Developing Interoperability Model for Health Services

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1. Introduction

Information plays an important role in health care. Doctors and health care providers will process the information which is a treatment for patients. Information management and use productively is a challenge to health care. Health Information Technology (Health IT) significantly increase the efficiency in helping the provider of health information about patients. It also improves the quality of health services and outcomes of patient care. Information technology has the potential to improve the quality, safety, and health care efficiency.

Health information technology is defined as the use of technology to organize and disseminate medical information for consumers, medical personnel, and other parties involved in health services (Blumenthal and Glaser, 2007). Health information technology is defined as the use of technology to organize and disseminate medical information for consumers, medical personnel, and other parties involved in health services (Blumenthal and Glaser, 2007). Review Ebell and Frame (2001) state that IT plays in the functioning of medical records, communication, clinical decision support, and the learning process.

Review Ebell and Frame (2001) states that information technology plays in the functioning of medical records, communication, clinical decision support, and the learning process. Electronic Medical Record is one example of the success of information technology in support of health practice. Electronic Medical Record is slowly but surely began to be adopted by various health care centers in the hemisphere, and began to be developed in several hospitals in Indonesia, which in their activities. In day-to-day duties of health practitioners are often faced with various problems and uncertainties. The development of such advanced medical science has proved that many efforts medic, from diagnostic to therapeutic efforts once considered correct, when this has started to be abandoned because it proved more dangerous. Several previous studies showed the effectiveness of using computer systems to improve prescribing practice (Bates and Gawande, 2003). More recent study by Chaudhry, et al (2006) concluded that the use of information technology can be useful to improve adherence to standards of medical care, and reduce the risk of medication errors

The problems will be sought the solution include:
a. Difficulty of a patient in a medical examination when to move the location of the examination, such as hospitals, health centers, or clinics.

b. Pharmacies Department that difficulty in removing the drug for any kind of disease the patient.

c. Standard different patients from the health, especially in a form issued by the hospital.

d. Technology has not yet been utilized to make more progress in the medical records of a disease a patient.

An electronic medical record (EMR) is a computerized medical record created in an organization that delivers care, such as a hospital and doctor's surgery. EMR Implementation get obstacles in terms of technology and human resources, both in developed countries and in developing countries, including Indonesia. Karim Keshavjee, et. al. said that EMR implementation is always a failure up to 50% which resulted in financial losses, loss of opportunity for learning by physicians and clinical side.

The technical standard of EMR include (1) Health Level 7 (HL7) - message format for interchange between record systems and practice management systems, (2) ANSI X12 (EDI) - a set of transaction protocols used in the US for transmitting virtually any aspect of patient data, (3) CEN - CONTSYS (EN 13940), a system of concepts to support continuity of care, (4) CEN - EHRcom (EN 13606), a standard for the communication of information from EHR systems, (5) CEN - HISA (EN 12967), a services standard for inter-system communication in a clinical information environment, and (6) DICOM - a standard for representing and communicating radiology images and reporting. EMR standards which are frequently used and closed to perfect are HL7 version 3 and DICOM.

Health Level 7 (HL7), established in March 1987, was organized by a user-vendor committee to develop a standard for electronic data exchange in health care environments, particularly for hospital applications. The HL7 standard, the “Level Seven,” refers to the highest level, the application level, in the Open Systems Interconnection (OSI) seven communication levels model. The common goal is to simplify the interface implementation between computer applications from multiple vendors. This standard emphasizes data format and protocol for exchanging certain key textual data among health care information systems, such as HIS, RIS, and PACS.

HL7 addresses the highest level (level 7) of the OSI model of the International Standards Organization (ISO), but it does not conform specifically to the defined elements of the OSI’s seventh level (see Section 9.1). It conforms to the conceptual definitions of an application-to-application interface...
placed in the seventh layer of the OSI model. These definitions were developed to facilitate data communication in a health care setting by providing rules to convert abstract messages associated with real-world events into strings of characters comprising an actual message. (Huang 2004).

2. Methodology

- Choosing the international standard for health information system.

Electronic medical records have some standards used in the health world, the technical standard of EMR include Health Level 7 (HL7), ANSI X12 (EDI), CEN - CONTSYS (EN 13 940), CEN - EHRcom (EN 13 606), CEN - HISA (EN 12 967), and DICOM. These standards have different functions, and standard HL7 which closed to perfect is the last version (version 3) and DICOM.

- Developing Indonesian standard for health information exchange. → describe what the step of the development stage

In developing the standard of health in Indonesia, the steps taken is to find similarity and dissimilarity medical records from several hospitals that were taken randomly. Medical records will be created so that reading of fields from all hospitals will have the same meaning which can be read by the health services that are not only part of the hospital, but also can be understood by the laboratories and pharmacies associated with the health of the patient.

- Developing ontology that combined International standard and current hospital data structure in Indonesia. → describe what the step of the development stage

Standard medical records such as HL7 and DICOM will be combined and customized according the standard in Indonesia, the Indonesian health standards. Medical records that exist in some hospitals that have been taken randomly will be pursued as much as possible in order to deliver as one in reading

3. Discussion

Some of the fields that exist in health standards HL7 and DICOM will be combined into a new health standard that can be applicable in Indonesia. These standards will become a reference for medical records that are now used in all health services. With this health information in electronic medical records that apply in all health services in Indonesia, will simplify the process of care for patients.

4. Conclusion

Health standards which have been combined from a variety of medical record standard makes health standard will apply at various hospitals and other health services in Indonesia. This will facilitate a
patient in health examination if the patient moves from one location to the other location of the treatment, in addition to relevant sections such as pharmacies and laboratories are no longer cultivated made a mistake in making decisions in the administration of drugs and laboratory results. The results of this study can also create a standard of health information in electronic medical record at the ministers of health in the State of Indonesia, as well as the most important is the use of technology that can simplify and make faster in creation of electronic medical records.

References
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