.

NHSA considers that this project will be very relevant for the sector even with all the difficulties of implementing it. The process of managing a national standard for information interchange among private health plan and healthcare providers will be constantly evolving and broadly participative.

6. Acknowledgments

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