**Construction of the Immunization Component of the Brazilian IPS - (International Patient Summary): mapping of local vaccines terminologies to SNOMED-IPS**

Background  
The BrazilianMOH has a national eHealth Strategy (ESD2028) that is being implemented (1). The National Health Care Network (RNDS) has been developed as part of this effort. RNDS has up to March 2023, more than 1.2 billion immunization registries and 66 million COVID-19 exams. Following the priorities established by the ESD2028 the MOH has decided to implement the International Patient Summary in the country. To begin with, the Allergy, Medication, and Immunization components are being defined. Hospital Sirio Libanes, one of the six philanthropic hospitals that develop projects for the National Health System (SUS) has been appointed to lead this initiative together with the MOH team. The project started on March 23 and by December 23 we shall have the Implementation Guide according to the FHIR R4 IPS Implementation Guide. This abstract describes mapping the Brazilian vaccines registry to the IPS SNOMED refset, since this is the terminology mostly used in the IPS.   
Approach   
Brazilian Codesystems for immunization as described for RNDS ( https://simplifier.net/redenacionaldedadosemsaude/imunobiolgico), as well as SNOMED IPS were uploaded to an open-source terminology server (Open Concept Lab). The ISO TR-12300 - Health informatics — Principles of mapping between terminological systems standard was followed by creating mapping tables in Excel that express the direction, cardinality, and degree of equivalence of the mapping as follows: (1) Equivalence of meaning; lexical as well as conceptual; (2) Equivalence of meaning, but with synonymy; (3) Source concept is broader, and has a less specific meaning than the target concept/term; (4) Source concept is narrower, and has a more specific meaning than the target concept/term and (5) 5 No map is possible. No concept was found in the target with some degree of equivalence (as measured by any of the other 4 ratings) (2).   
  
Results: The Brazilian vaccines list has 103 terms. Before carrying out the mappings, it was observed that from the 103 terms, 4 were duplicates terms and 12 were vaccine diluents that could be mapped to SNOMED GPS refSet 74626007-Drug Diluent with an equivalence of 4, meaning that the Brazilian terms are more specific than the Snomed ones since the Brazilian terms specifies the diluent for each vaccine. From the remaining 87 terms left, 12 terms were not present in the IPS/GPS refset but could be found on SNOMED CT Core. Table 1 depicts these concepts, with the Portuguese translation to English of the Brazilian term, the SNOMED CT Core mapping, and their respective equivalence scales. In total, 75 terms were mapped to SNOMED IPS terms. Table 2 depicts these totals and shows the mapping scale of equivalence. 35% of the terms could be mapped preserving the semantics (equivalence 1 or 2); In 40% of the mappings the Brazilian term was more specific than the SNOMED IPS concept.    
  
Discussion: Using SNOMED IPS we were able to map 75% of the Brazilian List of Vaccines in order to develop the immunization section of Brasil-IPS. 12 terms are present in SNOMED CT Core and we ask they are also present in the IPS refset allowing for us to do the mapping. Brazil has one of the most successful vaccination programs in the world and certainly one of the largest immunization registries – today with more than 1.2 billions records and growing since we are now vaccinating for COVID boosters and influenza. The data is sent to the RNDS automatically from the provider administering the vaccines.    
By having a patient summary in the international standard we will be able to provide for Brazilian citizens the capability to share their relevant health data no matter where they will be in the country or abroad. SNOMED-CT by providing the IPS refset is allowing for the sharing of relevant clinical information necessary for the continuity of care. It is, however, mandatory that the terms already identified by the international community of implementers of IPS that are not present today in the IPS refset, but only in SNOMED CT core are made available on the IPS subset. In addition to that, terms that are used in specific contexts in countries and cannot be found in SNOMED today should also be included. If SNOMED intends to be the international language for clinical interoperability it is necessary to accommodate these needs.  
References  
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