

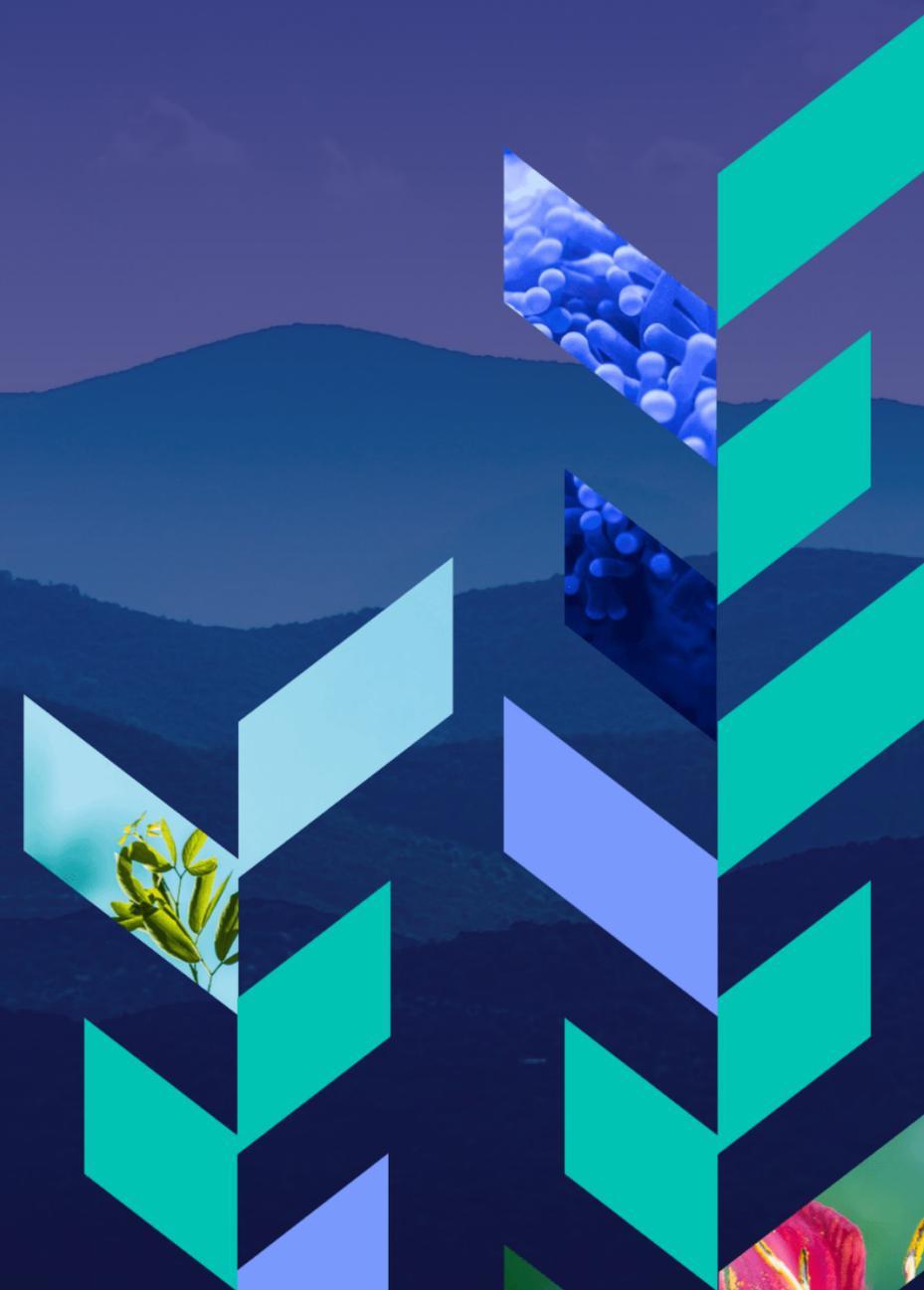


TRUVETA

Saving Lives with Data

Enabling innovative research
with complete EHR data -
including notes, images and
mother-child pairs

November 18, 2024





Ryan Ahern, MD, MPH

Chief Medical Officer and co-founder
Truveta

Providence

ADVOCATE HEALTH

Trinity Health

Tenet Health

Northwell Health

AdventHealth

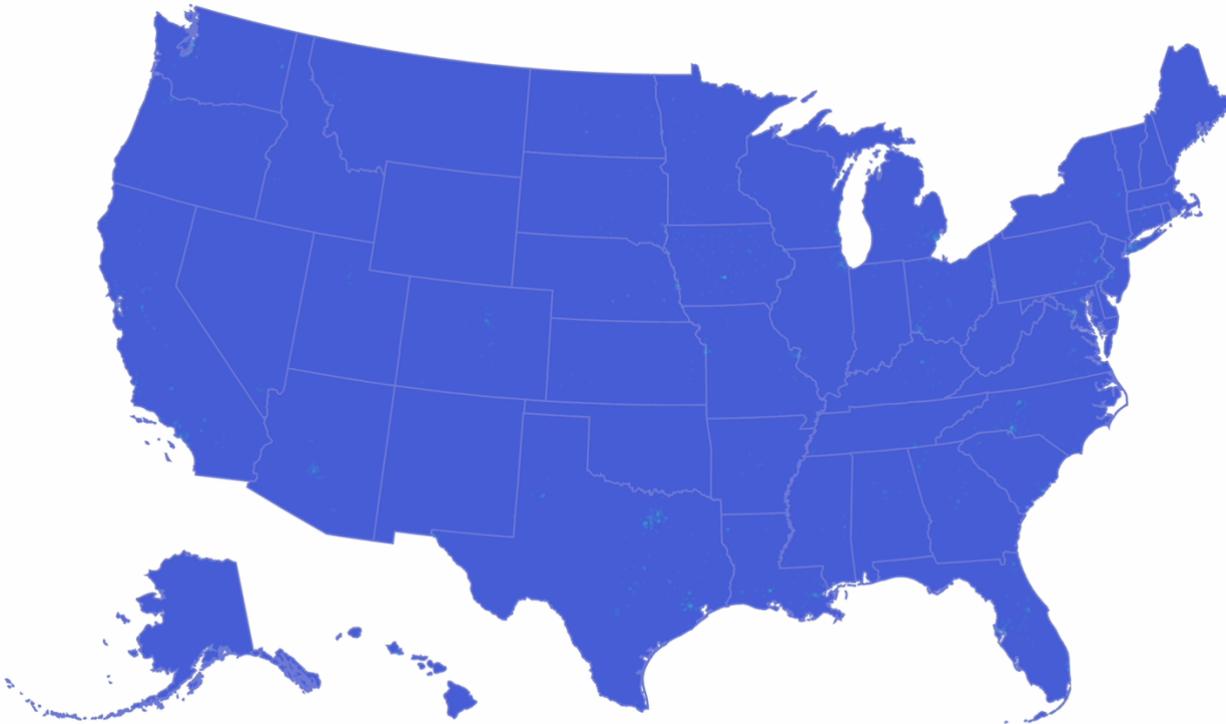
Baptist Health

Baylor Scott & White Health

BON SECOURS MERCY HEALTH

CommonSpirit

HAWAII PACIFIC HEALTH



HealthPartners

HENRY FORD HEALTH

HONORHEALTH

Inova

Lehigh Valley Health Network

MEMORIAL HERMANN

MedStar Health

MetroHealth

NOVANT HEALTH

Ochsner Health

Premier Health

Saint Luke's

SANFORD HEALTH

Sentara Health

Texas Health Resources

TriHealth

UnityPoint Health

Virtua Health

WELLSPAN HEALTH

Our healthcare members

30 of the largest health systems in the US

18% of care across the US

Our data today



100M+

Patients and growing

5B+

Clinical notes

85M+

Imaging studies

1M+

Mother-child pairs

8+

Years longitudinal patient history

72M

Patients with SDOH attributes

188K+

Unique devices

Semi-structured data

- Diagnosis (SNOMED, ICD)
- Procedure (CPT, HCPCS)
- Medication (RXNORM, NDC)
- Labs (LOINC, UCUM)
- Immunizations (CVX)
- Implanted/explanted device (UDI)
- Inpatient/outpatient care settings
- Pharmacy
- Mother-child pairs

Unstructured data

- Clinical notes
- Images

Linked data

- SDOH
- Mortality
- Claims
- Industry leading tokens

Our unique partnership

- **Consistent agreements**

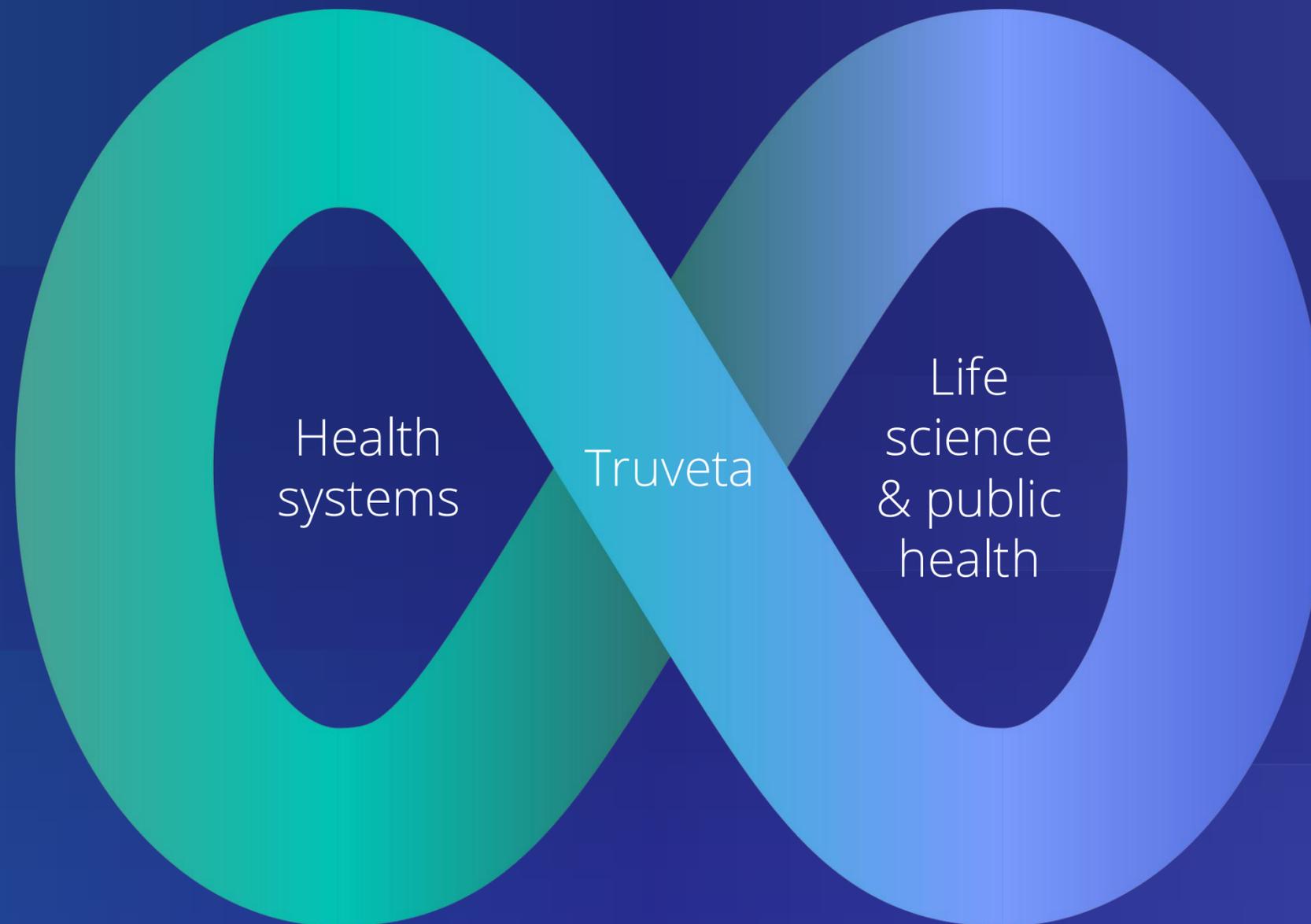
Standardized agreements across all 30 health systems

- **Delivery of complete EHR data and source documentation**

Ensuring provenance and lineage of data for regulator filings

- **Bidirectional feedback on data**

Unique business model with incentives on data quality



Safety

HEOR

Clinical trials

R&D

Market access

Billions of data points normalized

Trained on Truveta Data with clinical experts in the loop

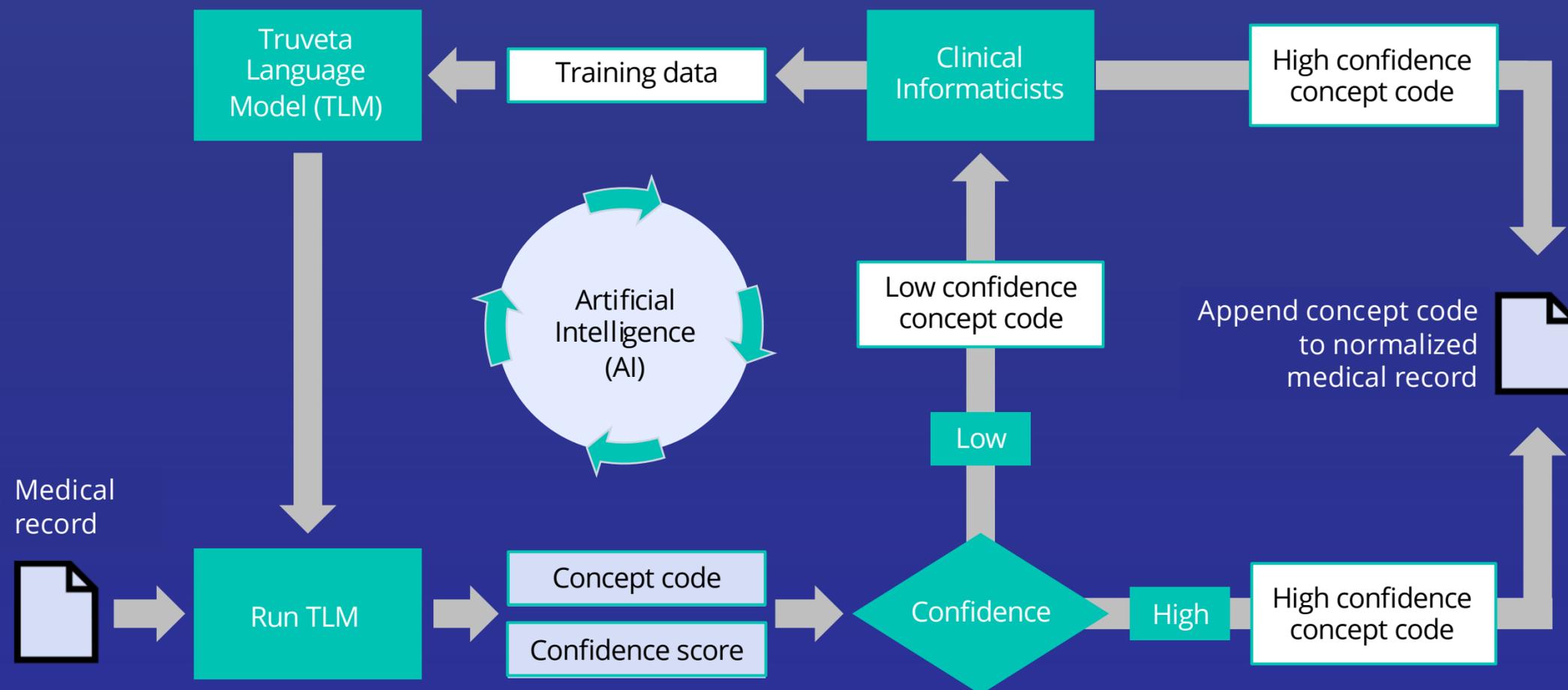
More than 100M medical records
representative of the diversity of the US

Greater than 92% accuracy^{1,2}

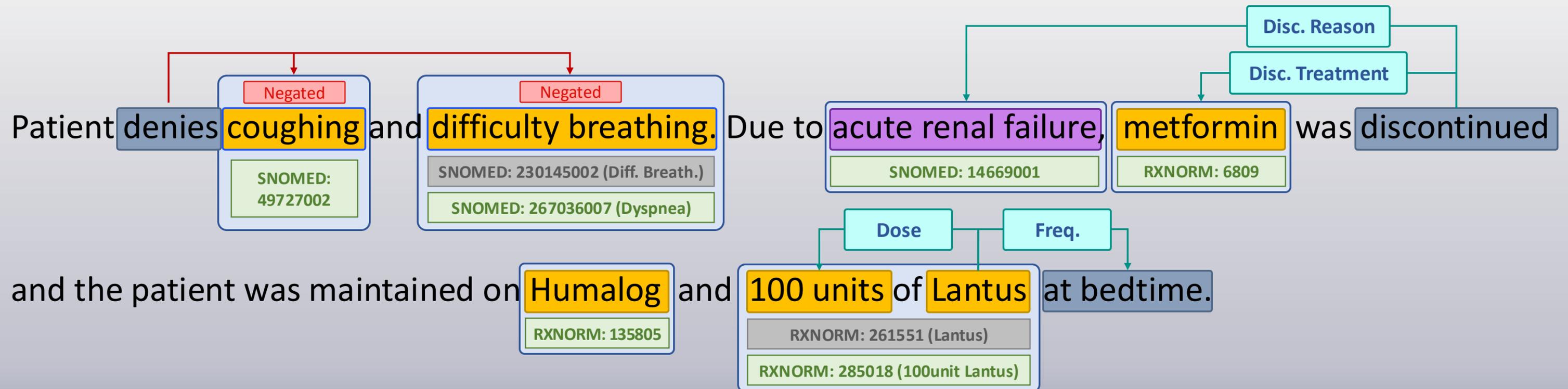
Across diagnoses, medications, clinical
observations, lab results, etc.

Transparent & accountable

Precision and recall data available for
any medical term, quality validation



Concepts with relationships are extracted for accurate context by TLM



Data from 5B+ clinical notes available for research

Heart Failure - NYHA

Patient Active Problem List Diagnosis • Appendicitis, acute • DM (diabetes mellitus) • Facial cellulitis • Hyponatremia • Essential hypertension • Dilated cardiomyopathy • Pulmonary embolism without acute cor pulmonale • Acute deep vein thrombosis (DVT) of popliteal vein • LBBB (left bundle branch block) • Chronic combined systolic and diastolic CHF, NYHA class 2 and ACA/AHA stage C • Lightheadedness • Suspected sleep apnea • Congestive heart failure • Snoring

History of Present Illness: Information is gathered from patient ... with a past medical history of hypertension, hyperlipidemia, cardiomyopathy, history of left lower extremity DVT, diabetes, history of left bundle branch block, pulmonary embolism, combined systolic and diastolic heart failure with EF of 17% at diagnosis

ECHO Complete Result Date:

1. Mildly dilated left ventricle with normal thickness, LVEDD 5.9 cm global hypokinesis with mildly reduced calculated LVEF 42% which on visual comparison is similar to the images
2. The RV is not seen well but the size appears normal with normal lateral annular motion and TAPSE suggestive of normal RV SF
3. Normal biatrial sizes. Intracardiac lead seen intermittently in the right atrium
4. The mitral and aortic valves are seen adequately without echodensities suggestive of vegetation. The tricuspid valve is not seen completely but there are no large echodensities visualized. There is trace tricuspid and mitral valve regurgitations
5. The aortic root and feels normal
6. There is a trace pericardial effusion
7. Normal CVP, normal left-sided filling pressure
8. Sinus 70s ECHO Transesophageal (TEE)

Patient Id	Note Date	Clinical Measure	Value
PT1234	2023-01-22	NYHA Class	2
....
....

Patient Id	Note Date	Clinical Measure	Value
PT1234	2023-01-22	LVEF	42%
....
....

Examples of concepts extracted from notes:

- Ejection fraction
- Seizure frequency
- Cancer stage
- Heart failure stage and symptoms
- Cardiac catheterization measures
- Metabolic disease progression

Multidisciplinary clinical experts in the loop

➤ **Clinical informaticists team:**

Physicians and scientists with expertise in R&D, clinical research, health system operations, and healthcare policy

➤ **Medical terminologists team:**

Dozens of experts with decades of experience in clinical terminology & standards

Clinical Informaticists

Oncology

General surgery

Clinical pathology

Internal medicine

Public health

Pediatrics

Clinical informatics

Medical Terminologists

Oncology

Internal medicine

Genetics

Pharmacy

Dentistry

Clinical research

Medical scribe

Deep EHR expertise

2.7M echo reports unlocked by AI

Truveta Data by the numbers

2.7M

total echocardiograms normalized

56.6M

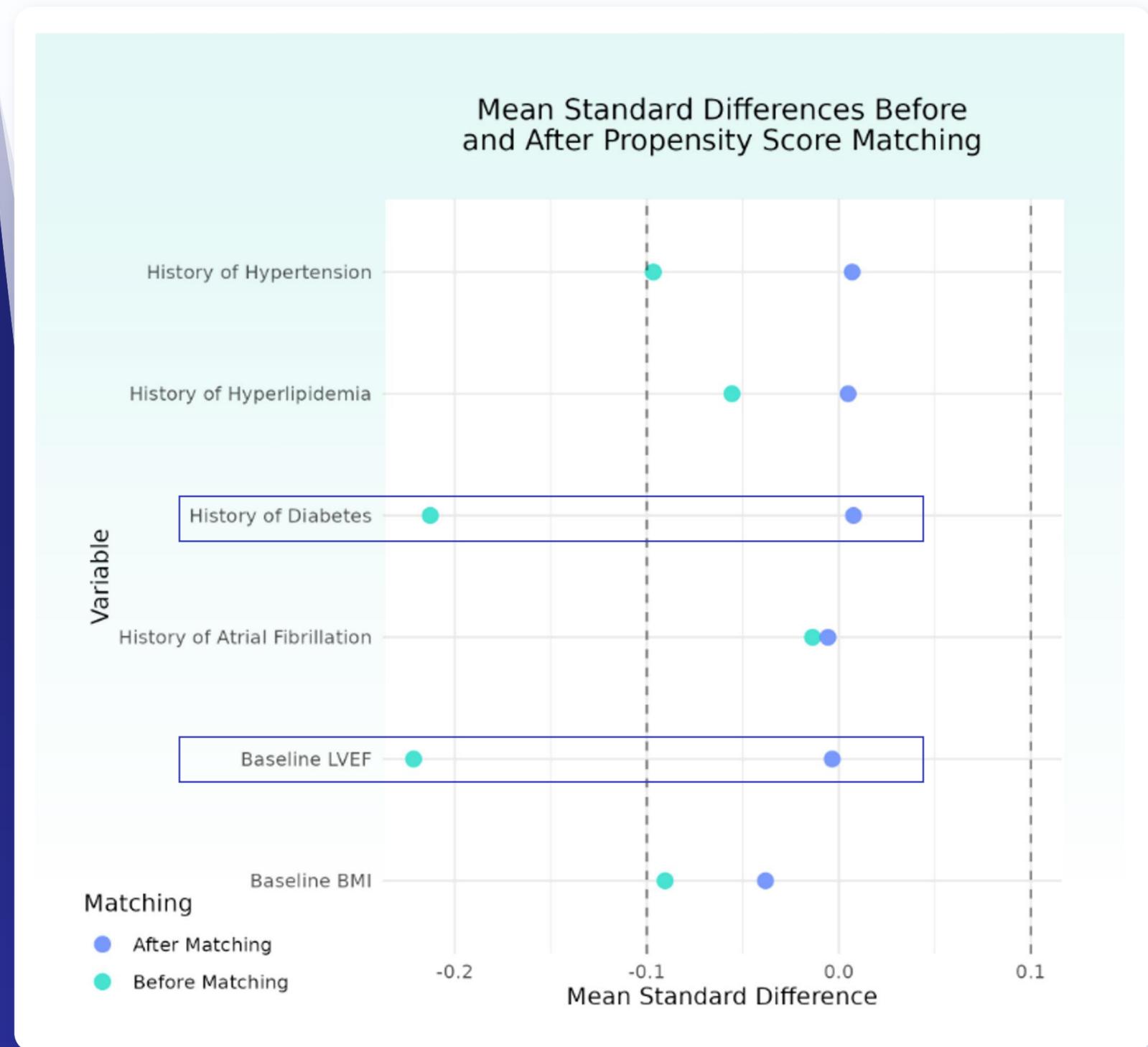
total clinical observations extracted from notes

Frequency of clinical measures within echo reports

Clinical measure	Measure frequency in normalized echos	Patients with at least one instance	Patients with at least three instances
Serial ejection fraction	2.6M	858K	323K
Aortic valve peak systolic flow	735K	403K	69K
Aortic valve orifice area	612K	240K	63K
Aortic valve systolic pressure gradient	1.2M	459K	137K
Aortic diameter	1.3M	534K	151K
Tricuspid annular plane systolic excursion (TAPSE)	451K	271K	32K
PA pressure	590K	265K	77K

Enabling comparative effectiveness research

- **Challenge:** No head-to-head comparisons of popular SGLT2s (dapagliflozin and empagliflozin) on mortality rates; data on potential confounding factors hard to access
- **Results:** Enabled unbiased comparison of two drugs, not feasible with other data; no significant difference in mortality rates



Research conducted with Truveta Data

JACC: Heart Failure

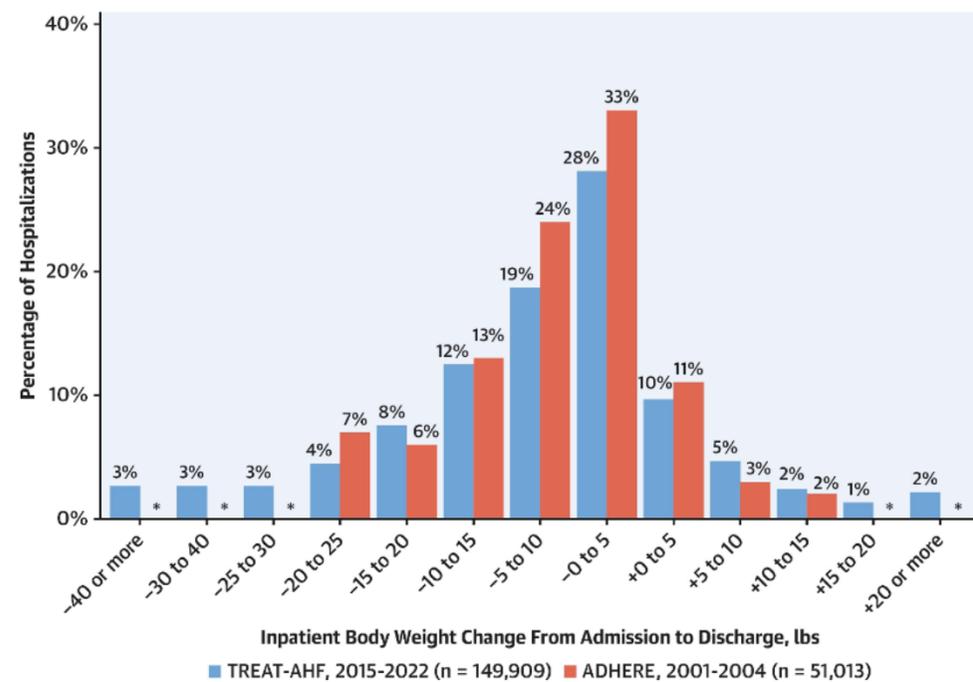
JACC: Heart Failure

JACC Journals | JACC: Heart Failure | Archives | Vol. 12 No. 8

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Contemporary Decongestion Strategies in Patients Hospitalized for Heart Failure: A National Community-Based Cohort Study [GET ACCESS](#)

CENTRAL ILLUSTRATION: Distribution of Inpatient Body Weight Change



Zheng J, et al. J Am Coll Cardiol HF. 2024;12(8):1381-1392.

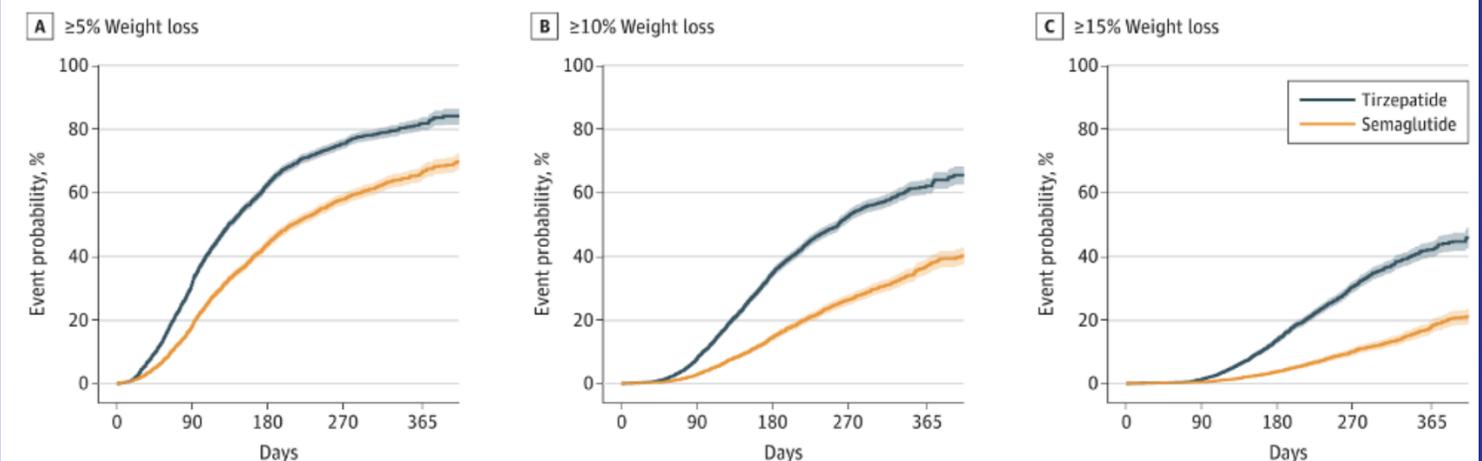
JAMA: Semaglutide vs Tirzepatide

Research

JAMA Internal Medicine | Original Investigation

Semaglutide vs Tirzepatide for Weight Loss in Adults With Overweight or Obesity

Figure 2. Event Probabilities for 5% or Greater, 10% or Greater, and 15% or Greater Weight Reduction Among Propensity-Score Matched Patients on Treatment



The y-axis represents the event probability (1-survival probability [eg, probability of being event-free]).

Explore additional research

 **TRUVETA** Complete study

Access to GLP-1 RA anti-obesity medications for Medicare-aged adults



 **TRUVETA** Complete study

Humira and approved biosimilars

Exploring medication switching trends from Humira to approved biosimilars



 **TRUVETA** Complete study

The Adderall shortage

Exploring rates of prescription fills over time



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Q&A





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