Reviewer Report

Title: Desiderata for the development of next-generation electronic health record phenotype libraries

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Reviewer Comments to Author:

In this work, the authors present a set of 13 desiderata to guide the development of future phenotype libraries. The work presented here nicely rounds out current and established phenotyping efforts and established/outlines their suitability and components for a larger and broader definition of a phenotype library. The relevant literature is well collected, and with the exception of newer developments (within the last 9 months) for the OHDSI phenotype library (https://data.ohdsi.org/PhenotypeLibrary/) and tools (https://pubmed.ncbi.nlm.nih.gov/31369862/) is highly relevant and up to date. Each current tool is nicely analyzed and dissected by the authors to deliberate over the items that are included in the desiderata they propose. The figures and tables are well utilized and relevant, but a missing opportunity is a more comprehensive table that includes their 13 elements as columns and the current available libraries/tools as rows, with checkmarks as to which elements they provide in perspective to the 13 provided here. One considerable concern is that the 13 desiderata feel like they are all proposed based on the authors' works (CALIBER and PhenoFlow), serving more of a way to fit these contributions to a broader context, than an impartial discussion about what phenotype libraries would need based on current literature. Some changes in the language would greatly improve this, or the paper focus should be the phenotype library that the authors have built, versus the other approaches - which does not seem to be the way the manuscript is currently presented. Other than this concern, this work is highly relevant and very useful for the communities involved in building phenotyping libraries.

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