Health Information Exchange Based on Cloud Computing System

[1] J. B.Lalitha
M.Sc (Computer Science)
Besant theosophical college,madanapalli.

[2] D.Venkata Siva Reddy
Head dept. of C.S
Besant theosophical college,madanapalli

ABSTRACT Successful publication of the eHealth registry helps improve patient safety and quality of care, but this requires a prerequisite for the interoperability of health information exchange in different hospitals. The clinical documentation structure (CDA) developed by HL7 is a fundamental standard in the document to ensure interoperability, and the deployment of such documentation is essential for interoperability. Unfortunately, hospitals are reluctant to adopt the interoperable HIS system due to the cost of their deployment, with the exception of a few countries. A problem arises even when more hospitals start using the CDA document format because the data scattered in different documents is difficult to administer. In this document, half of the CDA service and the integration of our CDA creation documents are based on cloud computing, which allows hospitals to create CDA documents conveniently without the need to purchase special software. The CDA document integration system integrates multiple CDA documents per patient into a single CDA document and clinicians and patients can examine the clinical data in chronological order. Our system supports the generation and documentation of CDA documents in cloud computing and the service is provided in the open API. Therefore, developers who use different platforms can use the system system to improve interoperability.

Health information exchange, HL7, CDA, cloud computing, software as a service

INTRODUCTION

EHR is a longitudinal collection of electronic health information for individuals and individuals, where health information is identified as information about the health or medical care of a person and can support the effective delivery of medical care. [1] To ensure the success of the EHR process, HIE must be implemented [2]. However, the majority of HIS in the service have different

properties and are compatible with each other [3], [4]. Therefore, the exchange of effective health information must be exchanged for the exchange of health information between hospitals. In particular, the standardization of the clinical document lies in the essence of ensuring interoperability. Health CDA has established the seventh level as a main criterion for clinical documentation [5]. CDA is a standard coding document that defines the structure and semantics of "clinical documents" for exchange purposes. The first CDA was developed in 2001 and the second version was launched in 2005 [6]. Many CDA projects have been successfully completed in many countries [7], [8], [9]. Semantic interoperability is being promoted on the basis of openEHR and CEN13606 [10], [11]. In order to establish confidence in HIE interoperability, the need for your HIS support to support CDA has increased. However, the CDA structure is very complex and it is difficult to achieve the production of the correct CDA document without a thorough knowledge of the CDA standard and sufficient experience with it. In addition, the HIS development platforms for hospitals vary significantly, so a generation of CDA documents in each hospital will always require a separate CDA generation

system. Hospitals are also very reluctant to adopt a new system unless it is absolutely necessary to provide care. As a result, the adoption rate of EHR is very low, with the exception of some countries such as New Zealand or Australia. [12] In the United States, the government implemented an incentive program called the Intensive Use Program to promote the adoption of EHR among hospitals [13]. When the patient is diagnosed in the clinic, a CDA document is created to record the diagnosis. The CDA document can be shared with other clinics if the patient agrees. The concept of family doctor is not available in Korea, and it is common for a patient to visit several different clinics. The exchange of a CDA document is triggered in the following cases: when the doctor needs to study the patient's medical history; when the reference and response messages are formulated for a patient interested in several clinics; when the patient is in an emergency and the medical history is reviewed.

Existing System:

The effective exchange of health information should be standardized for the exchange of health information among hospitals. In particular, the standardization

International Journal of Research

Available at https://edupediapublications.org/journals

e-ISSN: 2348-6848
p-ISSN: 2348-795X
Volume 05 Issue 07
March 2018

of the clinical document lies in the essence of ensuring interoperability.

More time is required for medical personnel with the greatest number of CDA documents because more documents mean the distribution of data in different documents. This significantly delays the medical staff in making decisions. Therefore, when all CDA documents are combined into a single document, the medical staff can review the patient's medical history comfortably in the chronological order of each clinical section and the follow-up service can be provided more effectively. Unfortunately, there is currently no solution that integrates multiple CDA documents into one until now, our best knowledge. There are practical limitations for individual hospitals to develop and apply CDA document integration technology.

Disadvantages of the current system:

Their development platforms for hospitals vary widely so that a generation of CDA documents in each hospital will always require a separate CDA generation system. Hospitals are also very reluctant to adopt a new system unless it is absolutely necessary to provide care. As a result, the adoption rate of EHR is very low, with the exception of a few countries. Unfortunately, for now, there is no solution that integrates multiple CDA

documents into one so far on our best knowledge and there are limitations of individual hospital processes to develop and implement CDA document integration technology. To demonstrate confidence in HIE interoperability, more HIS is needed to support CDA. However, the CDA structure is very complex and it is difficult to achieve the production of the correct CDA document without a thorough understanding of the CDA criteria and sufficient experience with it.

Proposed system:

In this research we present (1) the CDA document generation system that creates CDA documents on different platforms and the CDA document integration system, which integrates several CDA documents distributed in different hospitals for each patient. The CDA generation API generates CDA documentation in the GEM.

The CDA generation interface uses the API provided by the cloud, sends input data and receives CDA documents created in the cloud. Template Manager is responsible for managing the CDA documents created on the cloud server. Our system uses CCD document templates.

International Journal of Research

Available at https://edupediapublications.org/journals

e-ISSN: 2348-6848
p-ISSN: 2348-795X
Volume 05 Issue 07
March 2018

CDA Generator collects patient data from hospitals and creates CDA documents in template formats as suggested by the template administrator. Validator Validator checks that the CDA document that is created corresponds to the CDA schema standard.

Advantages of the proposed system:

Hospital systems can simply expand their existing system instead of completely replacing it with a new system. Second, it is not necessary for hospitals to train their staff to generate, integrate and deliver documents that comply with CDA.

The Cloud CDA generation service produces documents certified by CDA of the National Institute of Standards and Technology (NIST). If this service is offered free of charge at a low hospital price, it is likely that the current EHR will consider the adoption of CDA in its practice. Interoperability between hospitals improves patient safety and quality of care, but also reduces the time and resources devoted to converting the data format.

SYSTEM ARCHITECTURE:
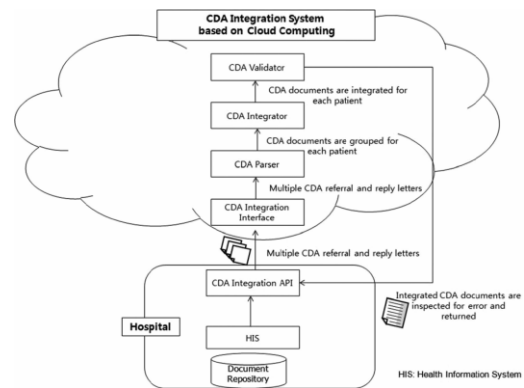
DISCUSSION AND CONCLUSION

Interoperability among hospitals improves patient safety and quality of care, but also reduces the time and resources allocated for data format conversion. [23] Interoperability is more important as more hospitals participate in the HIE. If the hospital does not support interoperability, other hospitals must convert the data format of their clinical information to exchange HIE data. When the number of hospitals does not allow interoperability, the complexity of the HIE system will inevitably increase. Unfortunately, hospitals are reluctant to adopt EHR systems that support interoperability, because changing the current system increases the cost of software and maintenance [24], [25]. The benefits of the API service as a service to us are the amount of resources hospitals must allocate for minimal interoperability. Therefore, providing a system that supports interoperability through cloud computing is

a good alternative for hospitals that have not yet adopted HME because of cost problems. CDA sets the clinical information standard designed to ensure interoperability between hospitals. A large number of HIE projects have been implemented using the CDA document format in many countries. Table 5 shows several HIE projects and whether they generate CDA documents or include multiple CDA documents. The cloud-based CDA creation and integration system has some great advantages over other existing projects. First, hospitals do not have to purchase enrichment programs to create, integrate and present CDA documents as they were before. Second, the conversion is to a type of matrix string. This is because of the IDE C # program, which automatically performs this type of conversion. Consequently, the data returned should be as general as possible so that it can be applied to as many platforms as possible. In our future work, we will explore the following points. First, we will make a concrete estimate of cost reduction when the electronic health records system is in the cloud. Creating a reasonable rate system is a major problem for cloud computing [20]. There is ample evidence that cloud computing is effective and effective in reducing costs, and it seems that the medical field is no exception [43]. Security and stability are a priority for cloud computing resources as they are used by many users [44]. Future work will seek to improve security while ensuring reasonable service quality even when many users access the system at the same time.

AUTHOR DETAILS

Student Details

B.Lalitha

D.Venkata Siva Reddy