Designing Medication-Related Profiles for Japanese ePrescriptions with HL7 FHIR

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Abstract. HL7 FHIR is the standard for healthcare information exchange. In
November 2022, our medication subgroup developed 8 profiles and 23 extensions
for medication procedures in Japan, as part of the JP Core Implementation Guide
1.1. Our work demonstrates the ability of HL7 FHIR to describe Japanese
prescription procedures while also addressing the requirements of other countries

Keywords. HL7 FHIR, Medication, Prescription

1. Introduction

HL7 Fast Healthcare Interoperability Resources (FHIR) is an emerging medical
information exchange standards whose adoption is gaining international momentum [1].
As members of the NeXEHRS, academic research group of Japan Association of
Medical Informatics, tasked with implementing a next-generation electronic health
records (EHR) system platform, we developed HL7 FHIR profiles for the
implementation of the common EHR API from 2019 [2]. A research group was
established consisting of seven subgroups according to FHIR resource categories. Our
subgroup focused on pharmacy/medication-related resources. We published eight
profiles in 2021. These profiles and implementation guidelines contributed to the
national standards for healthcare of the Ministry of Health Labor and Welfare (MHLW)
in 2022. The specification has been continuously revised and is currently available as JP
Core v1.1.1 [3].
Here we introduce the medication-related part of the JP Core profile of the HL7 FHIR,
and discuss the requirements for Japanese operation of the profile related to drug
information. International development of the FHIR is considered as well. We believe
this discussion will contribute to other international efforts to develop FHIR profiles that
apply to each country's application.

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2. Methods

The English version of the medication-related resources of FHIR was translated, and the translated document shared in Simplifier.net [4]. Implementation guides and profiles were developed by Forge (provided over Simplifier.net) that addressed existing domestic specification standards as well as specifications related to prescription procedures for physicians, pharmacists, and engineers.

After JP Core profiles version 1.0 was released with other profiles, the changed platform was released to GitHub with FHIR shorthand [5].

3. Results

In November 2022, our medication group published 8 profiles and 23 extensions of the JP Core implementation guidelines in addition to profiles for Medication, MedicationRequest, MedicationDispense, MedicationAdministration, and Immunization resources. The details of the profiles will be presented in a poster. The main restrictions/extensions added to the FHIR resources in the profiles are: 1) alternative terminology/value sets in Japan, and 2) traditional Japanese instructions for medications.

4. Discussion

Drug prescriptions are a vital component of a hospital information system; they include information on drugs, doses, and instructions. In Japan, dosage instructions describe the total daily dose with rules for dose division, whereas the FHIR's original rule describes a single dose with instructions for daily intake. We designed extensions for Japan with the capability to express Japanese prescription procedures but with applicability to other countries.

5. Conclusions

HL7 FHIR is able to represent prescription order-related procedures in Japan. The published profiles and implementation guidelines can be adopted for ePrescriptions use.

References

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