



Sensitivity Analysis in the Context of Network Meta-Analysis: Demonstration for AcademyHealth Annual Research Meeting

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Learning Objectives

State of the art digital technologies can be leveraged to

- Perform sensitivity analyses in the context of network meta-analysis
- Implement several methods of sensitivity analyses
- To critically assess the advantages of using efficient sensitivity analyses to generate informative results

Network Meta-Analysis (NMA)

Analytical method to examine both direct and indirect evidence

Increases complexity of managing data configuration and performing sensitivity analysis

Research Objective: Find, synthesize, and analyze data from public sources into fit-to-purpose actionable knowledge



Search

Searched, screened and indexing of all relevant articles in the therapeutic area

Technology assisted process search and screen articles assigning them per inclusion/exclusion criterion with PRISMA diagrams dynamically generated and continuous monitoring

Mine

Near automated digitization of lists and frequency trees of all terms (including AEs) in each abstract and full-text articles with highly validated transparent & accuracy

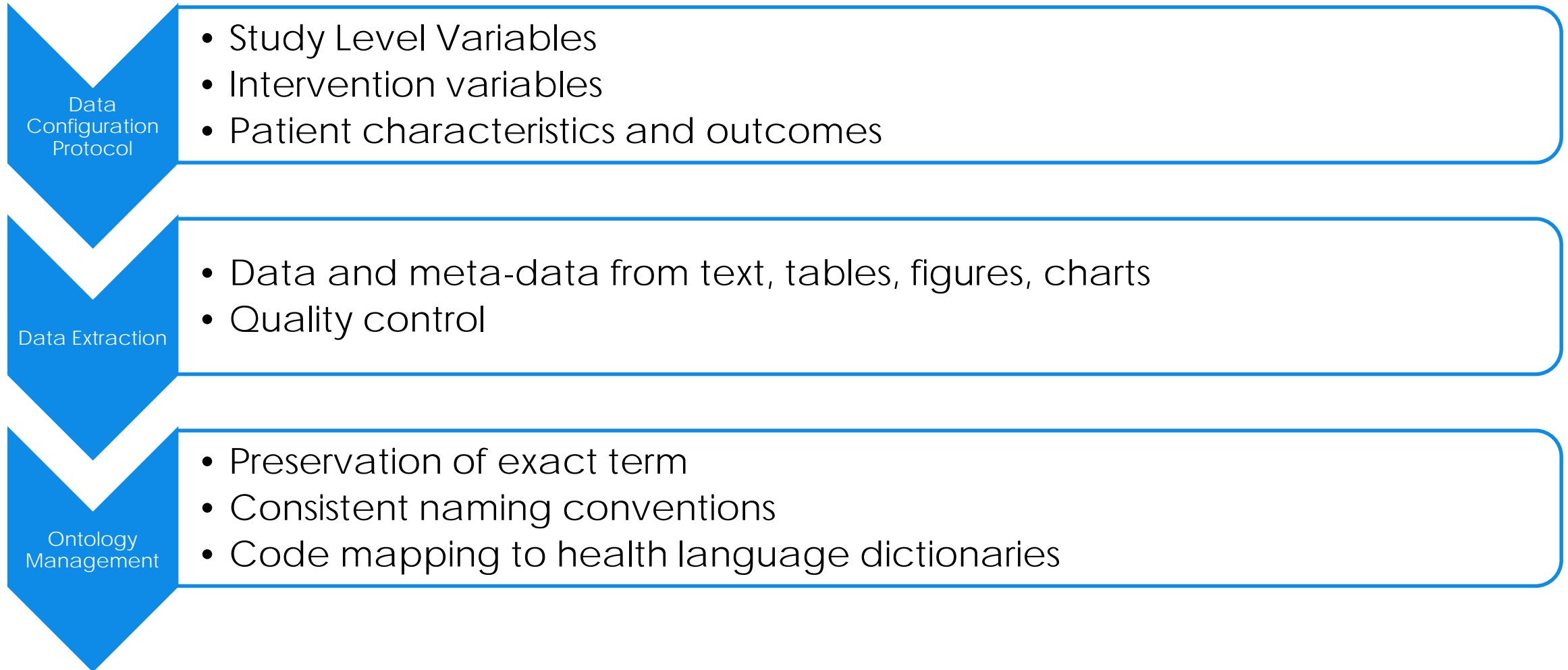
Technology assisted evidence analysts build frequency trees of terms, Adverse Events and patient characteristics, outcomes and endpoints in each article

Deliver

Requested data that is needed for any submission is available on demand and delivered in DRE platform available for analysis, tables, and other EBM outputs & fingertip analysis

Any analysis capable of being run in an R module are directly hardcoded into the evidence database with all the statistical consoles generated and auto saved

Data Configuration Process



Sensitivity Analysis

Why run sensitivity analyses?

- Exploration
 - Examination of robustness and relevance of results
 - Checking assumptions
- *More informed decision-making*

Conduct a Network Meta-Analysis

Demonstration

Sensitivity Analysis

Factors to explore when creating sensitivity analyses

- Study design
- Population (I/E criteria, baseline characteristics)
- Study bias
- Follow-up time
- Heterogeneity / outliers
- Date of publication
 - Leverage saved workflows to quickly update analyses
- What-if analysis

Implications for HSR

Employing today's technologies, the multivariate complexities of HSR can readily benefit from sensitivity analyses easily performed in the context of NMAs

Increased transparency allows independent audits and/or verification of binding and inclusion criteria, therefore increasing confidence in results and supporting replications of these analyses, a scientific tenet often impossible because traditional processes and publication resources do not document details (e.g., term management). Further, lack of technology inhibits replication due to the high labor and time requirements.

Capturing all terms (i.e. patient characteristics and outcomes) in published studies enables the creation of a web-based dictionary of terms -- an essential tool for HSR topics that do not have existing ontologies.

Thank you!

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