A federated database system based clinical decision support software for a multinational clinical trial
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Introduction
The Needs
- age ≥75 years
- multiple chronic diseases (multi-morbidity)
- multiple medications (polypharmacy)
- a medication review method: Systematic Tool to Reduce Inappropriate Prescribing (STRIP)
- time-consuming and complex

Federated database system
Architecture
- ETL: Extract, Transform and Load
- EMR: Electronic Medical Records

ETLs
- Extract Load Medications
- Transform
- Select non-essential medication
- Split into substances
- Create generic medication
- Intake, intake
- (no more medications)
- Load
- Store into national database

Figure 1: the STRIP process.
The OPERAM project: a multi-center large-scale cluster randomized clinical trial (RCT) in four European countries: the Netherlands, Switzerland, Ireland and Belgium.

Objectives
- To develop a software tool (web app) that facilitate the use of STRIP in daily practices
- To implement and use the software tool in multiple countries

Data models
To keep track of medication data, a unique identifier for each data item is created and recorded in source.

Figure 2. Integration Architecture of STRIPA.EU

STRIPA.EU Interfaces
- Dashboard
  a user interface for recording the results of patients' anamneses
- Analyzer
  a user interface for performing the pharmacotherapeutic analysis

Figure 3. Class Diagram depicting main data models

Figure 4 The ETL process of extracting medication data in the Netherlands

References

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Further information
The authors are working on the OPERAM project at Utrecht University. They are responsible for the implementation and use of STRIPA in the EU project. Meanwhile, they will explore more opportunities to improve the performance of STRIPA, such as using user behavior analysis to personalize the software. If you want to know further information, contact us via z.shen@uu.nl