

## HL7 FHIR IN HEALTH RESEARCH

### A Framework for Clinical, Epidemiological and Public Health Studies

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In the field of health research with all its heterogeneous data, interoperability is of high importance in order to use the data according to the FAIR (Findable, Accessible, Interoperable and Reusable) principles. Here, we present our work on the identification and deployment of semantic and syntactic standards within the project National Research Data Infrastructure for Health (NFDI4Health). NFDI4Health aims to collect meta(data) from clinical, epidemiological and Public Health Studies to foster collaboration among these research sectors. As a first step, we identified terminologies and health informatics (IT) standards suitable for the use-cases within the project and performed suitable mappings to these standards. Next, we were developing HL7® Fast Healthcare Interoperability Resources® (FHIR®) release 4 (R4) profiles for the NFDI4Health Metadata Schema (MDS). The developed FHIR profiles support metadata interoperability of studies, questionnaires and documents collected in the NFDI4Health German Central Health Study Hub. Based on a prior MDS to FHIR Mapping analyzing the gaps and overlaps, a FHIR specification was developed containing 12 FHIR profiles with a total of 73 ValueSets and 47 extensions. Our publicly available implementation guide may serve as template for the research community to generate and share structured health data and hence promote collaboration of researchers. This work not only advances the application of terminologies and IT standards within health research but also enables for future endeavors that align with future community needs.