Optum Labs: A Center for Collaborative Healthcare Research and Innovation

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What's Missing in Healthcare Research and Innovation?

Collaboration across the healthcare ecosystem

- Providers, academics, payers, government, and life sciences organizations all look at the same problems but have different ways of approaching them.
- Collaborations between more than two of these groups are rare.
- Major advances in patient care requires coordination of efforts.

Availability of high quality, high volume data sources

- Commercially available administrative claims data sources are not available to most provider and academic organizations.
- High quality, national EHR data are almost non-existent, or very costly.
- Linked claims/EHR data are not available.

Opportunity to prototype and test new findings

- Many organizations don't have readily available means to test new tools, care pathways, etc. outside of a small group of providers.
- Partners to prototype and test your new ideas, who have the discipline and methodology to follow through on innovation, and provide definitive feedback, are rare.

Vehicles for widespread adoption of new knowledge

- Even after successful prototyping, new knowledge may not be used beyond a small group.
- Translating new knowledge into clinical practice or new product development is hard and requires significant investments of time an resources.

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Introducing Optum Labs

An open, collaborative research and innovation center for the health care industry with a singular goal: improving patient care.

Developed initially as a partnership between Mayo Clinic and Optum.

Attracting partners and researchers throughout the healthcare ecosystem.

It's a place for:

- Research
- Clinical Translation
- Innovation

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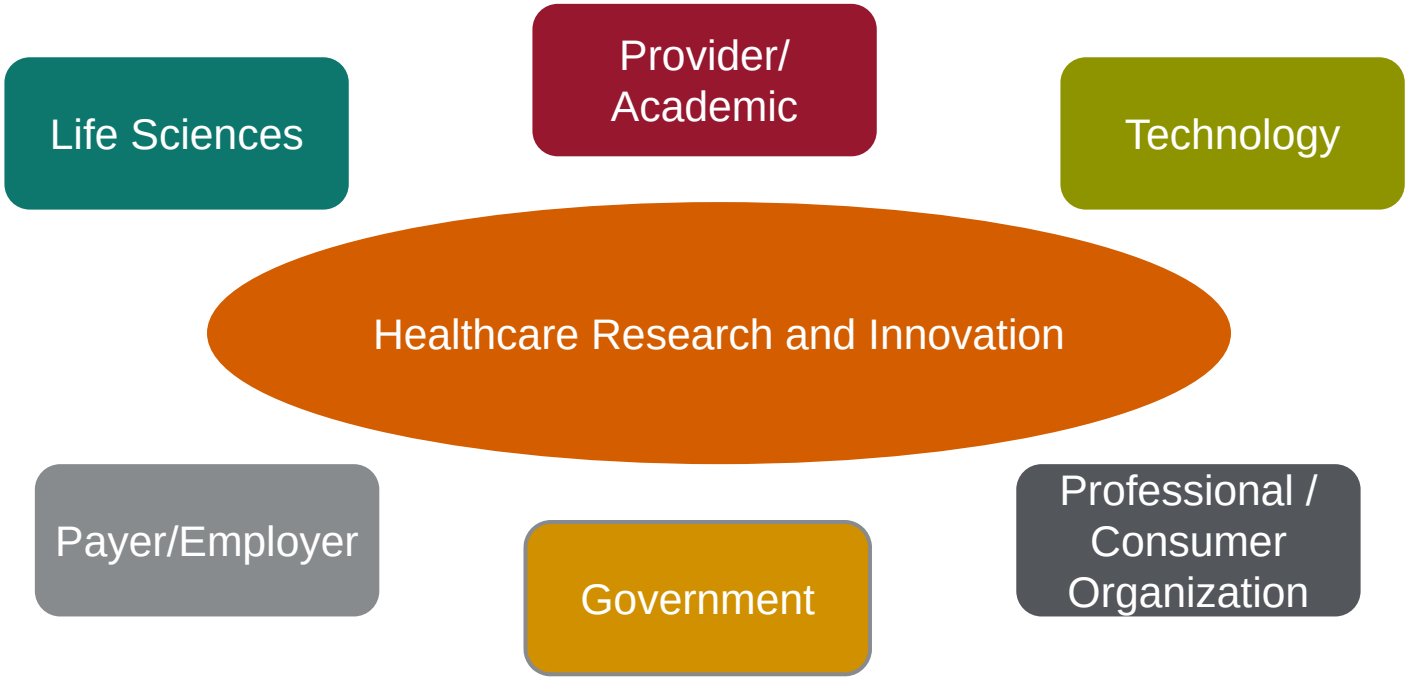
Optum Labs: A Seat at the Table

- The “Large Hadron Collider” of healthcare – a national resource.
- All projects must be:
  - primarily to improve patient care
  - to improve productivity of the delivery of healthcare
  - transparent and intended for publication/policy
  - collaborative, where possible



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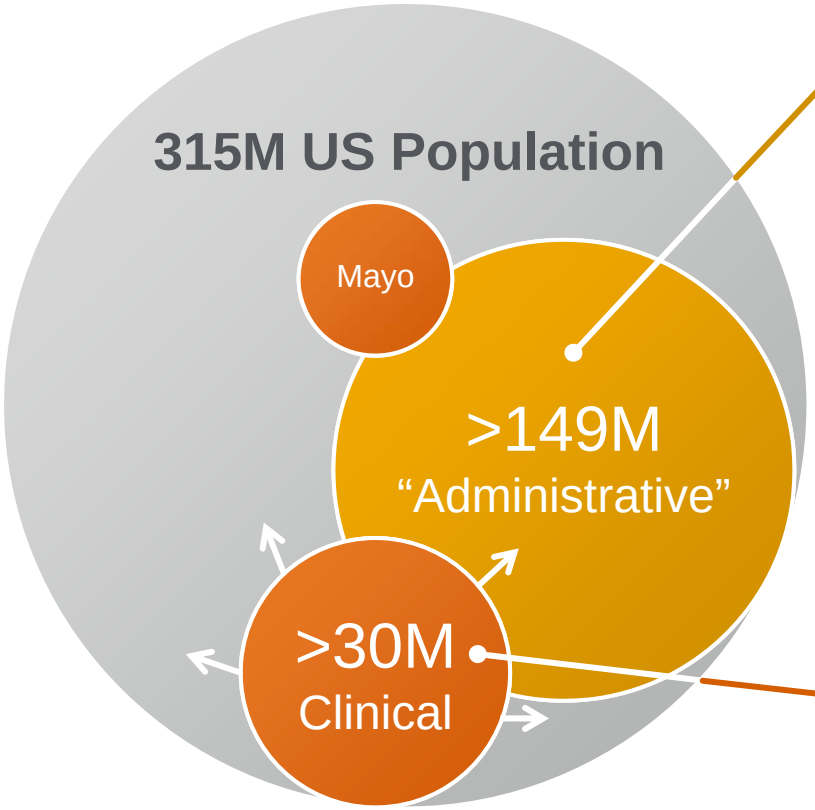
Comparative Effectiveness Requires Data Sufficiency



- Data is cleansed, tested and refreshed monthly

2,000+ Data Fields:

- Medical Claims
- Pharmacy Claims
- Lab Claims and Results

Tests, Treatments

- Health Risk Assessments
- Standardized Costs of Care
- Race
- Income
- Education Level
- Language Preference
- Household
- Geography
- Mortality

Expanded Insights with Deeper Clinical Context

500+ Additional Data Fields:

- Encounters
- Vitals
- Labs
- Medication Orders
- Procedures
- Admissions, Discharges and Transfers
- Patient Appointments
- PHQ-9
- Patient Provided Information

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EHR/Claims Data Linkages Can Help Fill Information Gaps

Relevant Information	Claims Alone	EHR Alone	Linked Data
Clinical data and severity measures	—	+	+
Retail/specialty drugs across treatment settings	+	—	+
Leakage	+	—	+
Patient reported outcomes	—	—	—
Selection biases due to payer type	—	+	+
Longitudinality of patient follow-up	—	+	+
Self pay data	—	+	+
Coding biases	—	+	+
Unstructured data	—	+	+
Continuous coverage	—	+	+

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Natural Language Processing (NLP) extracts valuable information into structured data

Types of Notes Analyzed

Outpatient Office Visits

Consultation Reports

Operative (Procedure) Reports

Admission Notes (often with H&P)

Discharge Summaries

Nursing notes

Emergency room notes

Pathology notes

Radiology notes

Cardiology Notes

Types of Extracted Data

Numeric fields
- BP, HbA1c, height, weight, ejection fraction, …

Observations
- HEENT: Negative. Neck supple. Chest clear. …

Medications including OTC
- Including strength, route, frequency, form

Facts
- Smoking status, family history, cancer stage

Signs and Symptoms
- Nausea, Cough, Fatigue, Diarrhea, Dizziness, …

Examples of Extracted Data Elements

Blood Pressure
Weight/Height
Temperature
Pulse/Respiratory Rate
Pain Level
BMI
LVEF
EDSS
FEV1, FVC, TLC
HER2/ER/PR
Bone Density
Glasgow Coma Scale
PSA – total & free
Diabetes Family HX
Smoking Status
Reason for switch of medications

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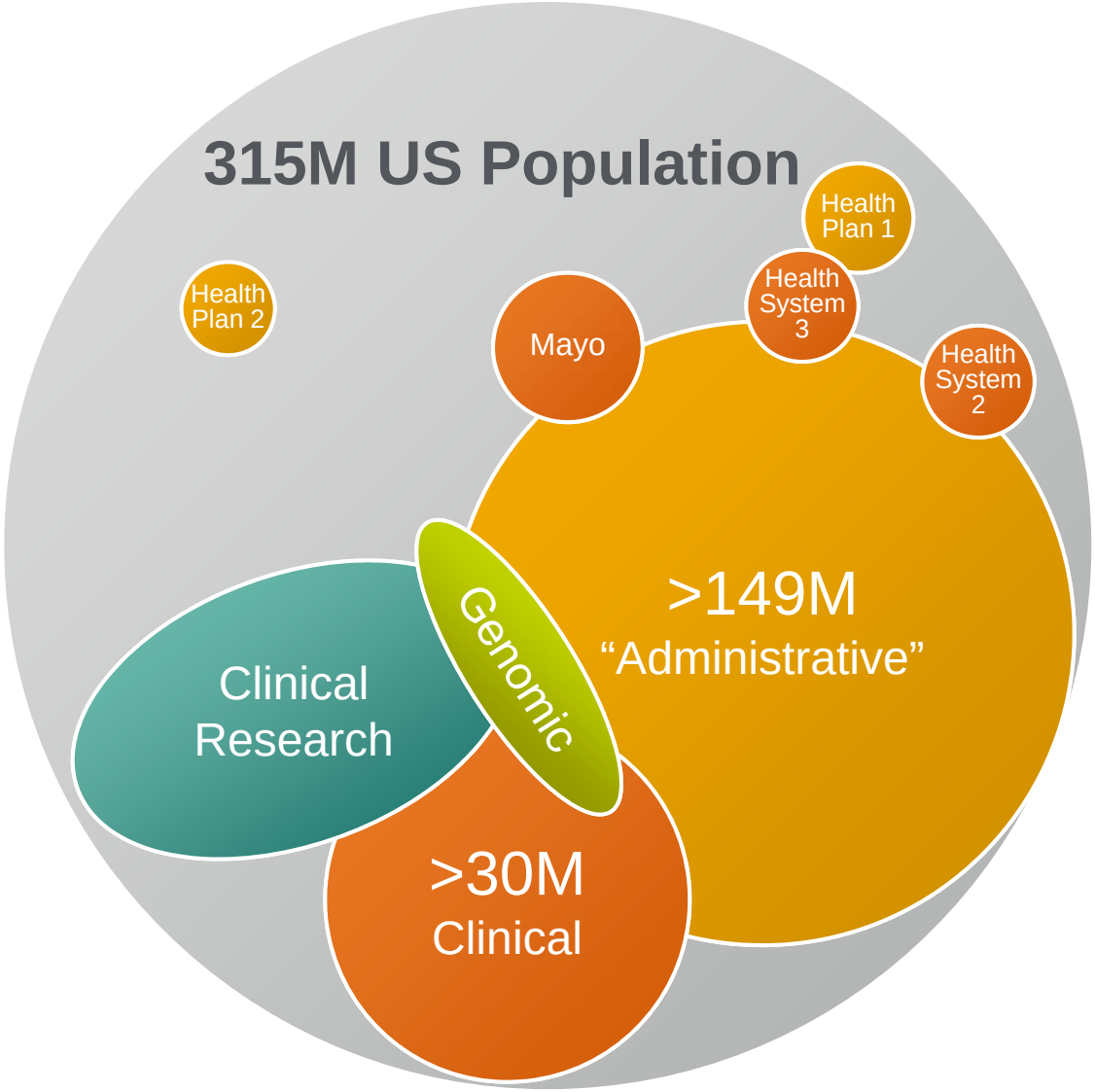
Optum Labs Growth Through Partnership



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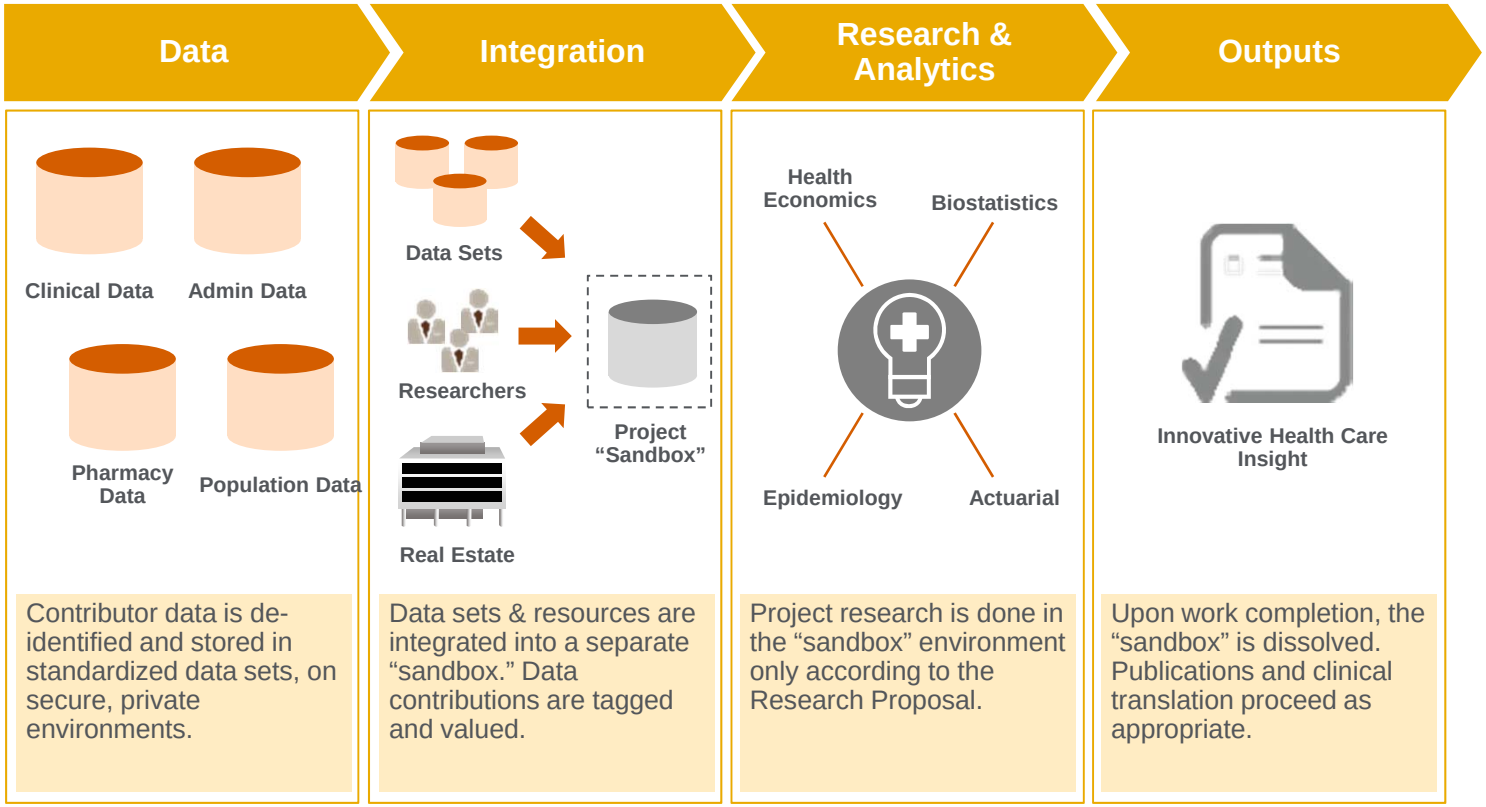
The Optum Labs Research Process



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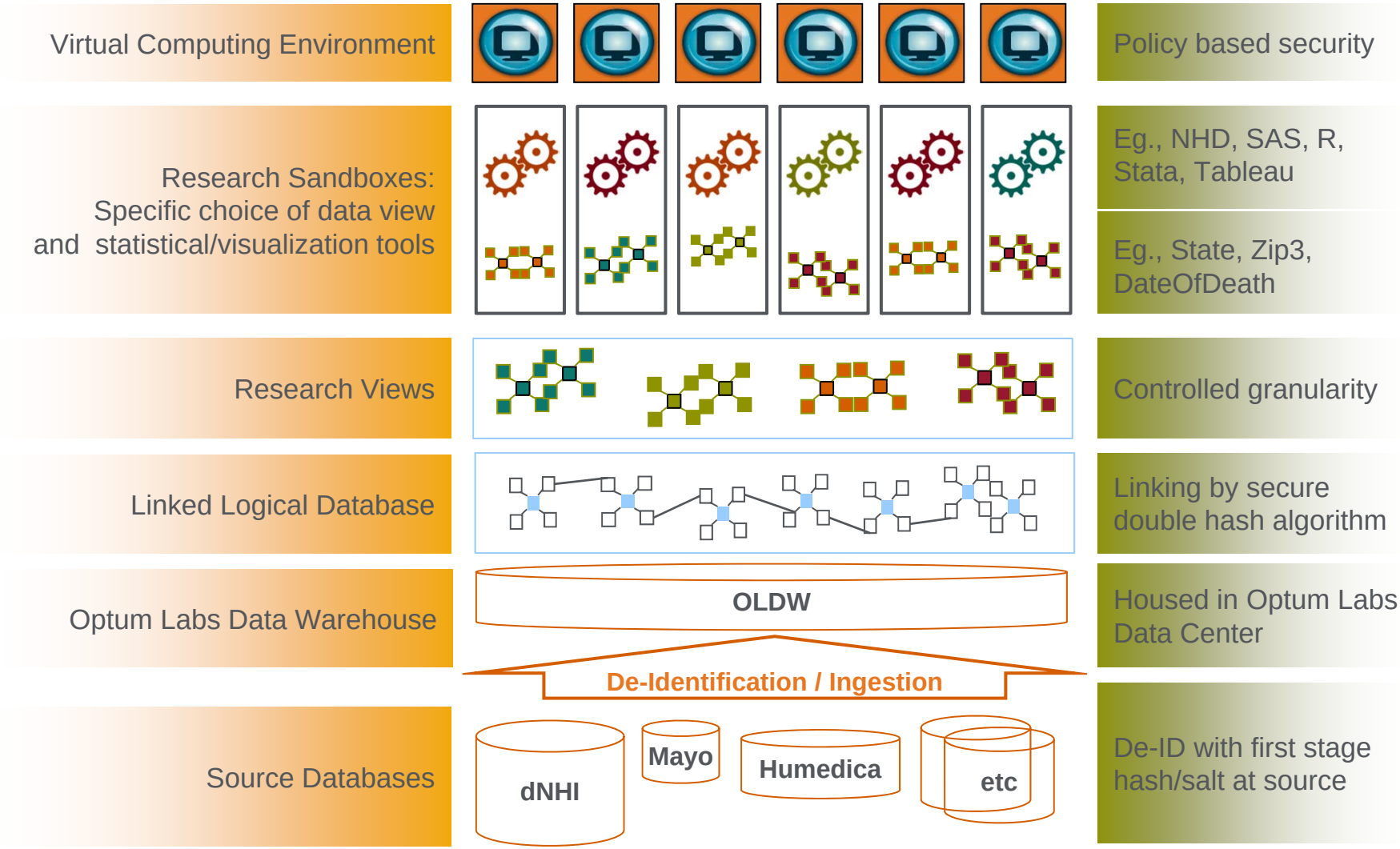
Data and Access Architecture



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Optum Labs Research Focus: Comparative Effectiveness

Comparative Effectiveness Research (CER) is the generation and synthesis of **evidence** that **compares** the benefits and harms of **alternative methods** to **prevent, diagnose, treat, and monitor a clinical condition or to improve the delivery of care**. The purpose of CER is to assist consumers, clinicians, purchasers, and policy makers to make **informed decisions** that will improve health care at both the individual and population levels.

– *Institute of Medicine. Initial National Priorities for Comparative Effectiveness Research. June 2009.*

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Dimensions of CER

Behavioral and Policy	• Factors that influence the behaviors of patients, physicians, and other providers. • Basis for “policy development” • Disentanglement of patient and provider behaviors.
Variations in Care / Heterogeneity of Treatment Response	• 1/3 of health care spending fails to generate clinical benefit for patients • Geographic, provider, care setting, patient factors in response to care interventions • Ranks alternative treatment by effectiveness and efficiency
Methodological	• Reliability of findings from observational research is key to improving the translation of research to clinical practice • Linkage of EHR and claims data also links clinical outcomes with health care utilization measures • Identifying novel statistical methodologies for linking EHR and claims observational data to maximize their value

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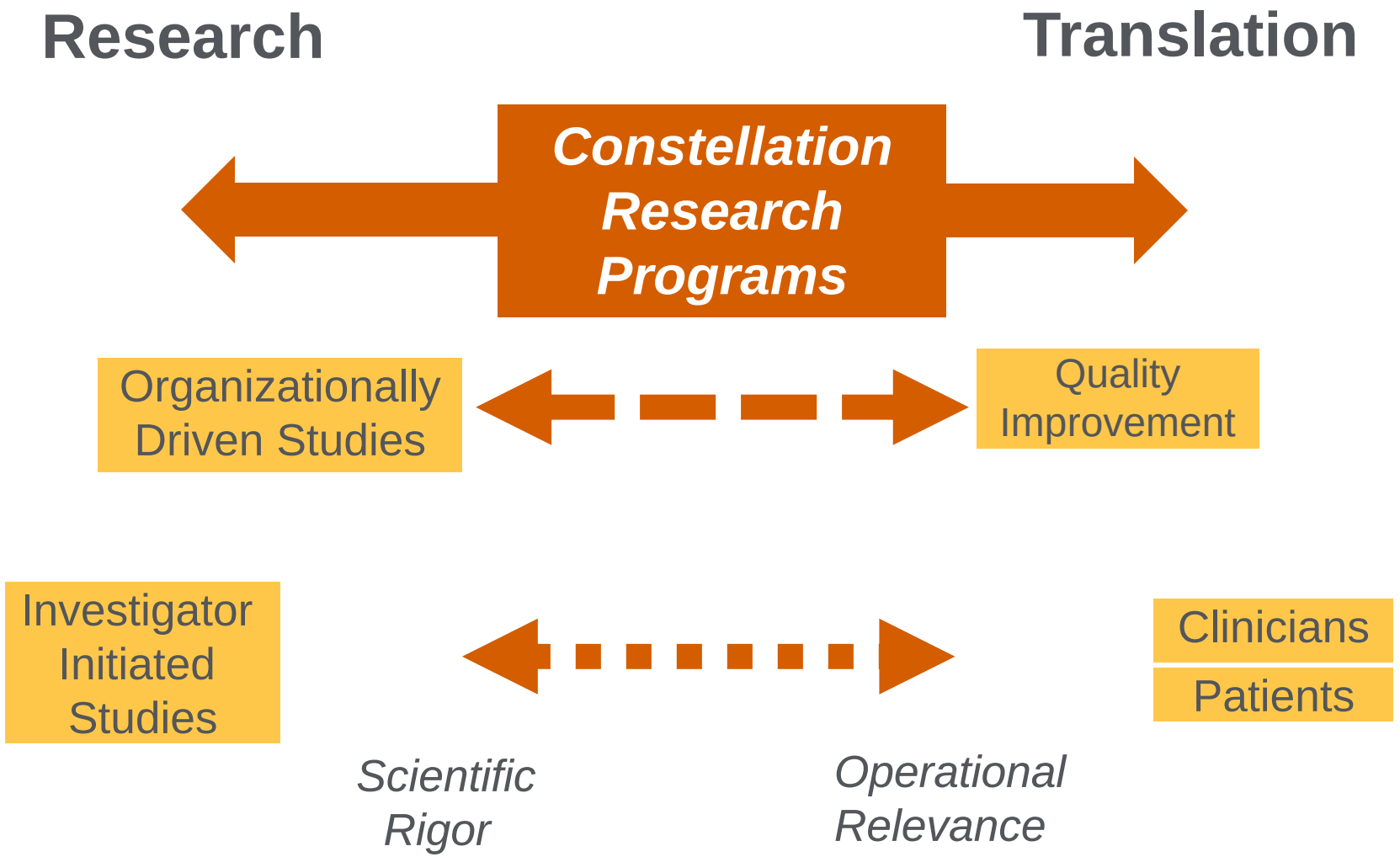
Knowledge Generation: Constellation Research Programs



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Questions and Answers