

Generating structured dose instructions from Mediatrī with machine learning

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Dose instructions

- Instructions written by a physician
- Why interesting for a researcher?
 - Prescribed daily dosages (strength)
 - Prescribed daily dosages (doses)
 - Medication exposure
 - Adherence studies

Medication adherence

- *“The extent to which patients take medications as prescribed by their health care providers”*
- Measurement often based on register data
- Calculation of adherence requires information on medication purchases and days supplied
 - For example, for how many days a purchase of a 30-tablet package lasts?
 - Information on dose instructions important

Current status

- Finnish studies on medication use mainly based on the Finnish Prescription Register
 - Basically, no information on dose instructions
- Assumptions on daily doses
 - For example, 1 tablet per day for statins
 - Validity depends on the studied medication group
- Electronic prescriptions include dose instructions
 - Full coverage since 2017
- Dose instructions as free-text

Mediatri - prescriptions

- Two data fields including information on dose instructions
- Although otherwise very structured, information on dose instructions not readily useable

Methods

- Prescriptions divided randomly into training set and testing set
- Training set provided for a researcher at the Faculty of Information Technology in the University of Jyväskylä
 - Text analytics
- Testing set provided after algorithm ready
 - Structured information on doses

Golden standard

- Two researches independently read prescriptions in the testing set
 - Structured information on doses
 - If disagreement → consensus
- Structured information based on machine learning compared to golden standard

Conclusion

- If algorithm successful, will help in future studies on
 - Medication exposure
 - Medication adherence
 - Prescribed dosages