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MEDICAL INFORMATICS INITIATIVE GERMANY

GEFÖRDERT VOM
Bundesministerium für Bildung und Forschung

Experiences from the National Demonstrator Study within the German Medical Informatics Initiative

Session S15: Data Banks for Research

Thomas Ganslandt[1], Jannik Schaaf[2], Josef Schepers[3], Holger Storf[2], Felix Balzer[3], Silke Haferkamp[4], Robert Lodahl[5], Fabian Prasser[6], Ulrich Sax[5], Holger Stenzhorn[7], Hans-Ulrich Prokosch[8], Martin Boeker[9]

[1] Heinrich-Lanz-Center for Digital Health, Mannheim University Medicine, Heidelberg University; [2] University Hospital Frankfurt; [3] Charité - Universitätsmedizin Berlin; [4] University Hospital Aachen; [5] University Medical Center Göttingen; [6] University Hospital rechts der Isar; [7] University Hospital Tübingen; [8] Friedrich-Alexander-University Erlangen-Nuremberg; [9] Medical Faculty and Medical Center - University of Freiburg

Disclosure

I disclose the following relevant relationships:

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Introduction:
The German Medical Informatics Initiative (MII)

Foster re-use of routine clinical data

Demonstrate utility through clinical use cases

Strengthen Medical Informatics as a discipline

MEDICAL INFORMATICS INITIATIVE

160 M€ funding by BMBF

Federal Ministry of Education and Research

Long-term perspective

Introduction:
The 4 MII Consortia

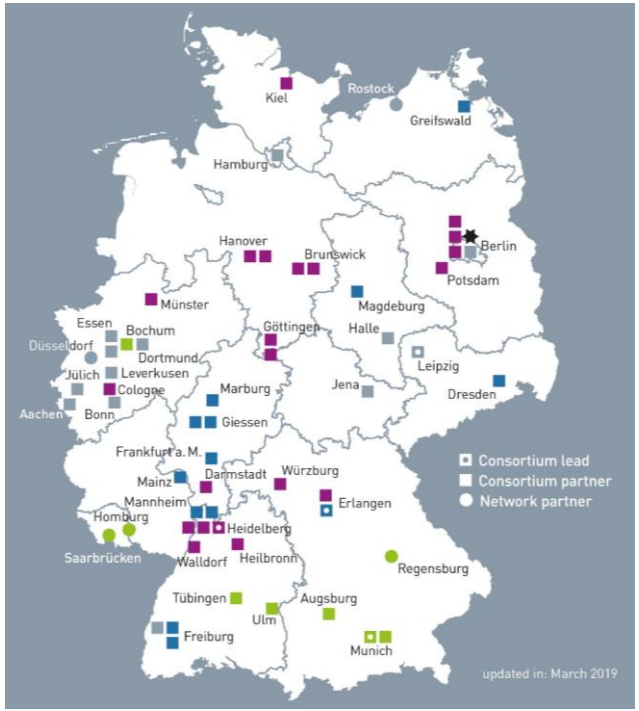


Image source: http://www.medizininformatik-initiative.de/en/node/5

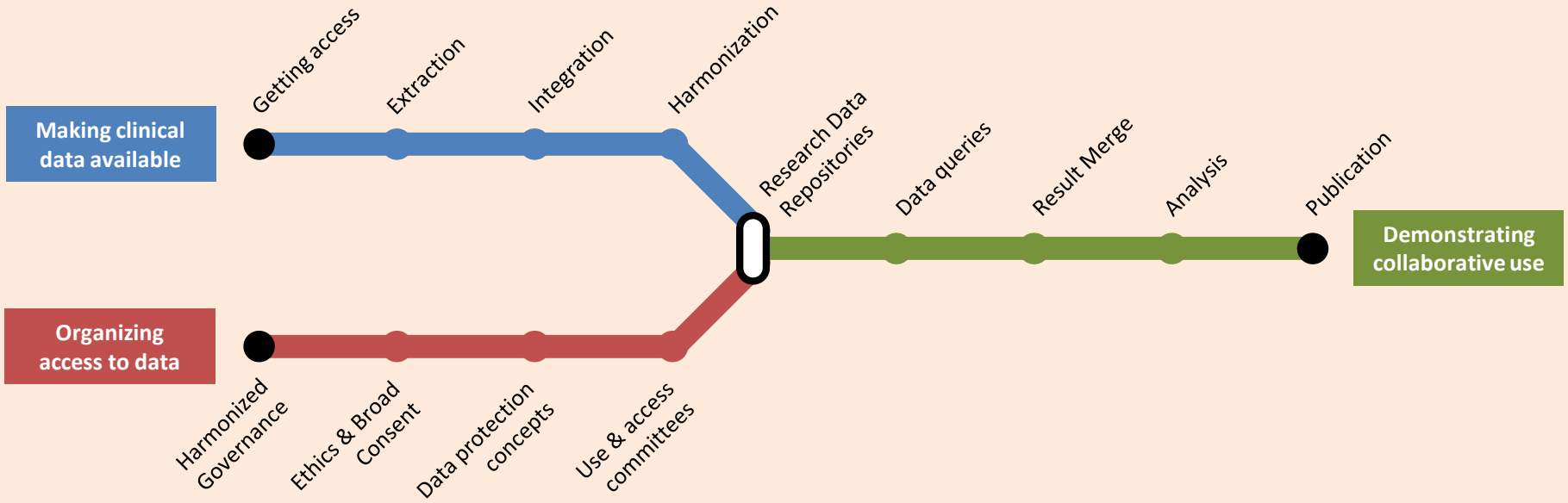
DIFUTURE
Data Integration for Future Medicine

HiGHmed
Medical Informatics

miracum
Medical Informatics for Research and Care in University Medicine

smith
Smart Medical Information Technology for Healthcare

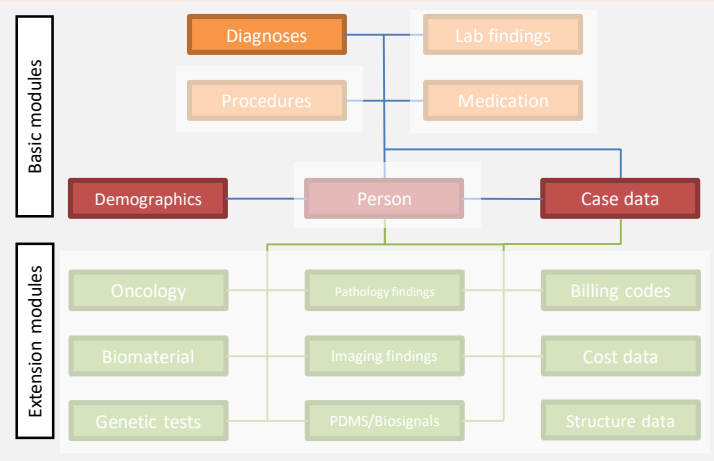
Introduction:
Shortcut needed through a four-year Roadmap



Introduction:
Steps towards harvesting low-hanging fruit, early-on

MII Modular Core Dataset

- based on HL7 FHIR
- specified collaboratively by MII Interoperability WG
- modules based MII use cases and data availability



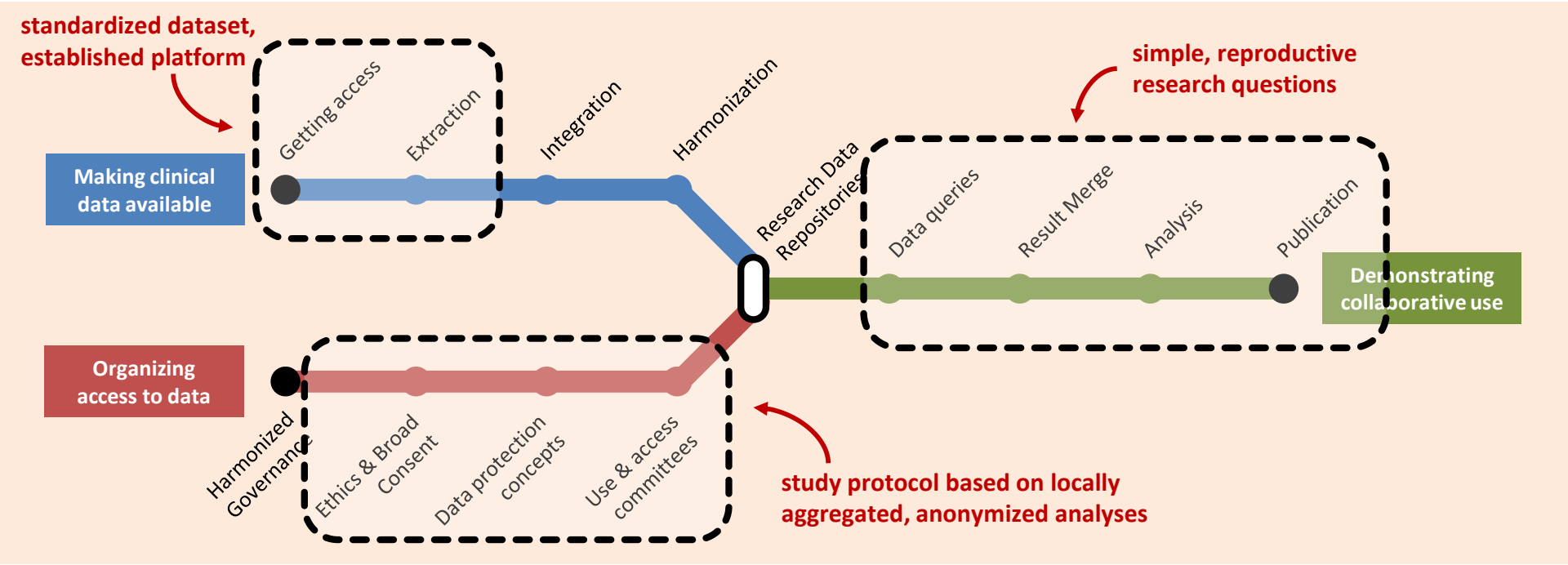
Readily available data

- German inpatient billing dataset ("§21")
- covers 5 of the 7 basic core dataset modules
- tightly defined, available at all German hospitals
- tooling available from prior work

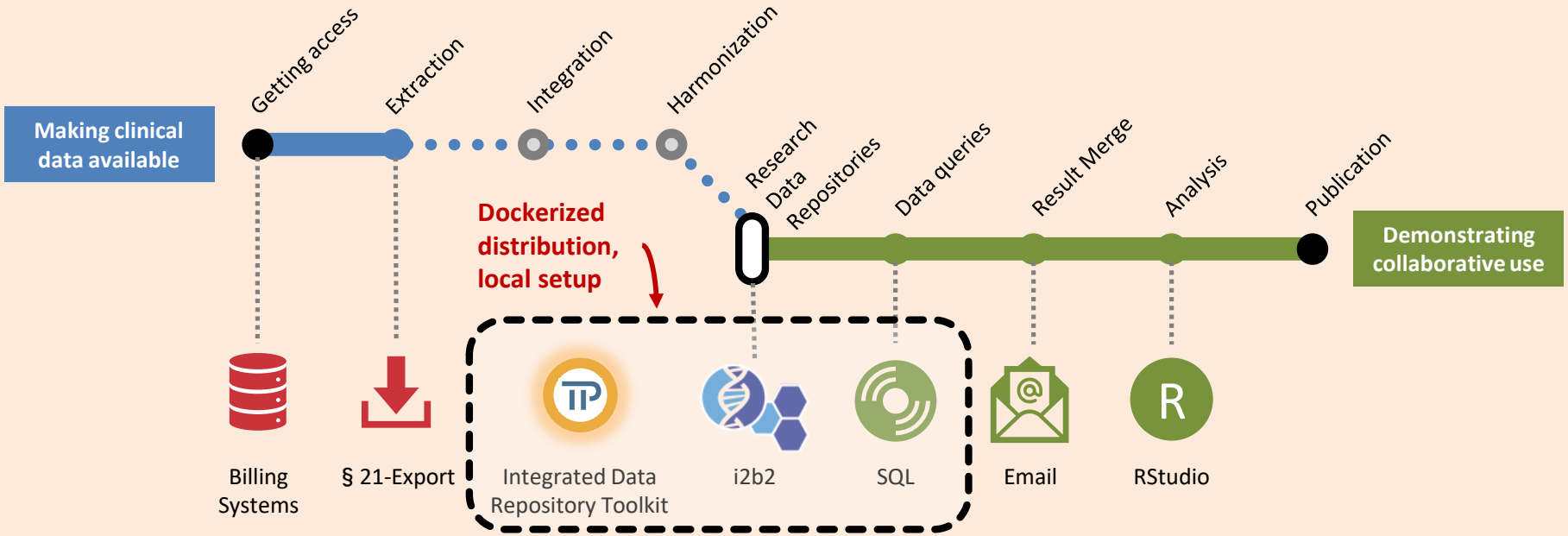
Limited, reproductive research questions

- based on the §21 billing dataset
- Analysis of Comorbidities
  - using principal and secondary diagnosis codes
  - calculation of published comorbidity scores (Charlson, Elixhauser, Stausberg)
  - correlations with case data
- Geovisualization of rare diseases
  - based on ICD10 diagnosis codes
  - visualization of distance to providing sites

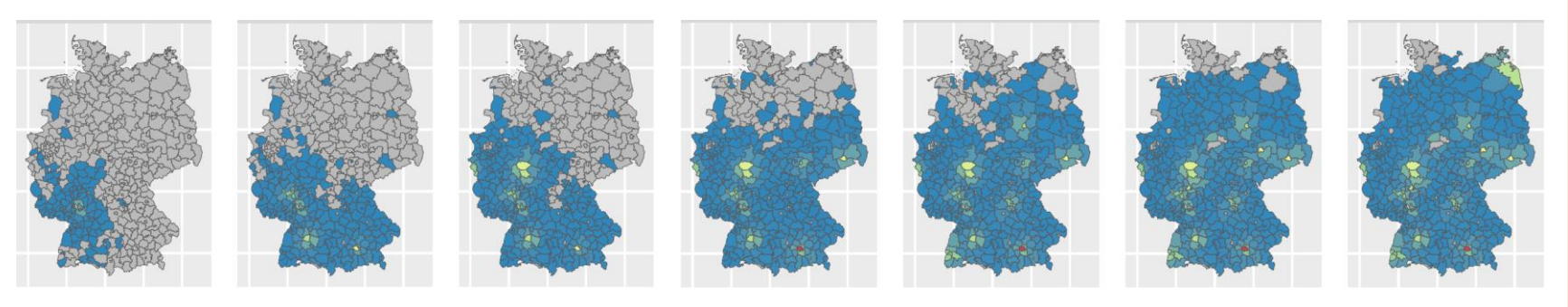
Methods:
Focus of MII Demonstrator Study



Methods:
Technical implementation of the Demonstrator

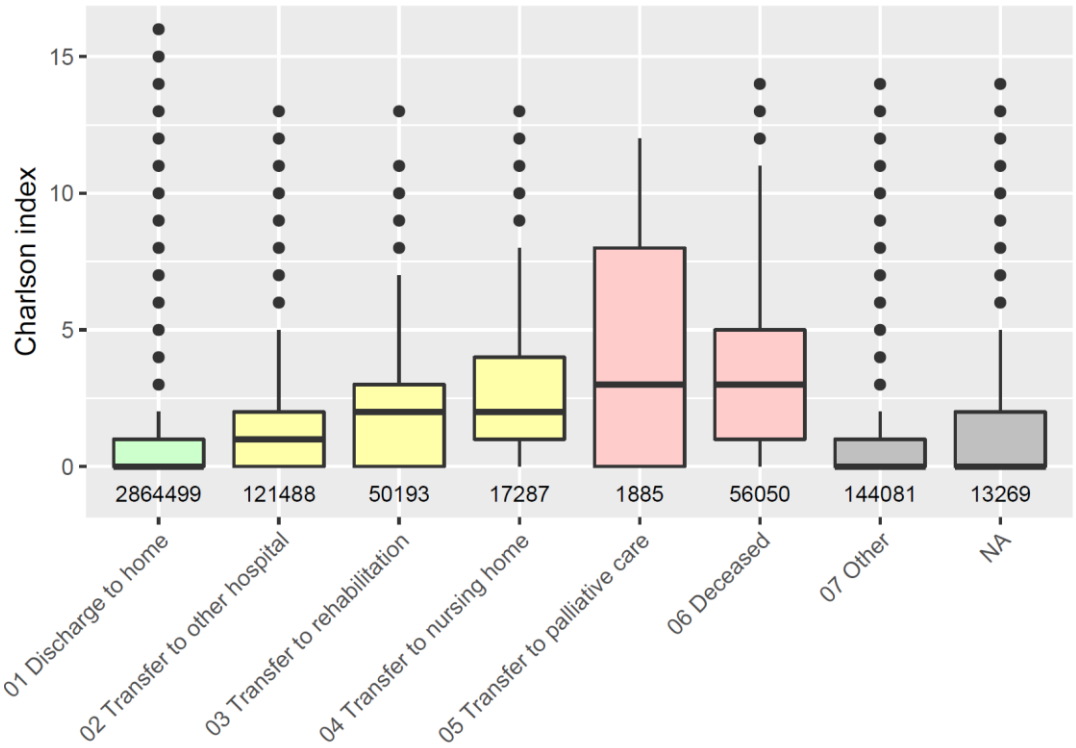


Results:
Site Participation and Data Volume

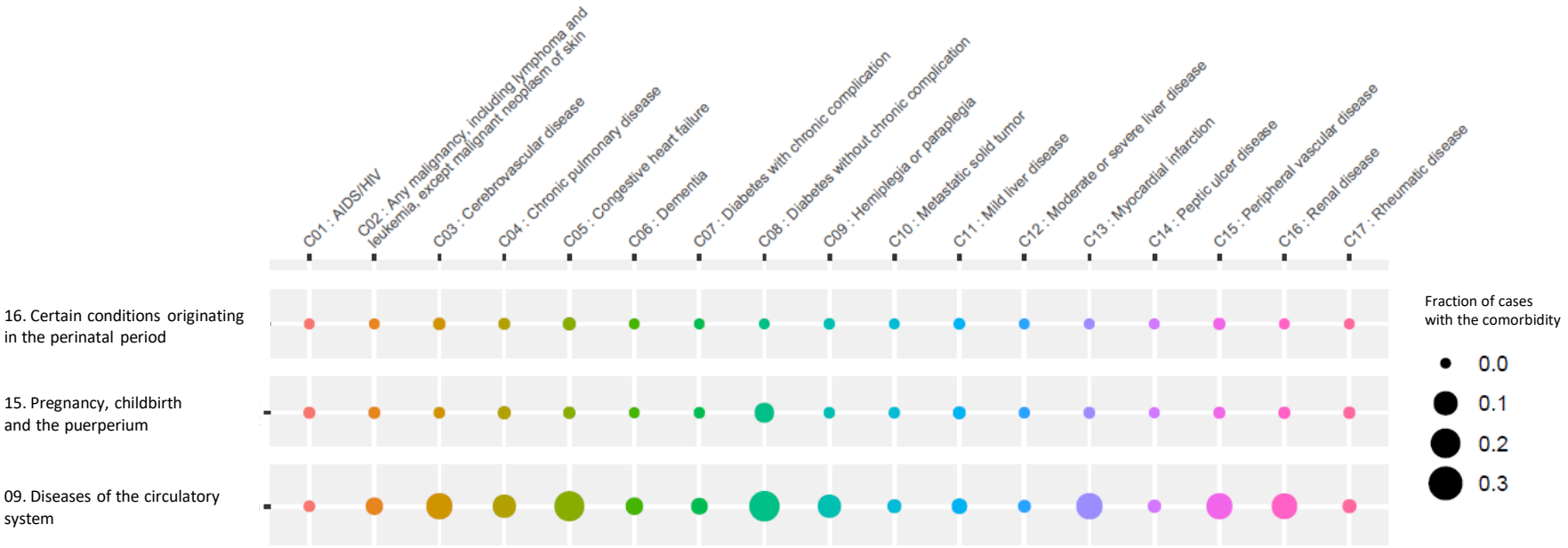


(09/2018 - 03/2019)

Results:
Charlson Index vs. Discharge Reason



Results:
Charlson comorbidity categories vs. principal diagnosis



Discussion

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What was achieved

- rapid demonstration of successful collaboration across all four MII consortia
- open source tools (i2b2, IDRT) were leveraged
- established local access to data & contacts to governance
- results consistent with expectations

Limitations

- even with very simple, aggregated & anonymized approach, it took up to 6 months for some approvals
  - complicated by state-level privacy laws in Germany
- limited scope & potential quality issues of billing data
- insufficient coverage of rare diseases in ICD10

Outlook

- approach will be applied in the upcoming MII cross-consortial use cases (CORD, POLAR)
- next iterations will include further core dataset modules (e.g. laboratory, medication) and leverage FHIR
- approach is transferable

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Thank you!

Email me at: thomas.ganslandt@medma.uni-heidelberg.de