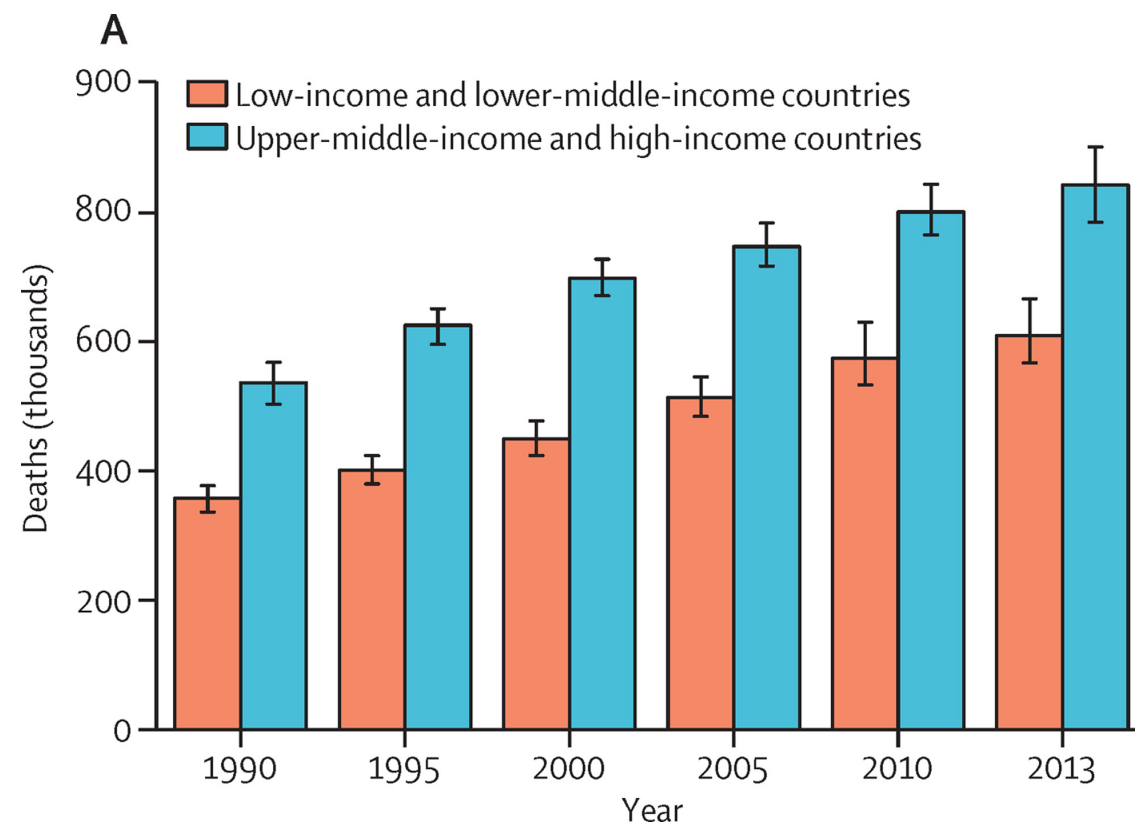
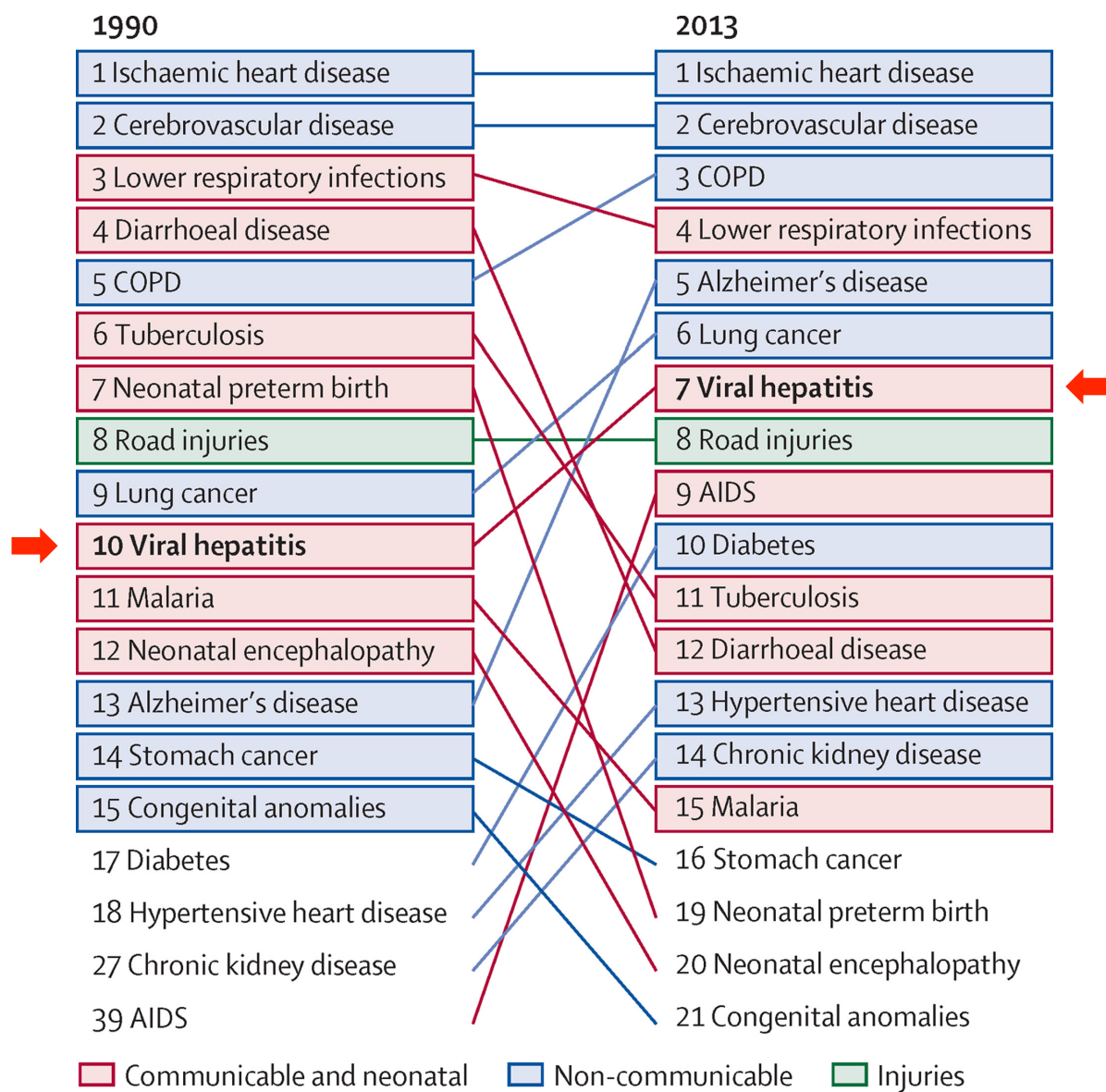


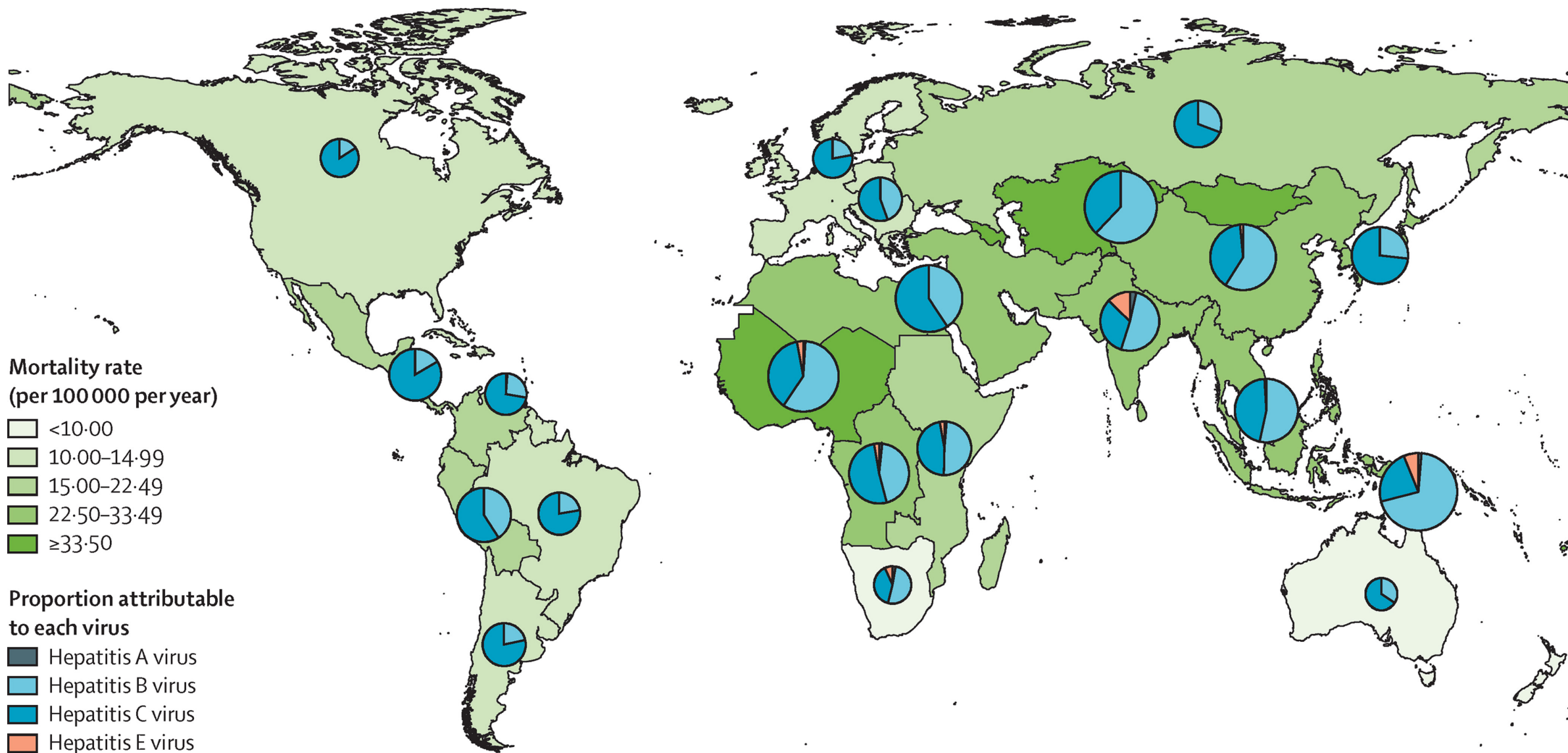
Using Electronic Patient Record Data to Investigate Viral Hepatitis

David Smith, University of Oxford

Viral Hepatitis

- Inflammation of the Liver caused by one or more unrelated virus hepatitis A,B,C,D and E.
- Chronic Infection with Hepatitis B or C Virus can lead to Liver Cirrhosis and Hepatocellular Carcinoma.
- Both are most commonly transmitted via contact with infected blood.
- Hepatitis D virus can only replicate if co-infected with Hepatitis B.
- Hepatitis E can causes an acute mild hepatitis and is most commonly spread via contaminated food.





NIHR Health Informatics Collaborative



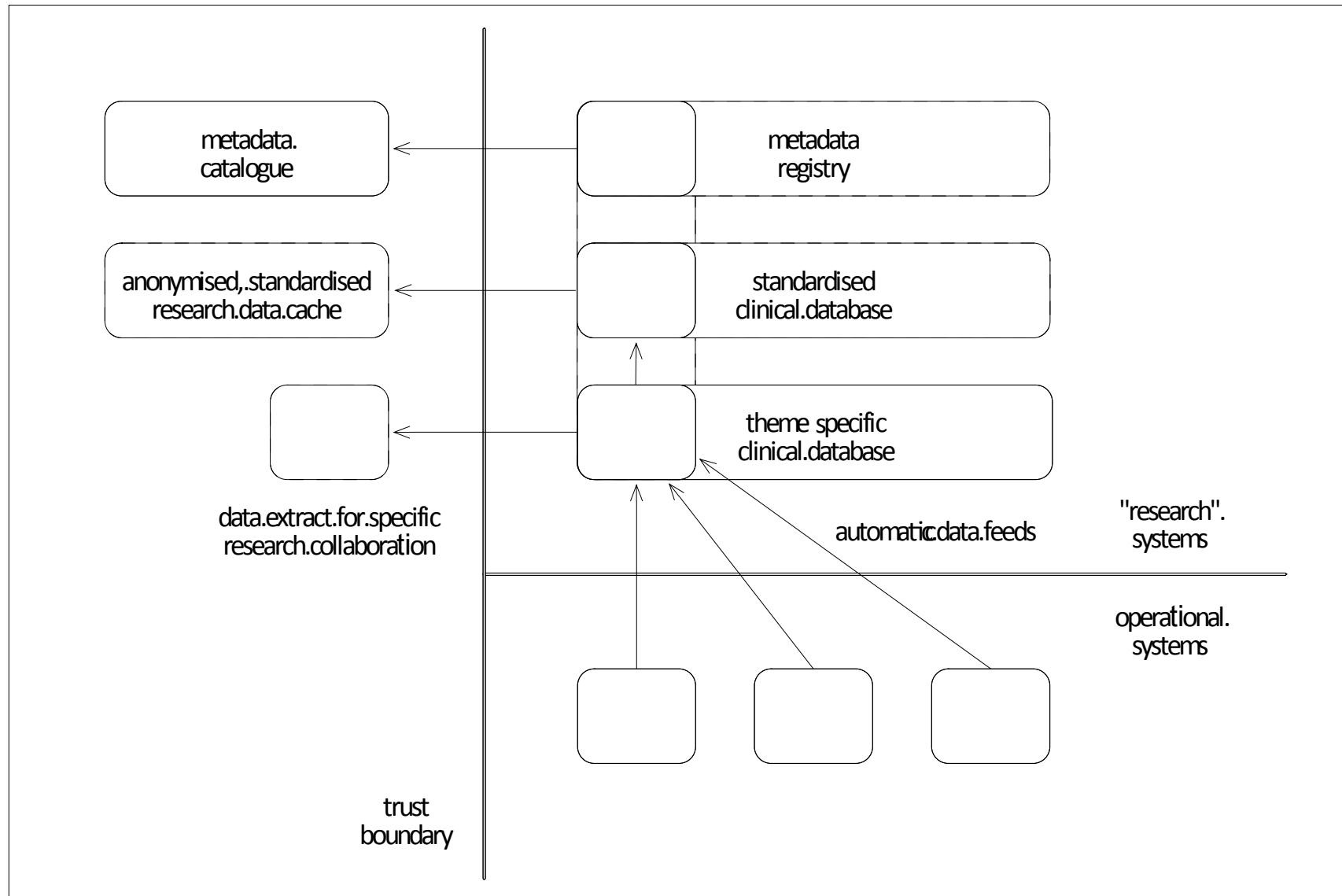
NIHR Health Informatics Collaborative: Objectives

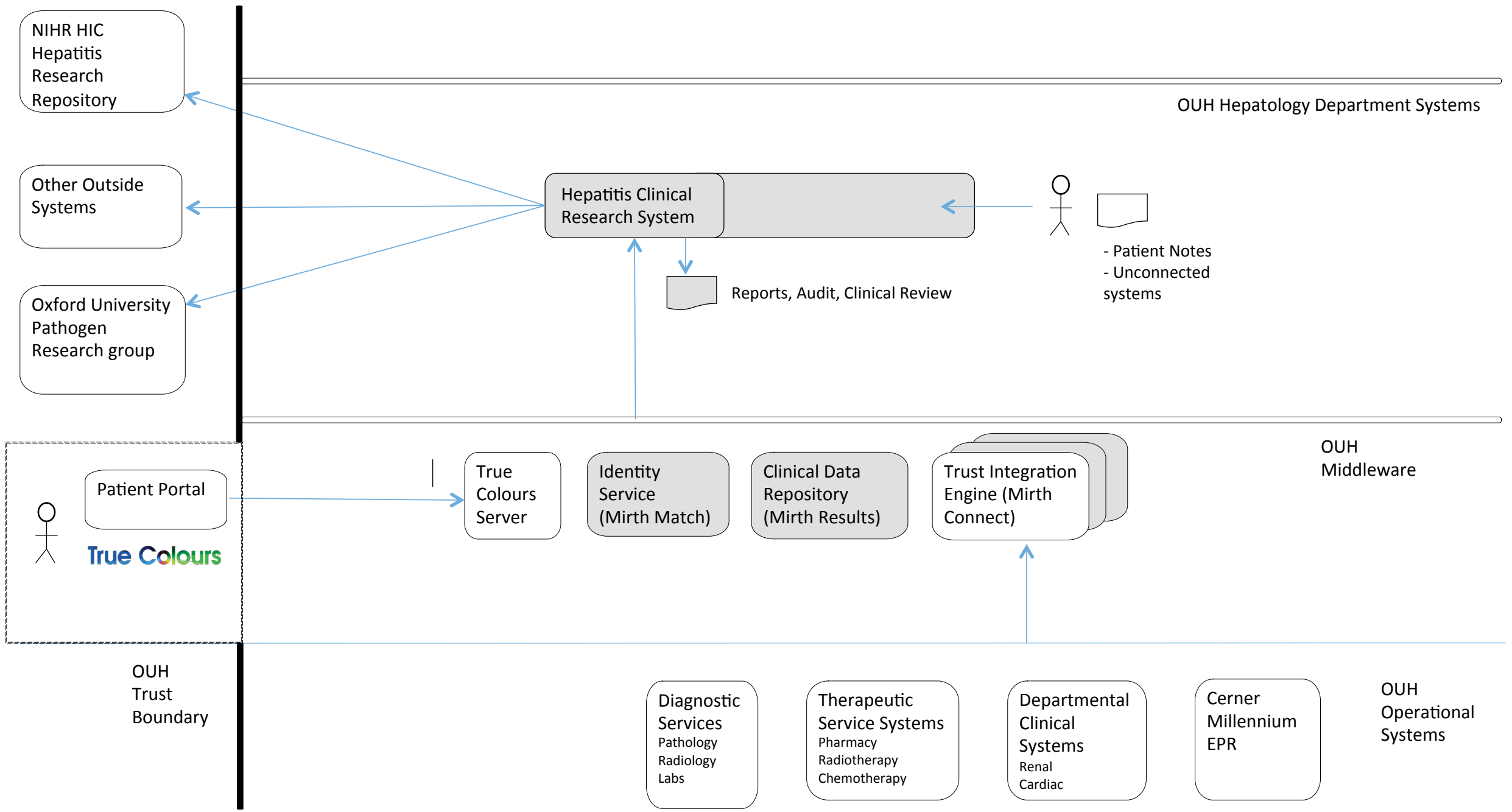
- To produce exemplar research projects.
- Provide modern infrastructure to allow researchers to share and exploit secondary care data for research.
- Establish rich longitudinal datasets in the NHS and BRCs.
- Common governance and PPI framework (including consent).
- Future proof the solution with automatic data capture where ever possible.
- Improving electronic patient records.
- Establishing comparability of data between BRCs.
- Creating interoperability between IT systems within and between BRCs.
- Industry engagement.

The Challenges of the Viral Hepatitis Theme

- Large dataset covering 4 distinct diseases with unique research questions.
- 5 Different NHS Trusts with differing patient populations, clinical services and IT infrastructures.
- Fast moving and competitive research environment.
- A need to develop appropriate governance for ethically collecting and sharing data on vulnerable patients.
- First exemplar research questions are:
 - HCV: What influences treatment outcomes with the new Direct Acting Antivirals?
 - HBV: The determinants of HBsAg loss and eAg seroconversion in treated patients?
 - HEV: Who gets it and why?

Conceptual Architecture NIHR HIC , Prof Jim Davies





Key Requirements for the OUH Hepatitis Clinical Research Database

- Import Legacy data (mostly excel spreadsheets or csv files).
- Easily update datasets to reflect changing research questions.
- Robust security and user roles.
- Custom reporting and exporting of data.
- **Patient-centric manual entry / editing of clinical data.**
- **Automatic import of data from OUH Middleware.**

Patient Centric Data Entry

- The standard LabKey workflow for data entry is dataset centric.
- Manual entry and editing of data is a key requirement of Hepatitis Clinical Research system.
- Research Nurses and Clinicians wanted a way of entering data which makes sense to them and follows their workflows.

[Database Enrolment](#) >

Insert new entry: Database Enrolment

Fields marked with an asterisk * are required.

Participant ID *?	<input type="text"/>
Date *?	<input type="text"/>
Date of Enrolment?	<input type="text"/>
Type of Hepatitis	<input type="text"/>
First Name?	<input type="text"/>
Last Name?	<input type="text"/>
NHS Number?	<input type="text"/>
MRN Number?	<input type="text"/>
Date of Birth?	<input type="text"/>
<input type="button" value="SUBMIT"/> <input type="button" value="CANCEL"/>	

LabKing: Rule over your subjects

- Built using LabKey Javascript API.
- Can be used with any datasets but requires to be pointed at an enrolment dataset.
- Code available at github.com/spikeheap/labking

Subject Record ▾

Cohorts *All / None*

- ☒ Autoimmune Hepatitis 0
- ☒ Hepatitis B 1
- ☒ Hepatitis B with Delta Co-Infection 2
- ☒ Hepatitis C 1
- ☒ Hepatitis E 0
- ☒ Other 0
- ☒ No Cohort 0

Participant Groups

Showing 4 of 4 participants

Search

+ Add participant

LabKey Id	NHS #	MRN #	Name	Date of Birth	Summary fields completed
HEP-0001	987654	123456	John Adams	01/01/1976	<input type="button" value=""/>
HEP-0002	123456	987654	George Washington	01/08/1973	<input type="button" value=""/>
HEP-0003	3456549872	45673657	Joe Bloggs	17/05/1950	<input type="button" value=""/>
HEP-0004	987678981	8674874638	Stephen Hawking	17/08/1951	<input type="button" value=""/>

John Adams

NHS #: 987654
MRN #: 123456
Date of birth: 01/01/1976

Enrolment **Final Outcome** Diagnosis Clinical Assessment Risk Factors Treatment Imaging and Biopsy Lab Tests Summary

Dataset: **Database Enrolment 1** Trials 1 NIHR HIC Enrolment 0 Demographics 0 Local Cohort Enrolment 0 HCV Research UK Enrolment 0

Date of Enrolment	Type of Hepatitis	First Name	Last Name	NHS Number	MRN Number	Date of Birth	Actions
28/09/2015	Hepatitis C	John	Adams	987654	123456	01/01/1976	<input type="button" value=""/> <input type="button" value=""/>

Overview: /Hepatology Resear...

David NIHR

https://labkey001.oxnet.nhs.uk/project/Hepatology%20Research%20Training/Hepatitis%20Research%20Database%20Training/begin.view?

☆⋮

Oxford BRC LabKey

Q Search Oxford BRC LabKey

Help ▾david smith2 ▾

Hepatitis Research Database Training

OverviewData Views

Subject Record

Cohorts All / None

☒ Autoimmune Hepatitis

☒ Hepatitis B

☒ Hepatitis B with Delta Co-Infection

☒ Hepatitis C

☒ Hepatitis E

☒ Other

☒ No Cohort

Participant Groups

Showing 3 of 3 participants

0

1

1

1

0

0

0

Search ParticipantId, NHSNur

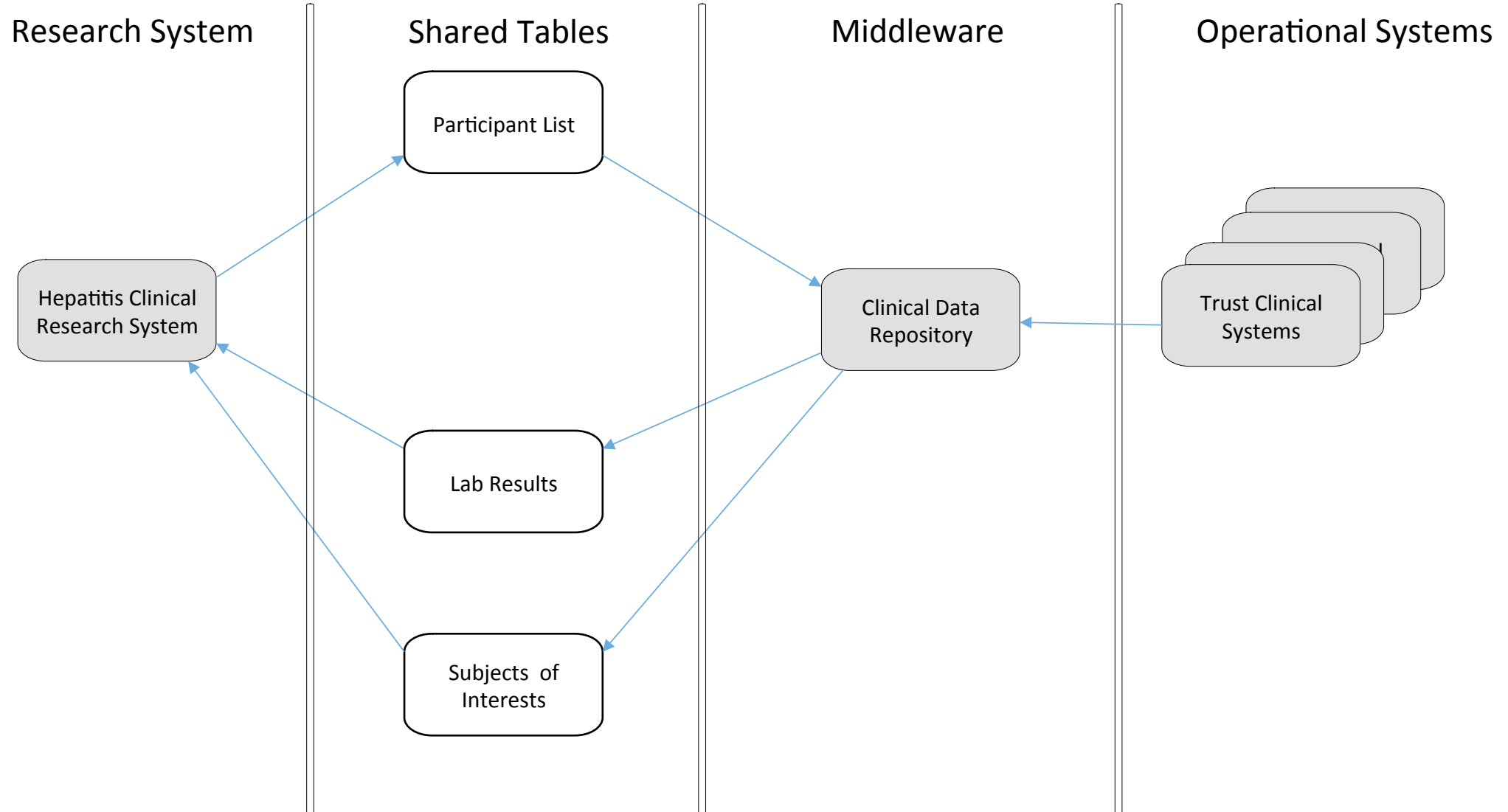
LabKey Id	NHS #	MRN #	Name	Date of Birth	Summary fields completed
HEP-0001	987654	123456	John Adams	01/01/1976	
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HEP-0003	3456549872	45673657	Joe Bloggs	17/05/1950	

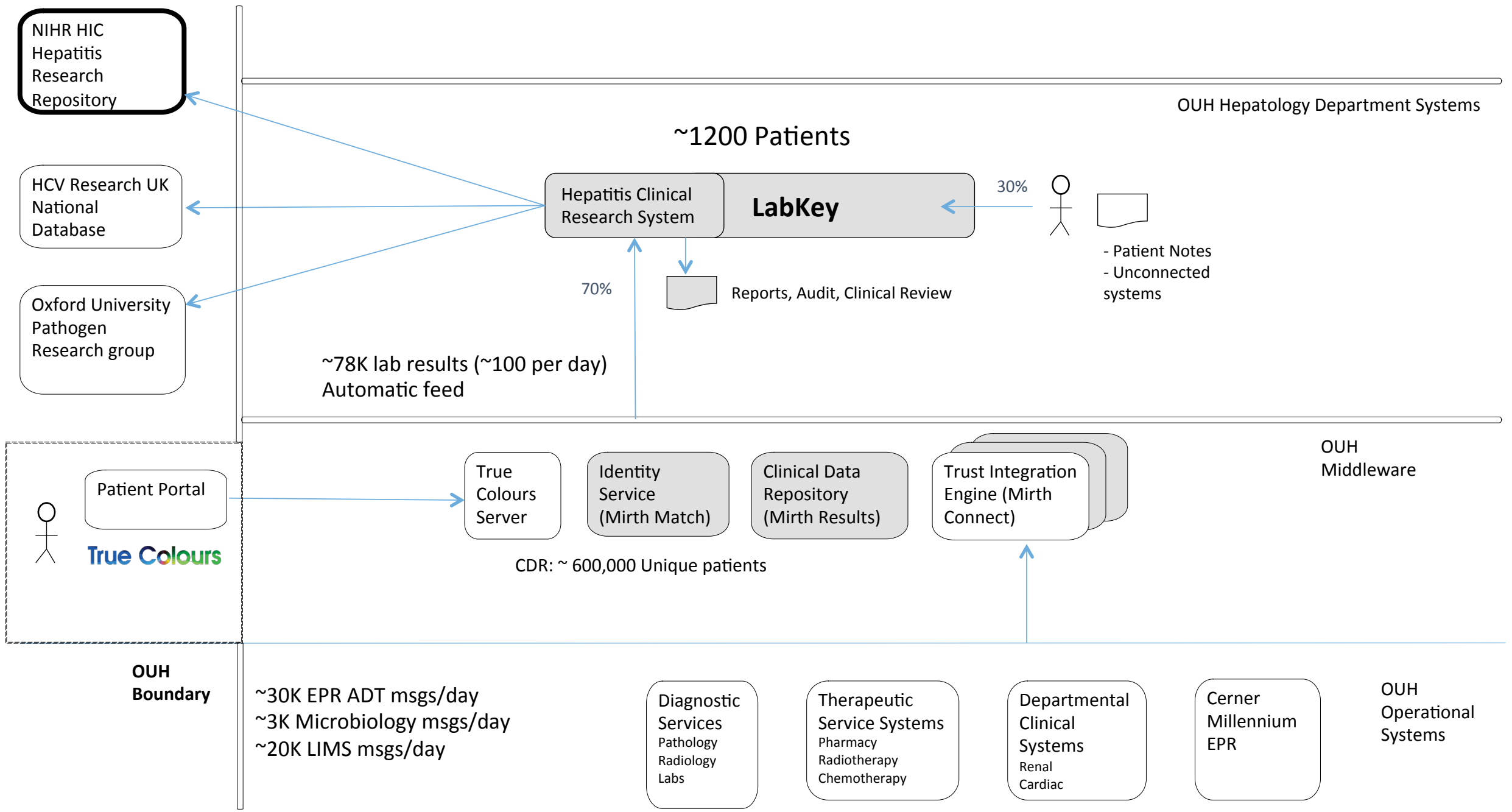
+ Add participant

Please select a participant...

Powered by LabKey

Automated importing of clinical data





On-going Research using OUH Hepatitis Research Data.

- Incidences of Hepatitis E in patients with underlying liver disease in Oxford Cohort.
- Integration of longitudinal clinical data with viral and host genetic data to better understand Hepatitis C and B.
- Development of HCV Vaccine.
- Integration with viral sequencing to better understand resistance to Hepatitis C Direct Acting Antivirals.

Future Work

- Collection of minimum dataset from all sites for NIHR HIC Project .
- Analysis of data for exemplar research questions.
- Partnerships with industry partners in collaborative analysis of data.
- Further Development of Hepatitis Clinical Research System.
 - Reporting
 - Dashboard views of key data
 - Integration with further clinical systems
 - Automating quality control

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