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Nationwide Standard Electronic Health-Document-Exchange based on HL7CDA - Rel.2 in the New National Health-Checkup-Program for Preventing Metabolic Syndrome in Japan

Hiroyuki Hoshimoto[a], Yuki S.Nittami[a], Yukinori Konishi[b], Masaharu Ohbayashi[b], Ei Murakami[b], Takeshi Kubodera[b], Hiroki Watanabe[a], Izumi Yamaguchi[a], Katsuya Tanaka[a], Kengo Miyo[a], Ryuichi Yamamoto[c], Kazuhiko Ohe[a]

[a]*Department of Planning, Information and Management, the University of Tokyo Hospital, Japan*
[b]*Japan Association of Healthcare Information Systems Industry, Japan*
[c]*Graduate School of Interfaculty Initiative in Information Studies, the University of Tokyo, Japan*

Abstract

We have developed the standard electronic format based on HL7CDA-Rel.2 in the nationwide standard electronic health-document-exchange that is the indispensable infrastructure of the new national health-checkup-program (NHCP) in Japan. HL7CDA-R2 was proved to be an applicable message standard to the NHCP in Japan. The exchange has been under the test phase since F.Y.2006 and the real phase is supposed to start in the beginning of F.Y.2008. This is the first nationwide standard health-document-exchange based on HL7CDA-R2 and the estimated number of participants is between 10 million and 50 million citizens.

Keywords:

health checkups, Metabolic Syndrome,
public health informatics, HL7 CDA,
information standard

Introduction

In recent years, life-style related diseases such as diabetic mellitus, hypertension and hyperlipidemia are greatly increased in Japan. This situation is criticized as one of the causes of ballooning healthcare cost. For this reason, the Japanese government formed the policy which aimed at a 25% decrease of the prevalence of the life-style related diseases and the number of pre-disease state person by F.Y.2015[1].

In accordance with the above policy, the Ministry of Health, Labor and Welfare, Japan (MHLW) has decided to start the new national health-checkup-program (NHCP) which is specific for preventing metabolic syndrome from F.Y.2008 because metabolic syndrome is proved to be a key pre-stage followed by the life-style related diseases. All the health insurers that support the universal health insurance system in Japan shall be obligated to provide all the insured persons and their dependent family members aged between 40 and 74 with the routine health-checkup. They also have obligations to conduct the health consultation program which is specific for preventing metabolic syndrome in the standard method.

In NHCP, all the stakeholders (i.e. health-checkup providers, health consultation providers, insurers, and so on.) are required to exchange the health checkup and consultation data in a standard electronic format. Therefore, we developed the standard format and the guideline of its application under the special working group sponsored by the MHLW. The purpose of this project is to show problems and its solutions in applying HL7 Clinical Document Architecture, Release2 (CDAR2)[1] to the standard data format in NHCP.

Methods

In NHCP, there will be 4 major events such as health checkup, first-time consultation, mid-term evaluation and final evaluation consultation. Since the information to be exchange are different in each events, specified message formats are required for each message exchange.

In order to reduce development and management costs, we have developed a standard message model based on the HL7 CDAR2 specification [2]. The message format and XML schemas are derived from the model we have developed.

Results

Figure 1 shows the NHCP standard message model based on the HL7 CDAR2. Message schemas dedicated to each NHCP events are generated from this message model. Each message has basically one section to describe each health checkup and consultation events. Additional sections will be occurred to describe optional information, such as health insurance policy holder specified health checkup results.

The checkup results and the performance of the consultations are described in structured format conformant with

CDAR2L3 for automated data processing on the recipient side.

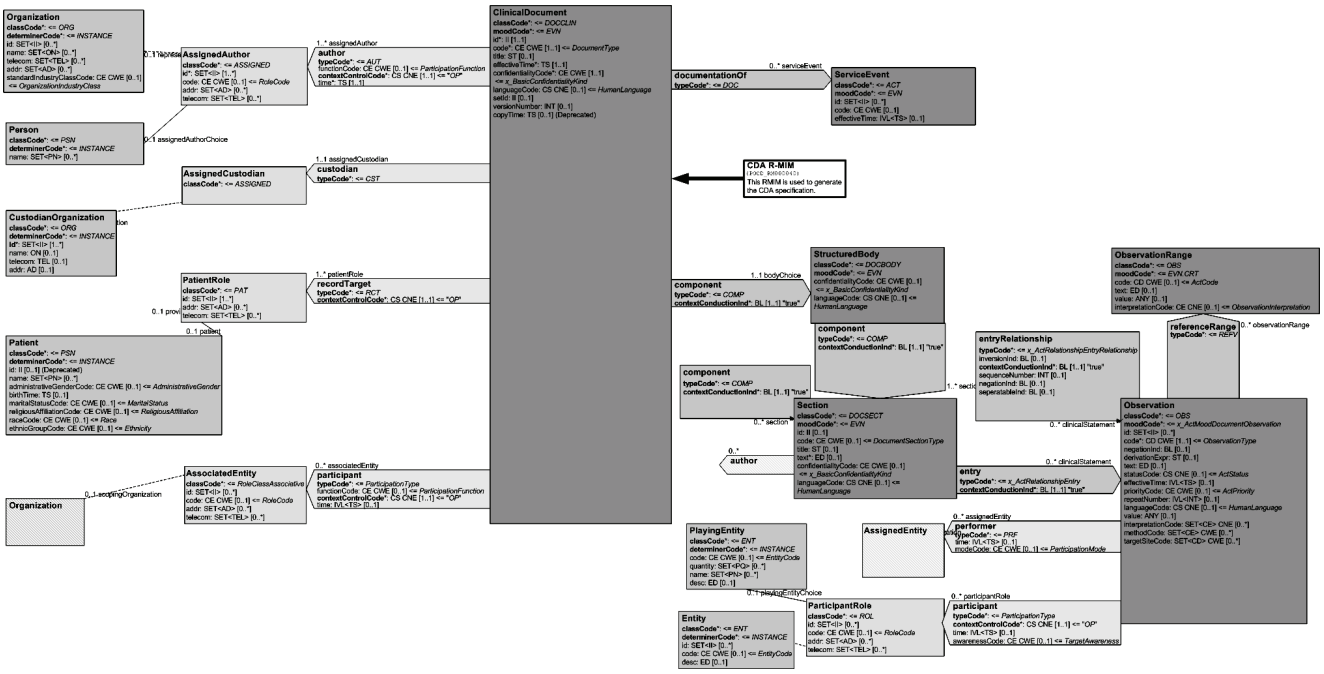

Figure 1 - The NHCP message model. This model is derived from original CDAR2 message information model

Discussion

In the NHCP, although it was found that the author, the custodian and the participants-information elements in the CDA message header have to be rewritten as the exchanging phase progresses, the HL7CDA-R2 was proved to be an applicable message standard to the NHCP.

However, since the CDA is originally an adaptable standard for the various medical documents, plural message notation exists to the identical contents. In addition to it, the NHCP requirements may be changed in the future. To guarantee the interoperability, development of a new mechanism to verify the message conformance to the standard is required.

The real phase of using the proposed standard is supposed to start in F.Y.2008. This is the first nationwide standard health-document-exchange in Japan. The estimated number of participants (i.e. the insured) is nearly 50 millions in the near future.

This message model and message format will be used for information exchange of the Health Checkup for Labors under the Occupational Health and Safety Law of Japan, and Health Checkup and Management Program for School workers under the School Health Low of Japan, as well. The authors believe that the proposed HL7CDA-based exchange program will not only contribute on the success of the NHCP in Japan but also serve as a useful reference for health document exchange in other countries.

Conclusion

In this paper, we described an outline of the new national health-checkup-program and brief structure of the NHCP message model. The exchange has been under a test phase since F.Y.2006 and the real phase is to start in the beginning of F.Y.2008. It will be the first nationwide standard health-document-exchange in Japan.

References

[1] http://www.mhlw.go.jp/ (Japanese)
[2] HL7 Clinical Document Architecture, Release 2.0., May 2005. Ann Arbor, MI: Health Level Seven, Inc., 2005

Address for correspondence

Hiroyuki Hoshimoto, MHSc, Hongo 7-3-1, Bunkyo-ku, Tokyo 113-8655, JAPAN; e-mail: <hhoshi@hcc.h.u-tokyo.ac.jp>