

Changing what we do...

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Some background....

“Clinical informaticians transform health care by analyzing, designing, implementing, and evaluating information and communication systems that enhance individual and population health outcomes, improve patient care, and strengthen the clinician-patient relationship.”

J Am Med Inform Assoc. 2009 Mar-Apr;16(2):153-7

Our largest ever investment in improving healthcare quality



The Trust

- 100,000+ ED attendances
- 70,000+ in-patient episodes
- 100,000+ day-case attendances
- 500,000+ out-patient episodes
- 40,000+ surgical operations
- 6,000+ births

- 9-14,000 staff to be trained....

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The journey....

- 2010 – strategic outline case “Towards an EPR”
- 2011/12 – invitation to tender
 - invitation to tender
 - competitive dialogue
- 2012 – preferred bidders
 - **Hewlett-Packard**
 - **Epic**

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“Hardware”

- **HP**
 - “Infrastructure as a service”
 - Network refresh & wireless
 - Desktop refresh
 - Managed print service
 - Remote access
 - BYOD
 - Handheld devices

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“Software”

- **Epic**

- Extensive record of implementation in large / academic centres in the US (including....)

- Boston Partners

- Stanford

- Johns Hopkins

- UCSF / UCLA

- Kaiser Permanente

- Yale

- Ohio State University

- 69% of HIMSS Stage 7 US Hospitals use EpicCare

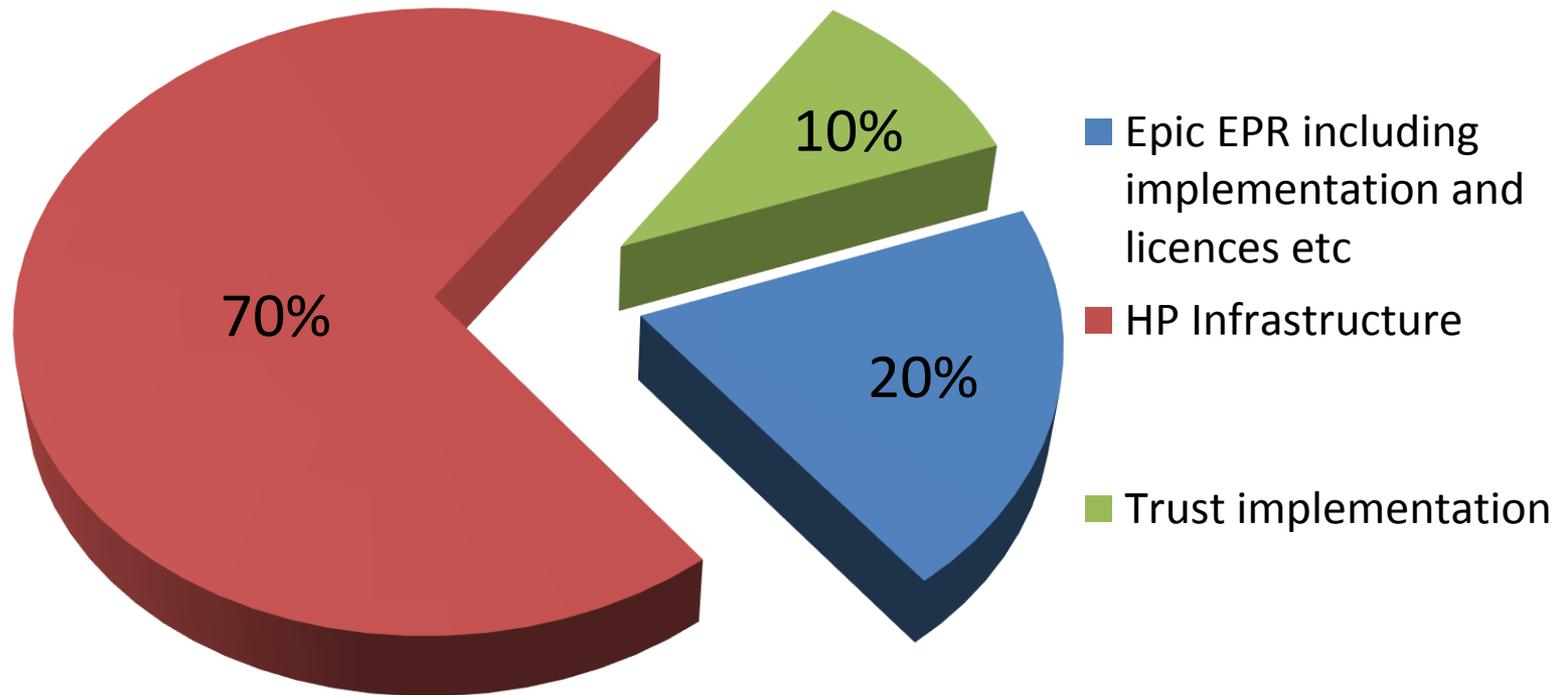
- >150 million of the US population covered by Epic

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Numbers

£200m over 10 years



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eHospital Analysts

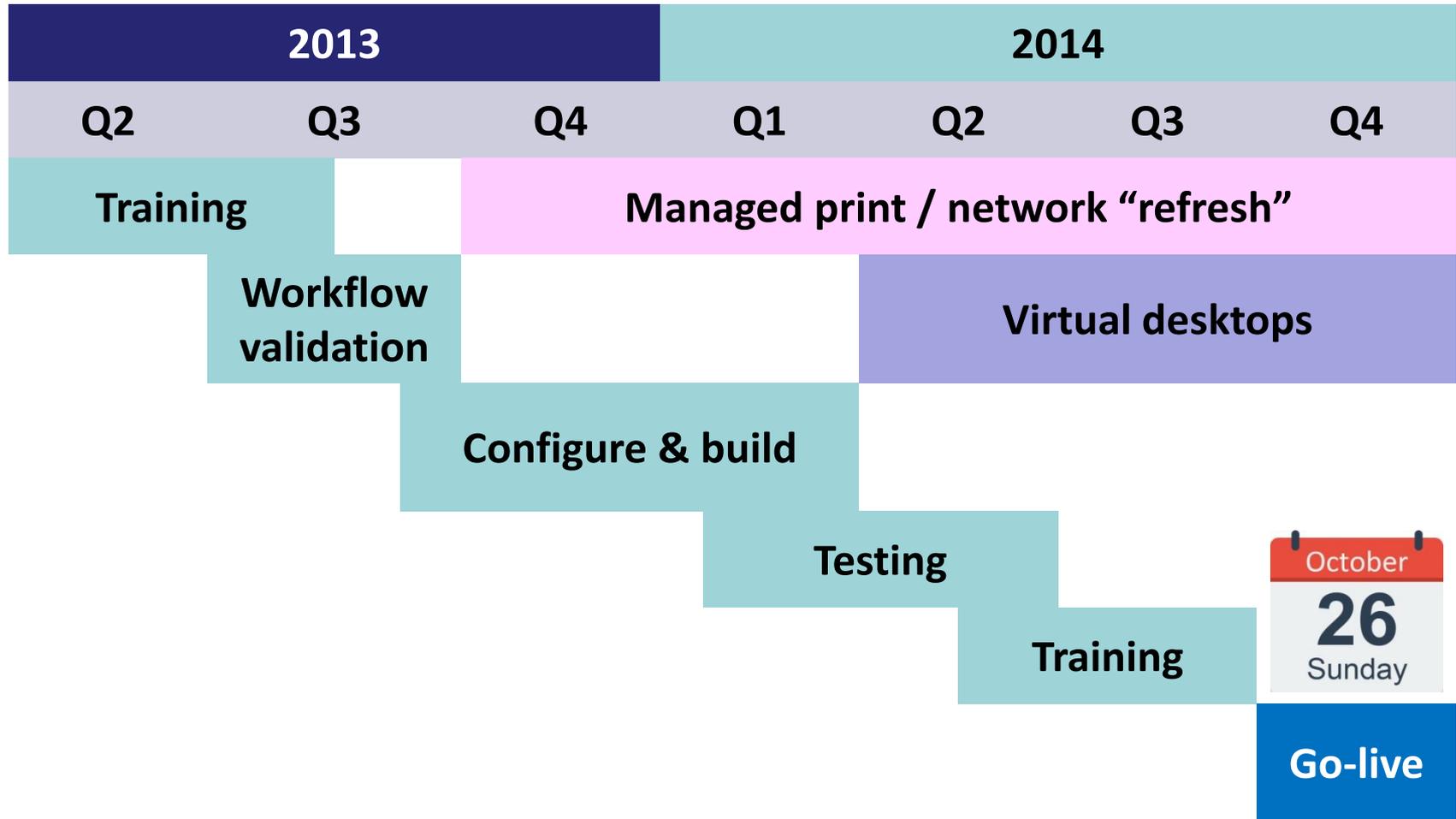
eHospital Recruitment Summary (by type)

	Team	Consultants	Junior Doc	Nurse	Midwife	AHP	Adm/Mgt/IT	Total
1	Clinical Documentation	4	0	3	1	1	3	12
2	Order Communications	5	1	3	0	0	3	12
3	Clinics/Patient Portal	1	1	0	0	1	2	5
4	ED	2	0	2	0	0	1	5
5	Medications Management	0	0	0	0	6	1	7
6	Theatrest/Anaesthetics	3	0	0	0	0	4	7
7	Pathology	0	0	0	0	7	0	7
8	Radiology	0	0	0	0	3	0	3
9	Cancer	1	0	0	0	1	5	7
10	Cardiology	1	0	0	0	0	2	3
11	Transplant	1	0	0	0	0	2	3
12	Ophthalmology	1	0	0	0	0	0	1
13	PAS	0	0	0	0	0	8	8
14	Reporting/Medical Record	0	0	0	0	0	8	8
		19	2	8	1	19	39	88

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Timetable



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Standardisation & Coding

- **Standardisation**

- clinical workflows / orders building on the Variation of Care transformation programme
- Epic's structured data entry tools

- **Coding**

- diagnoses / symptoms / problems SNOMED CT
- drugs dm+d
- operations / procedures OPCS 4.7

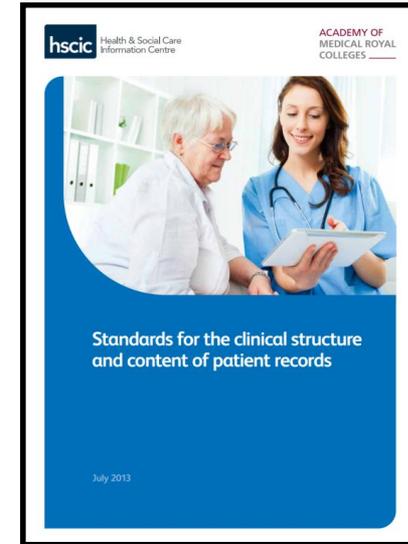
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Clinical Documentation & Generic Record Standards

- **Standards**

- structure & content of patient records
- hospital referral letters
- inpatient clerking
- handover communications
- discharge summaries
- outpatient letters

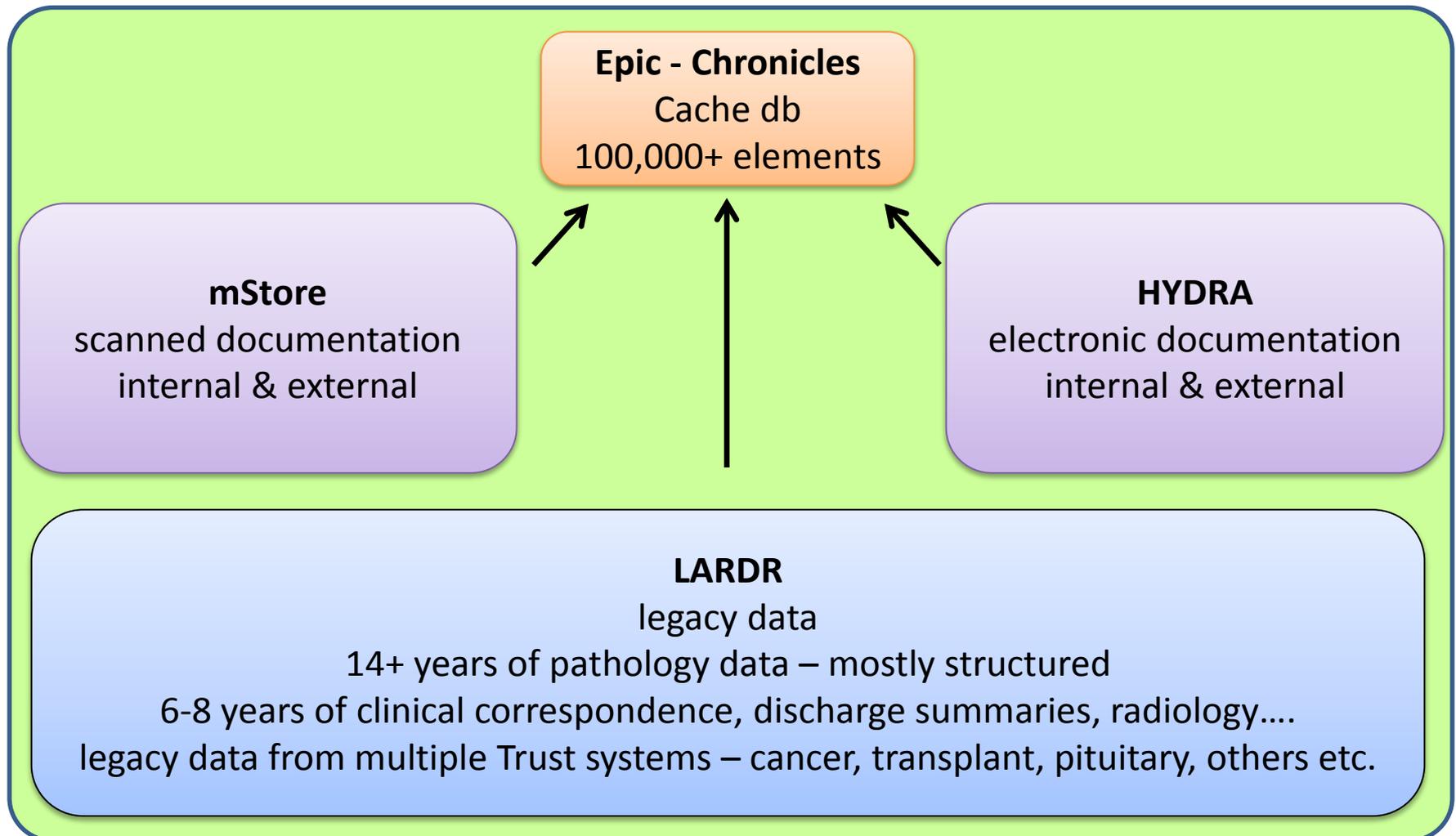


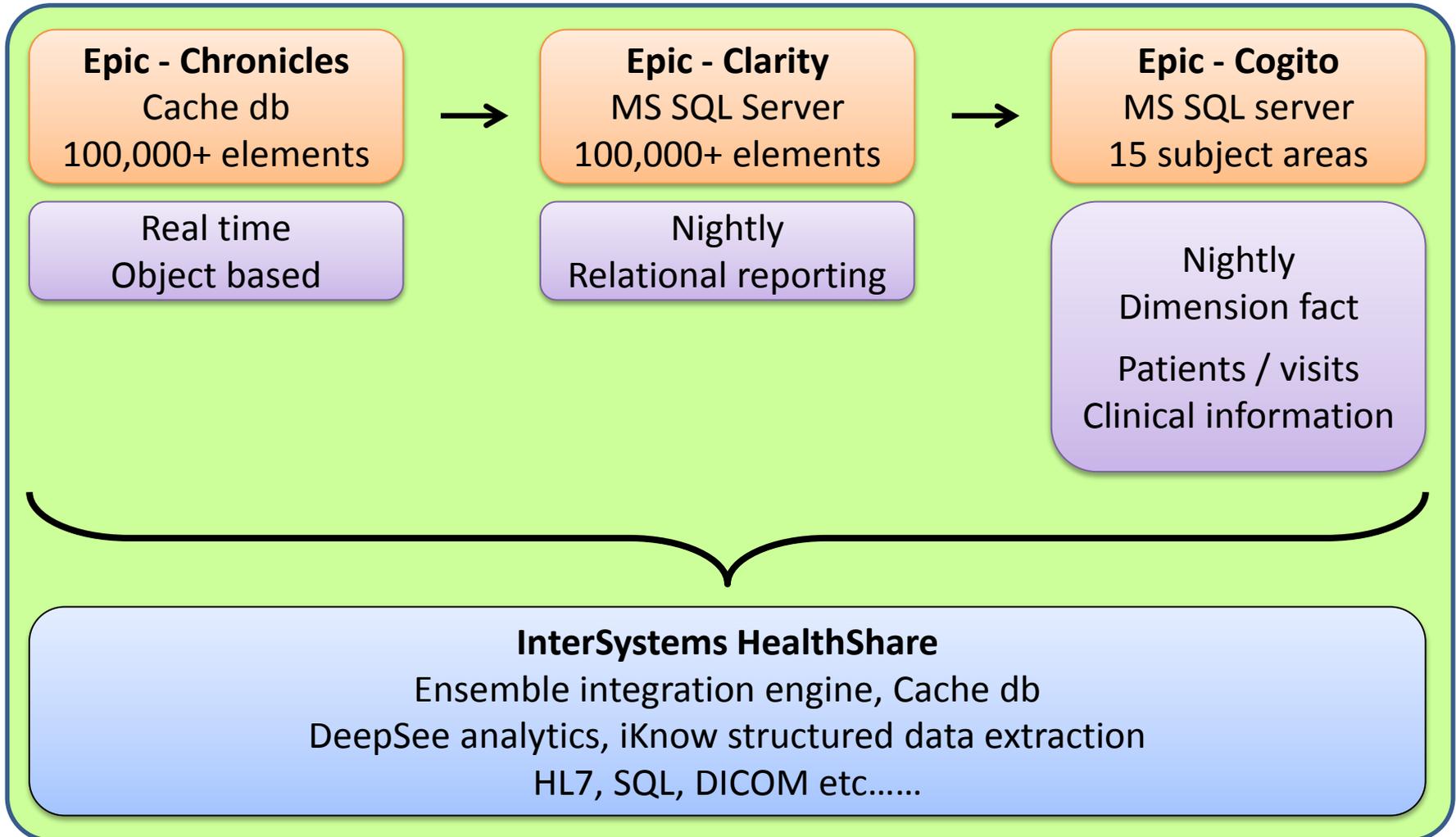
<http://www.infostandards.org/dd4c/professional-record-standards/scscpr/>

<http://www.rcplondon.ac.uk/sites/default/files/standards-for-the-clinical-structure-and-content-of-patient-records.pdf>

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Hyperspace - EMC FAMILY MED WEST - Current Model Playground - PHYSICIAN F.

Epic Patient Lookup In Basket Remind Me

Abra, Selena

MRN: 202798 Allergies: **Not on File** Advance Directive Filed?: None Primary Ins.: None Registries: Diabetes R
 Female, 42 y.o., 05/06/1971 CSN: 22758 Patient FYIs: None Code: Not on file Pharmacy: None Next Appt: 05/13/2013
 PCP: None MyChart: Inactive **BestPractice Advisory (1)** Outside Info: None

Care Team:

Plan Problem List Visit Diagnoses **BestPractice**

Problem List

+ Create Patient Care Coordination Note

Search for new item + Add Options

No active problems.
You can use the box to the upper left to add an item to the list.

Mark as Reviewed Never Reviewed More Detailed View

Visit Diagnoses

Search for new item + Add Previous Dx

Quick Dx: Asthma Backache Congestive heart failure Depression Diabetes mellitus
 Hypertension Hypothyroidism Obesity

None

BestPractice Advisories

Research Recruitment (1 Advisory)

✓ Patient Meets Initial Screening Criteria for Insomnia Study (demonstration only)

Specify Patient Study Status: MODEL RESEARCH STUDY-INSOMNIA

Interested
 Declined

Click here for brief study overview

Refresh Last refreshed on 5/11/2013 at 2:25 PM Accept

Meds & Orders SmartSets

Medications & Orders

+ Create Medication List Comments

Search for new order + New Order Options

No active orders.

Mark All Taking Mark as Reviewed Never Reviewed

Click here to select a pharmacy Order Entry
 Providers

SmartSets

Search + Add

Suggestions

Cerebrovascular disease orders
 Parkinsons orders
 GEN Adult Female Preventive Interventions

Right click on a SmartSet to add to favorites. Open SmartSets Clear Selection

PHYSICIAN F. Results All Reminders Community Message Rx Response Patient Calls My Open Charts My Open Encounters Overdue Results Hospital ADT Hospital Chart Completion 2:26 PM

Plan

Wrap-Up

Charges

Communicatio...

Sign Visit

More Activities ▶

Visit Diagnoses

Search for new item Previous Dx ▼

Quick Dx:

None

BestPractice Advisories

▼ Research Recruitment (1 Advisory)

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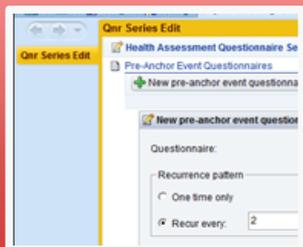
[Click here for brief study overview](#)

Last refreshed on 5/11/2013 at 2:25 PM

PHYSICIAN F. [Results](#) [All Reminders](#) [Community Message](#) [Rx Response](#) [Patient Calls](#) [My Open C](#)

EpicCare / MyChart Patient Reported Outcomes

Questions: which
and when



Assign to patients

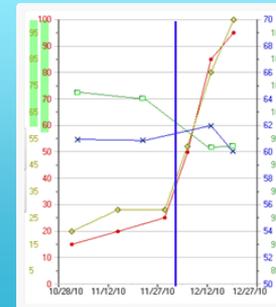


Collect answers

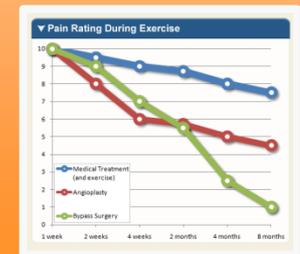
Questionnaire

- Activities of Daily Living
- Physical Health Questionnaire
- Knee Pain Questionnaire
- RAND SF-20 Health Survey
- Anxiety Questionnaire

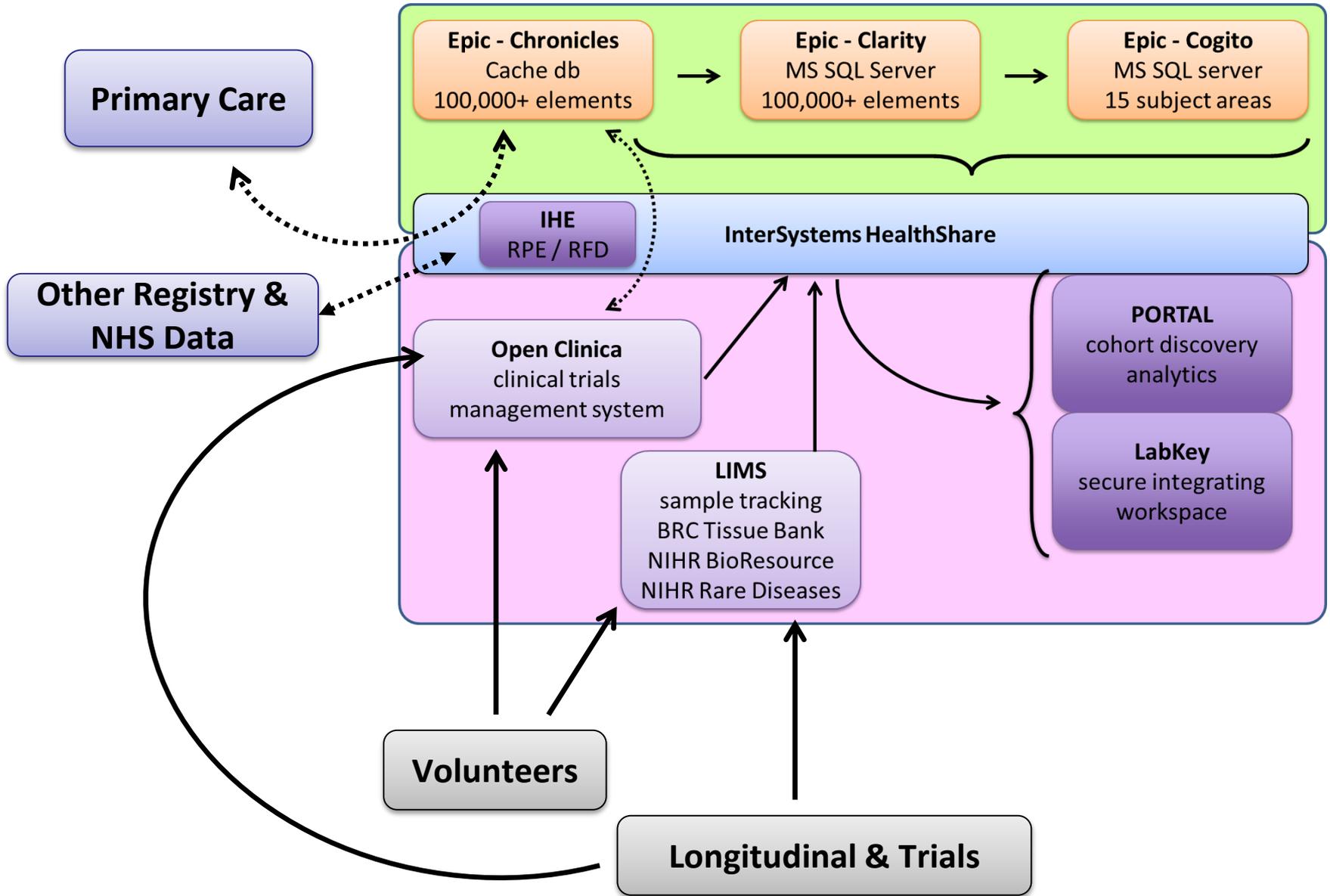
Track a
single patient

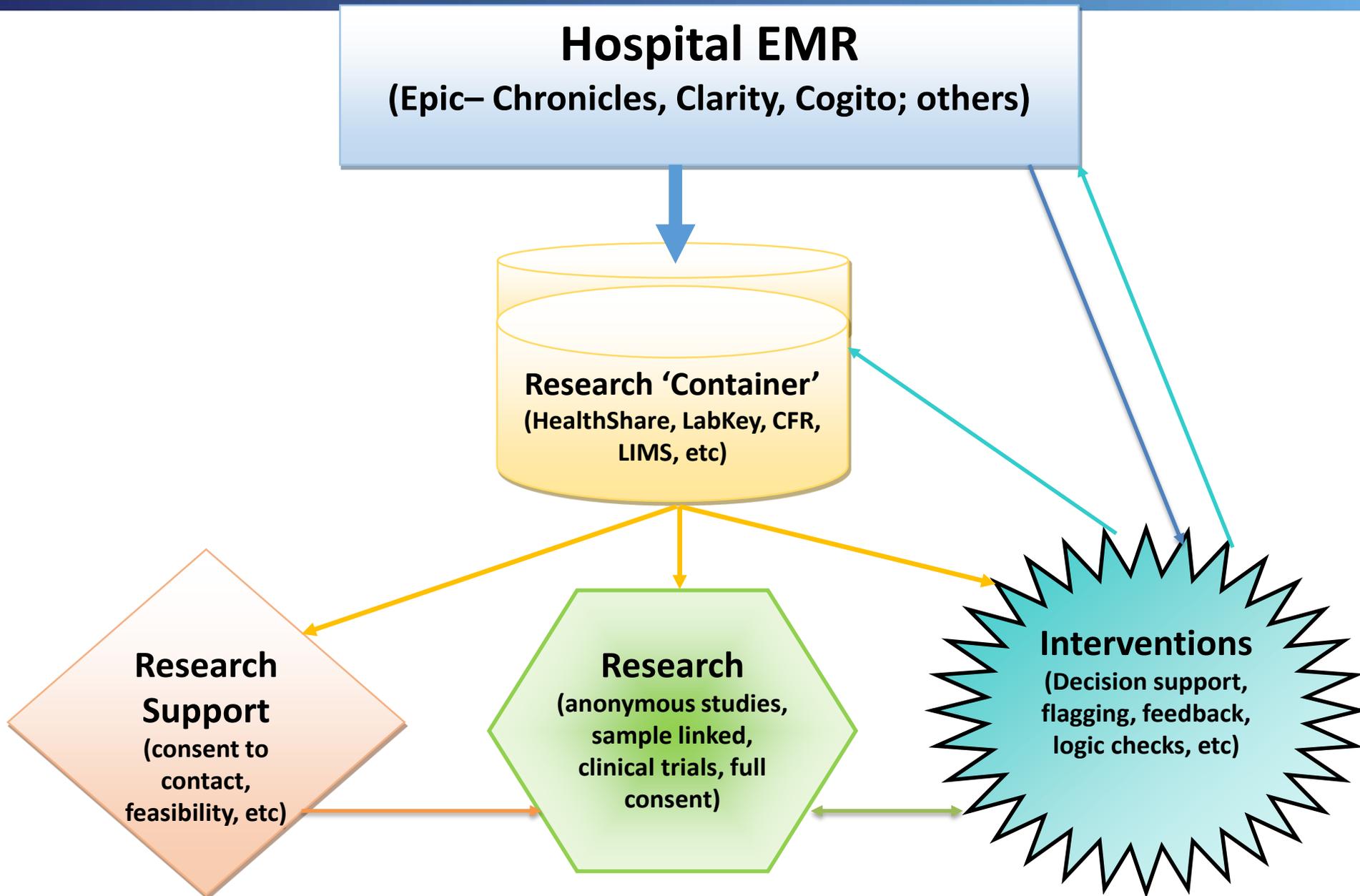


Analyze data
across many
patients









CLINICAL

Epic - Chronicles



Epic - Clarity



Epic - Cogito

InterSystems HealthShare

InterSystems HealthShare

CRF/ External Data
Entry System

LIMS

LabKey

Web
Portal

RESEARCH

CUH Computing Environment

Secure
Portal

Anonymous
Study

Consented
Study

Contact
Details

Aggregated
Data

University Computing Environment

Regulatory Issues (Data Sharing Processes)

- Data sharing agreement
 - Addendum to U Cam – CUH agreement
 - Specific to School of Clinical Medicine (CSCS)
 - General policies around data handling, storage, etc.
- Proof of concept
 - Based on study with REC approval for data transfer
 - 7 Aims: selection, anonymisation, encryption & transfer, secure access to CUH research domain, secure storage & access CSCS, automated pipeline, usability)
- IGT2 (and possibly ISO27001)



Regulatory Issues (Ethical Approvals)

- Permission to use data
 - Anonymised
 - Anonymised linked to clinical sample
 - ICT interventions
 - Evaluation of Interventions
 - Support for studies requiring REC approval
 - Blanket use with oversight committee
- Consent for contact
 - HCW approach for consent to release name, contact details and limited inclusion criteria data

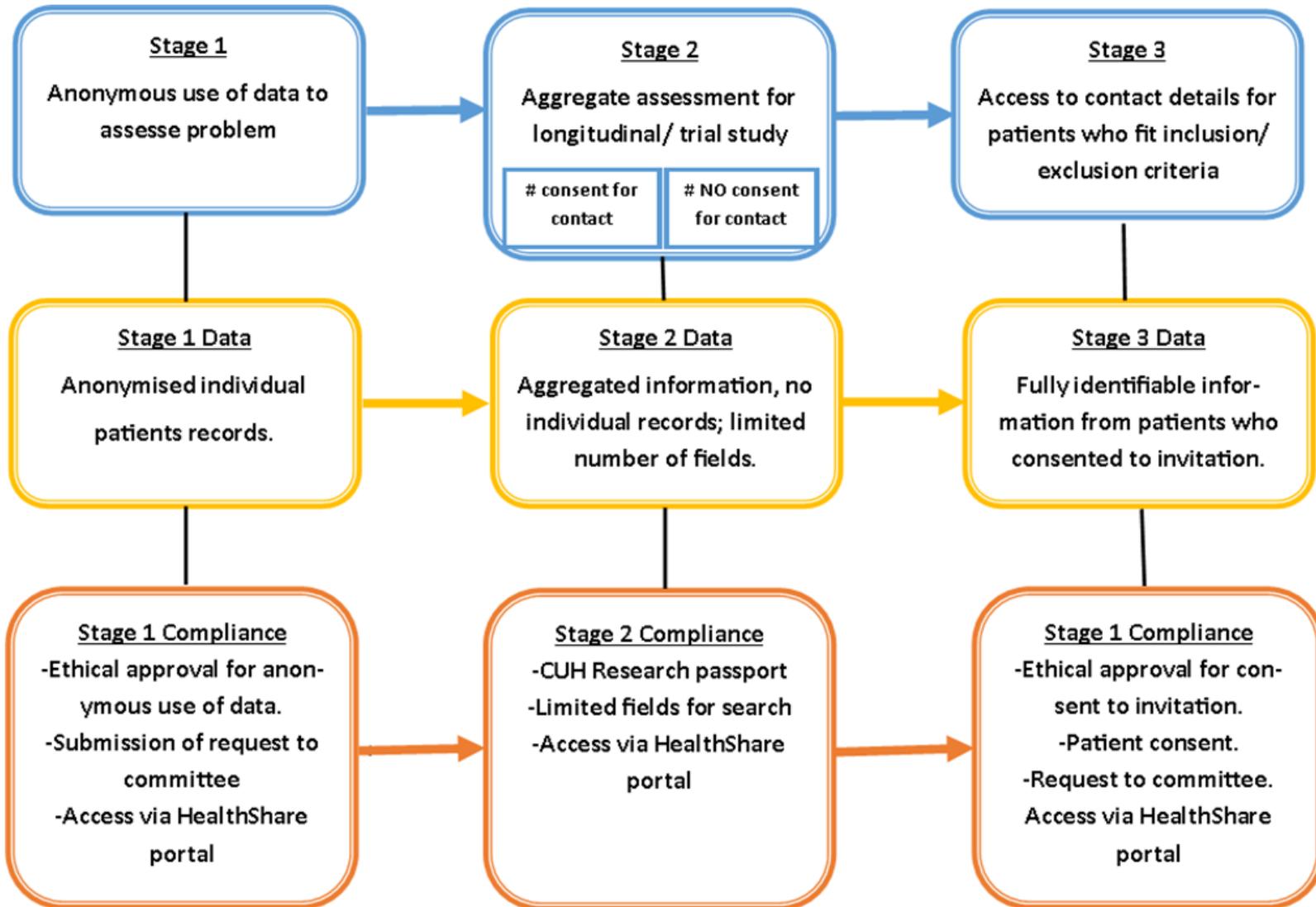
**Anonymous
Study**

**Consented
Study**

**Contact
Details**

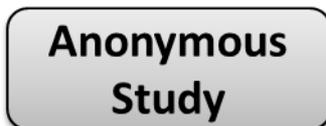
**Aggregated
Data**

Consent for Contact Plan



Regulatory Issues (Research Data Governance)

- Research Data Governance Committee
 - Monthly review of applications
 - 8 members minimum
 - 4 University, 4 Trust
 - Researchers, clinicians, ethics & IG experts, ICT & informatics.
 - 5 members quorate
- Other Regulations/ Policies
 - Data use agreements
 - Anonymisation SOPs/Policies
 - Data security & handling SOPs/policies
 - Return of all anonymous use data
 - Limits on dataset/database duplication
 - Specific training



Regulatory Issues (PPI & PPE)

- Public/ patient involvement & engagement critical to success
- PPI coordinator for Cambridge Clinical Informatics
- Larger PPI network within BRC & community
- PPI events
- Web Info for Public
- Outreach presentations/ activities

Where Are We?

Research Tools & Data

Data Extraction from Clarity

HealthShare:

setup, training, data management, interaction with OpenClinica, text mining

Secured LIMS system

Portals
& Data
Sharing

- Development of HealthShare web portal
- Beginning proof of concept
- Beginning IGT2 process

Regulatory Issues

- Data sharing agreement
- Ethics application for data usage about to be submitted
- PPI, planning, protocol around consent for contact
- Drafting forms, policies & training
- Early public engagement

Interventions

Qualitative assessment
Exemplar projects, collaborations & planning

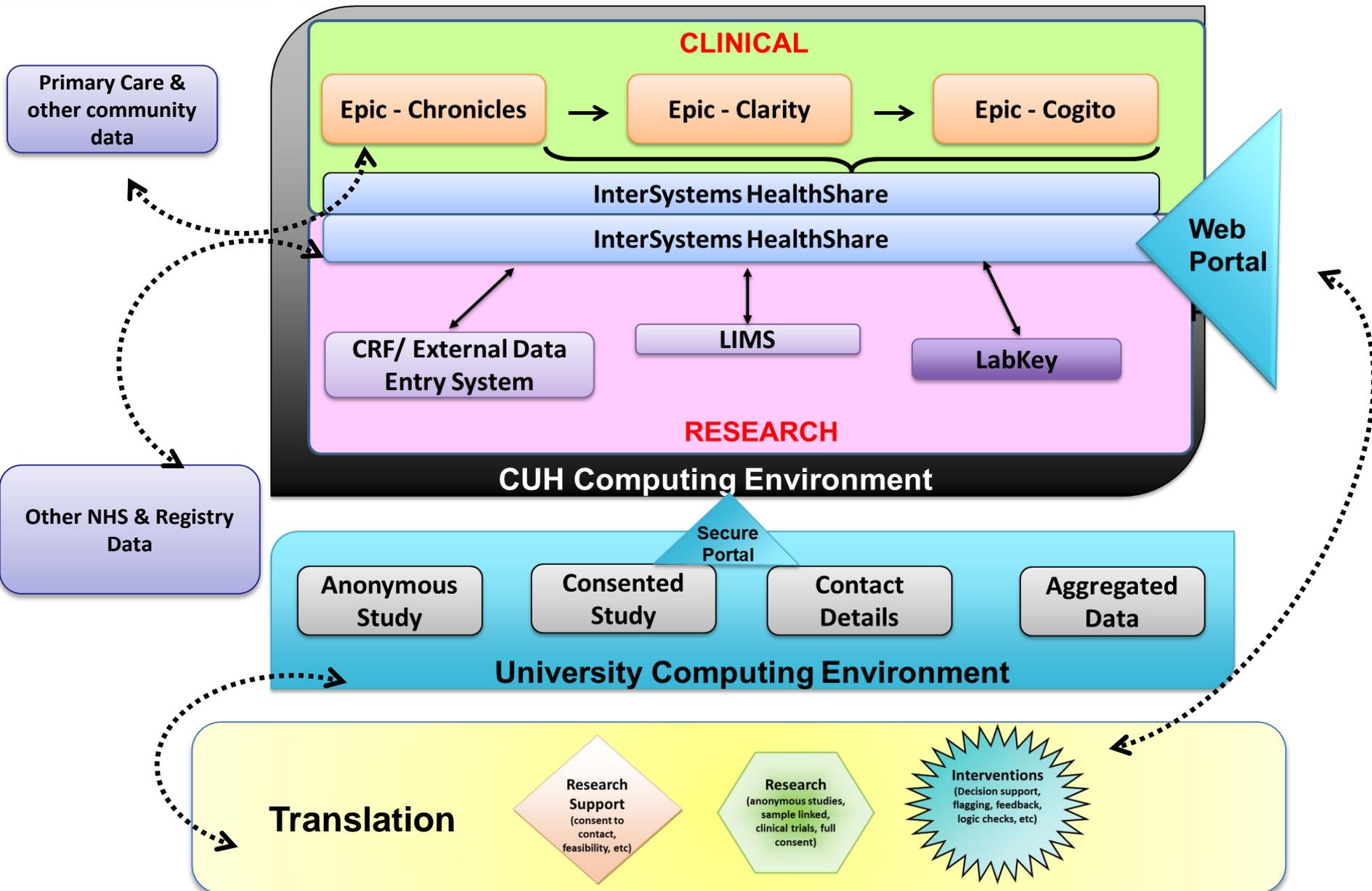
Research

Exemplar projects:
-Health Informatics Collaborative,
-Genomics England,
-Proof of concept,
-Intestinal Infectious Diseases

Use of OpenClinica

Future Steps

- Regulations & data sharing in place
- Exemplar project demonstration
 - development of essential tools
- Expand to wider group of projects
- Integration of other health data





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