Data evidence to enable value-based healthcare

BMC Conference

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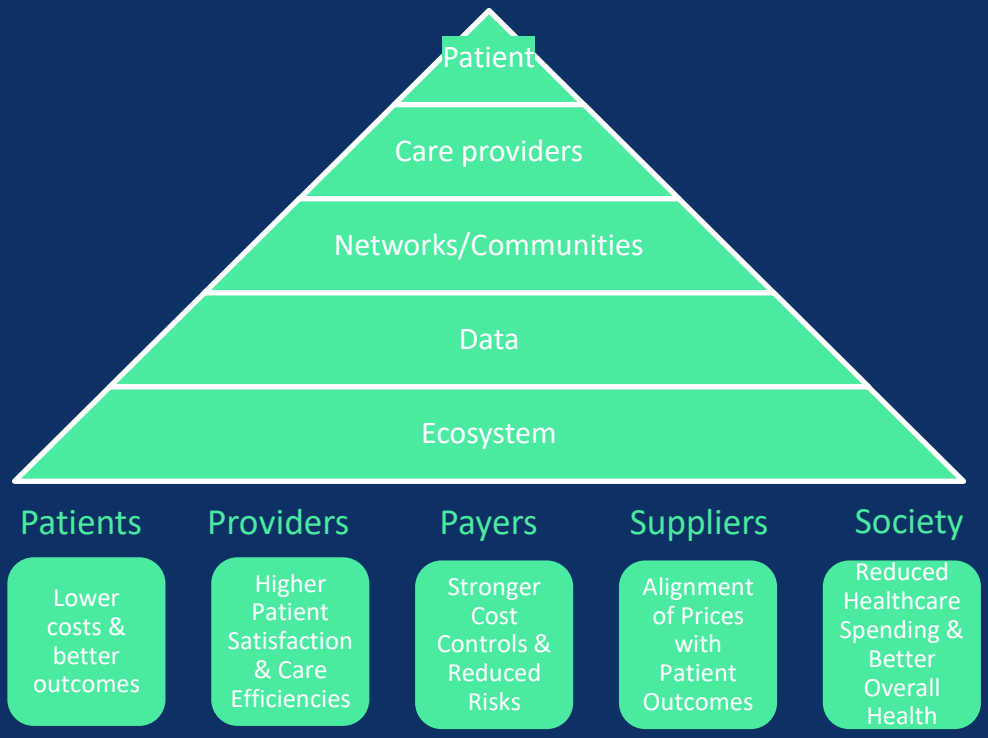
April 2023



Source adapted: NEJM Catalyst, Massachusetts Medical Society

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The need for data-driven value-based healthcare

Demographic change results in increasing number of patients with more complex, individual disease patterns and higher healthcare costs for our society

70 % of GP patients are multimorbid disease patients

Increasing number of possible medical treatment pathways and existing medical knowledge

6.000 medical publications per day

Pressure on care providers, patients and society

7 minutes on average per consultation in a GP practice

Source: Data KPIs based on CGM research panel of GP practices

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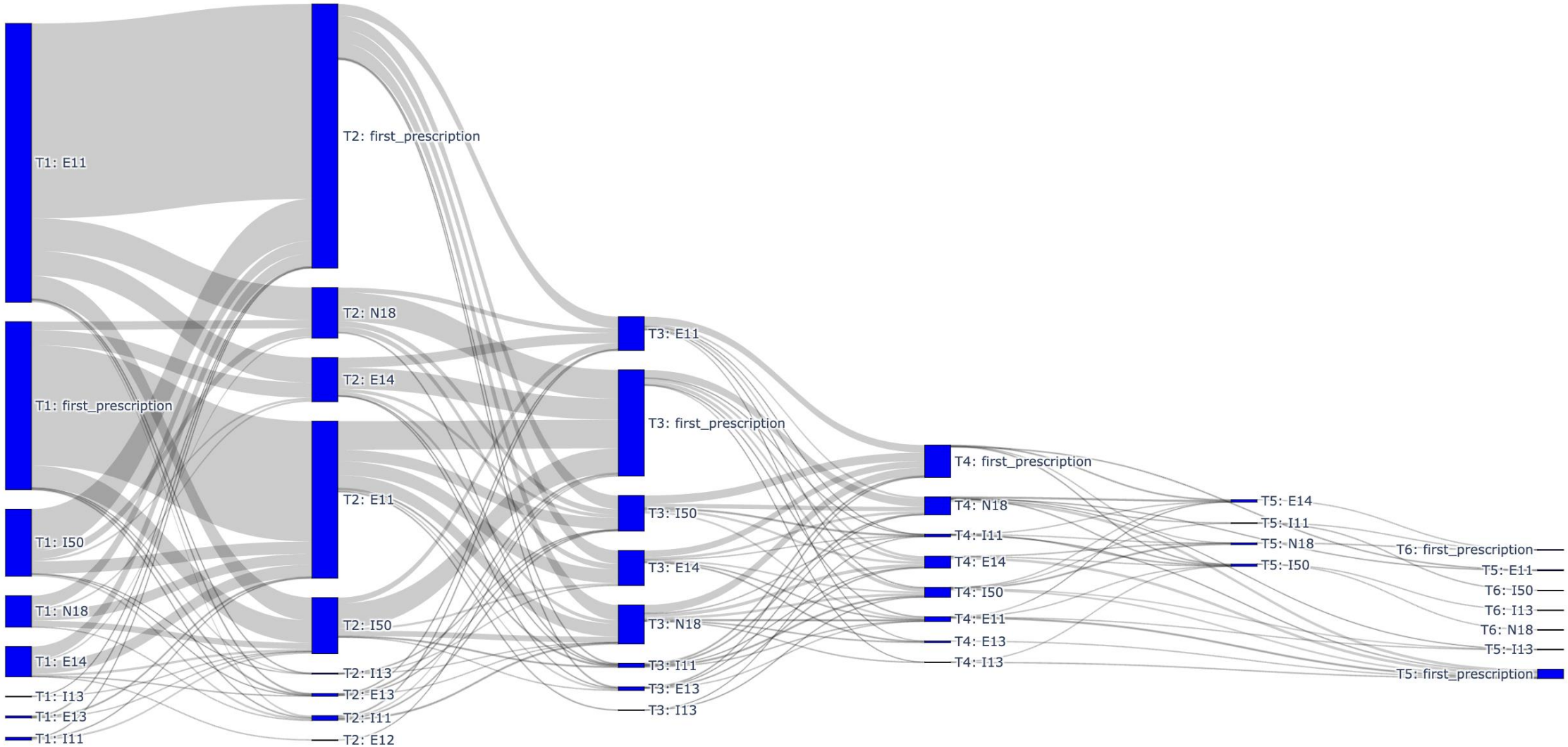
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The evolution of data generation and usage in daily healthcare provision

Clinical research

- Specific data collection follows pre-defined hypothesis to be validated
- Binary outcome validation (e.g., mortality rate, adverse events)
- Costly and time-consuming process
- Study specific data silos
- Prospective data collection with short time scope
- Small cohorts

Guideline-based decision support

- Local processing of pre-defined rule based engines
- Manual software integration by *med wiss* teams
- Medical device regulated software

TODAY

Real-world evidence studies

- Conditional market authorizations
- Retrospective observational studies
- Enable relative comparative, medical and cost effectiveness validation and benchmarking

Precision medicine and evidence-based therapy adaptions

- Personalized medicine requires efficient market authorization concepts for small cohorts
- ML-based therapy adaption recommendations to doctors and patients in health intelligence suites

Real-World Data

- Real-World data access before research hypothesis
- High volume, large cohorts with less selection bias
- Less expensive and less time consuming to enable adaptive studies
- Retrospective data with long time scope

Patient centricity

- Real-World Evidence enriched by PROM and PREM data as patient-to-doctor and patient-to-ecosystem connection
- Access to data cross silos

Today's step, which is our current priority, is required to setup up the cost-and time efficient evidence generation for evidence-based therapy adaptions and precision medicine

1: Source: IQVIA EFPIA Pipeline Innovation Review 2022

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Do we have all the variables for the overarching formula of value based healthcare?

Today

- **One way data flows**
- Medium quality of **data structuring** and **low interoperability** cross silos
- Growing availability of **real-world data in specific silos** (claims data, EHR data, prescription data, registries)
- **GDPR privileged status for statistical and research purposes** of health data processing
- Certified **rule-based data interaction** based on guidelines (Medical device regulation)
- Required **data anonymization** for extraction based on deletion, aggregation, generalisation. Modern approaches like synthetic data requires clear defined hypothesis beforehand

Anonymization by aggregation w/ broken patient journeys

$$\frac{Health\ Outcomes}{Costs} = Value$$

Future

- **Bidirectional data flows in the interoperable ecosystem**
- **PROM-and PREM** feedback loops to care providers and ecosystem
- **Master Patient Index** to follow patient cross data silos in an interoperable healthcare system
- **Supervised and unsupervised machine learning** in treatment pathways
- **Federated architectures** to enable use-case agnostic data processing and **synthetic data**
- Privileged status for health data processing for **treatment support** in a connected world

Individualization along the patient journey

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