

What are the approaches to mitigate patient identity-related challenges in an attempt to achieve interoperability between different healthcare entities?

Topic:

Privacy, Security, Trust, and Patient Engagement

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Abstract:

Patient identity management aims to process patient identity securely by managing, tracking, identifying and linking patients with their digital health information within and across disparate systems. The objectives were, to understand the current hospital infrastructure, designing and implementing the solutions and comparing other industry standards. The challenges this research work will address related to patient-identity are semantic interoperability across disparate systems, de-identification of patient demographic information to enable federated sharing, elimination of possible duplicates of patient records, cross-institutional identification of patients patient in a project (clinical trial), and availability of clinical data for research purpose. To mitigate these challenges pseudonymization service was implemented in MeDIC (Medical Data Integration center, Uniklinik Köln). This pseudonymization service generates pseudonyms from patient demographic information, used as unique identifier across multiple systems and different healthcare organizations without disclosing the actual patient identity. that this research also attempts to validate the operations of the Mainzliste (Software by TMF-BMBF) based on specific scenarios. The rationale for the defined scenarios are due to some common errors associated with patient identity. After extensive data analysis, it is evident that the pseudonymization service (Mainzliste) is able to generate pseudonym and perform de-duplication(record-linkage) in all possible scenarios. The maximum margin of error for CI 95% observed was $\pm 2.93\%$, which indicates the satisfactory accuracy level of Mainzliste. Some limitations with pseudonymization service were project-specific pseudonym, addition of identifiers to improve generation of pseudonyms for special scenarios, pre-defined data types in some of the fields, and scalability of record-linkage service which was not evaluated by this work.