

Software for (Bayesian) network meta-analysis

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Outline

- Background
- GeMTC demo
- ADDIS demo
- Discussion

Goals of PhD project

- Develop a drug information system:
 - Effective knowledge access and management
 - Answer drug efficacy and safety questions
 - in an efficient, transparent and accountable way
 - within and across compounds
 - for a broad audience (including regulators)
 - Improve consistency in regulatory decision making
 - Based on systematic review and meta-analysis

My answer: ADDIS

- ADDIS: Aggregate Data Drug Information System
- Assisted evidence synthesis and benefit-risk assessment
 - Based on a database of clinical trials
 - Focussed on aggregated data
- Database is assumed available
 - Gathering the data is still a major hurdle!
 - But the ADDIS system / data model is a first step

Automating network meta-analysis

- Network meta-analysis using Bayesian GLM
 - Extremely general / flexible
 - Natural connection to decision making
 - Use posterior samples e.g. in economic model
 - Difficult and laborious to apply (e.g. WinBUGS)
- ADDIS needed easier / faster network meta-analysis
 - Automatically generated Bayesian hierarchical model
 - Heuristically chosen default values
 - Priors
 - Starting values
 - Also models for assessing consistency

Our software

- Open source, free software: <http://drugis.org>
- ADDIS (Aggregate Data Drug Information System)
 - Prototype decision support system
- GeMTC GUI
 - Graphical interface for network meta-analysis
 - Same (network meta-analysis) capabilities as ADDIS
 - Run models directly or in WinBUGS / OpenBUGS / JAGS
- GeMTC R package
 - Can use WinBUGS / OpenBUGS / JAGS in background
 - More expert-oriented
 - Still very new, but my current favorite to work on

Demos

- <http://drugis.org>
- GeMTC GUI
- ADDIS
- (GeMTC R package)

Discussion

- Network meta-analysis much easier in GeMTC
- But also much less flexible
 - Need explicit support for your problem
 - But you can get the code out and modify it
- More features to come in the near future