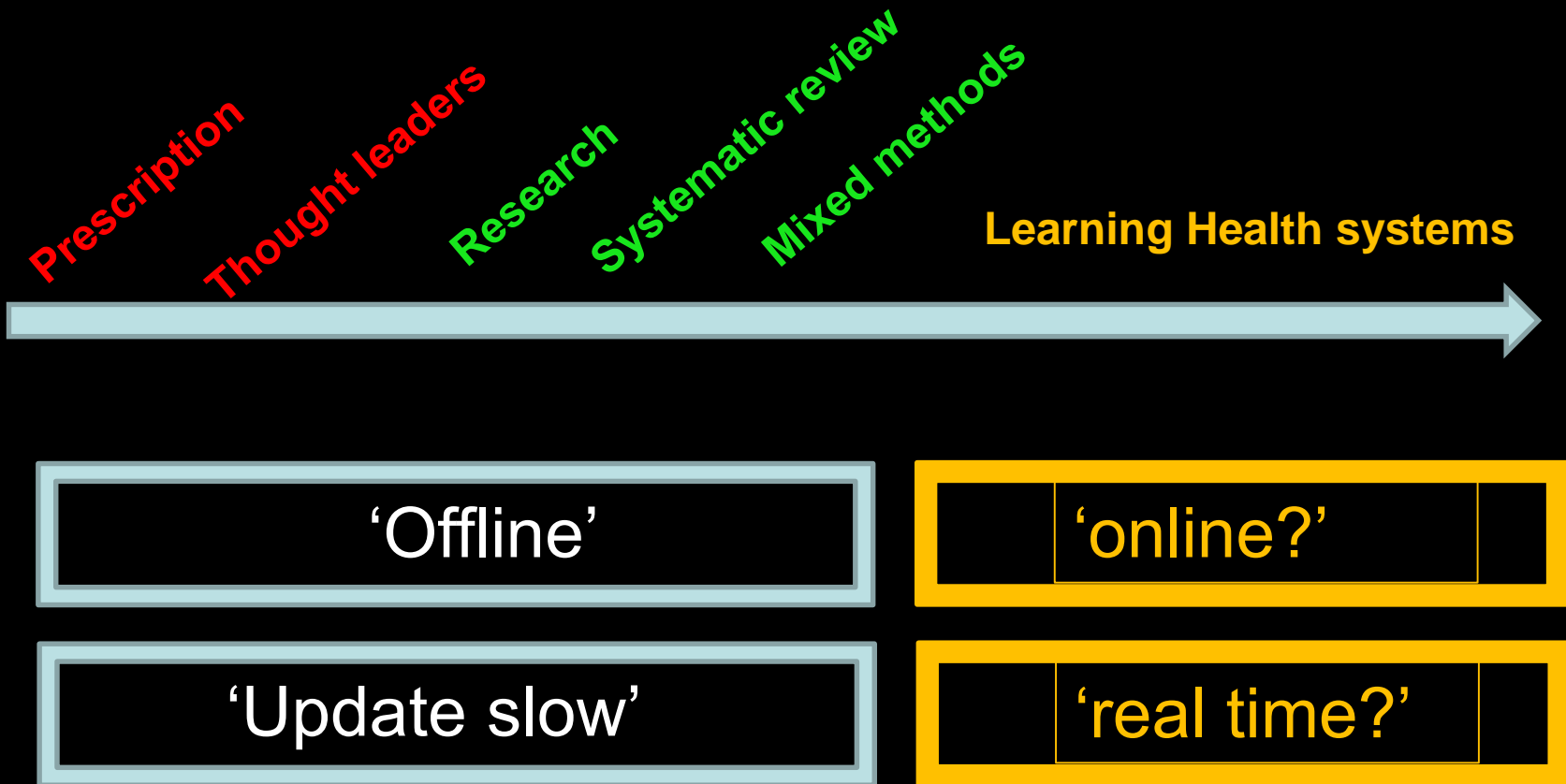# Artificial intelligence to improve patient outcomes and evidence translation
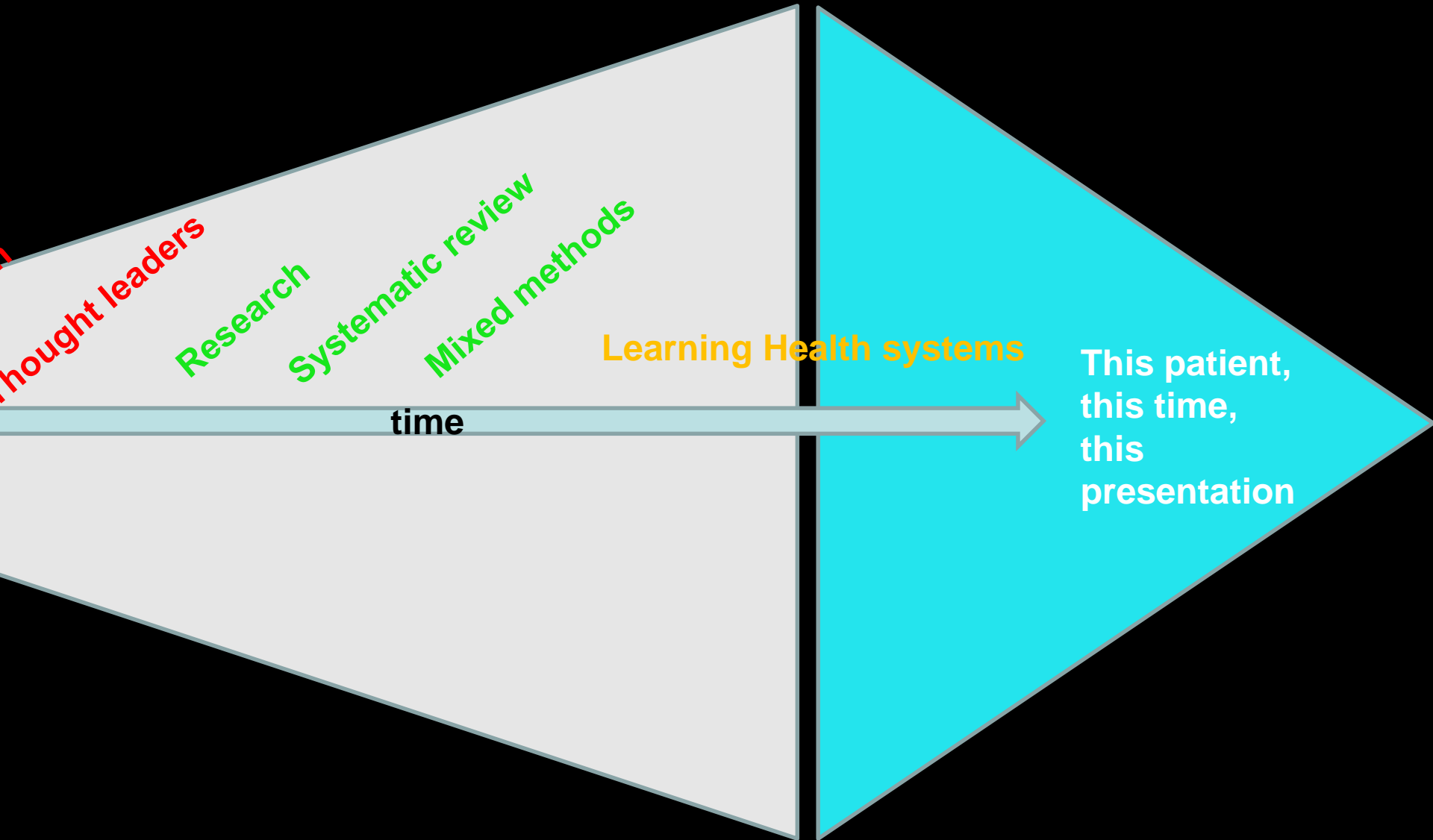
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Timeline of evidence translation methods

…and apply that evidence?

Thought leaders

Research

Systematic review

Mixed methods

Learning Health systems

This patient, this time, this presentation

time

Is my clinical reasoning, reading and experience not enough?

no

Evidence is crucially dependent on valid outcome measures

Learning health systems

a learning health system ... ecosystem in which all stakeholders can contribute, share, and analyze ... and where continuous learning ... courage the creation of new knowledge that can be used by a variety of information systems.

VITAL DIRECTIONS FROM ... ACADEMY OF MEDICINE

Data Access, Curation, and Use
for a ...uously Learning Health System

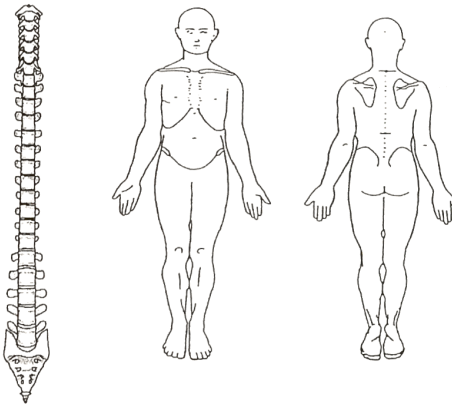BIG data

PROM_READS
PROtotype realisation of the Musculoskeletal Recovery Expert: Artificial intelligence for Decision Support

Name………………………………………………………………

DOB/NHS no.:……………………………………………………

Observation:

ROM: Resisted:

Neuro: Special Tests:
M:

D:

R:
AND:

Aggs: Eases:

Diagnosis: Plan:

VAS: 0_____ 10

24 hours:

Outcome:
Discharge ☐ 1:1 Urgent Treatment ☐ Back class & W/L ☐ Waiting list ☐

Signature:……………………… Name:…………………………………

Date:…………………
Ex group info sheet given? Yes ☐ N/A ☐

CRS or EMIS (EHR)   Upl…

Pati…

http://www.traumamodels.com
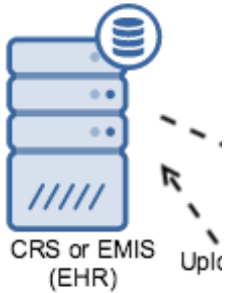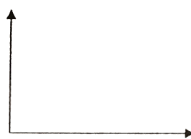
Pain

Patient experience

1: **Likely outcome in response to a given decision**
eg: exercise
Pain management
Injection
Manipulation
Arthroscopy

O Classification of presentation a

2: latest **evidence**
Eg papers, curated resources, infographics

3: automatic PROMs, and **therefore the model learns**

Symptoms

Bias analysis

Trained by outcomes (200)

Expert reasoning elicitation

What would you want from an AI informed learning health system?

- *Decision support*
- *Automated PROMs*
- *For my experience to drive improvements in knowledge*
- *To participate in 'clinical trials' without a big effort*
- *Pop-up evidence that updates in (almost) real time*
- *Seamless electronic record capture*
- *Robust data governance*
- *Integration of my notes with the patient's notes*
- *Integration of my notes with sensor data*
- *Integration of my 'data' with other health care practitioner's 'notes'*