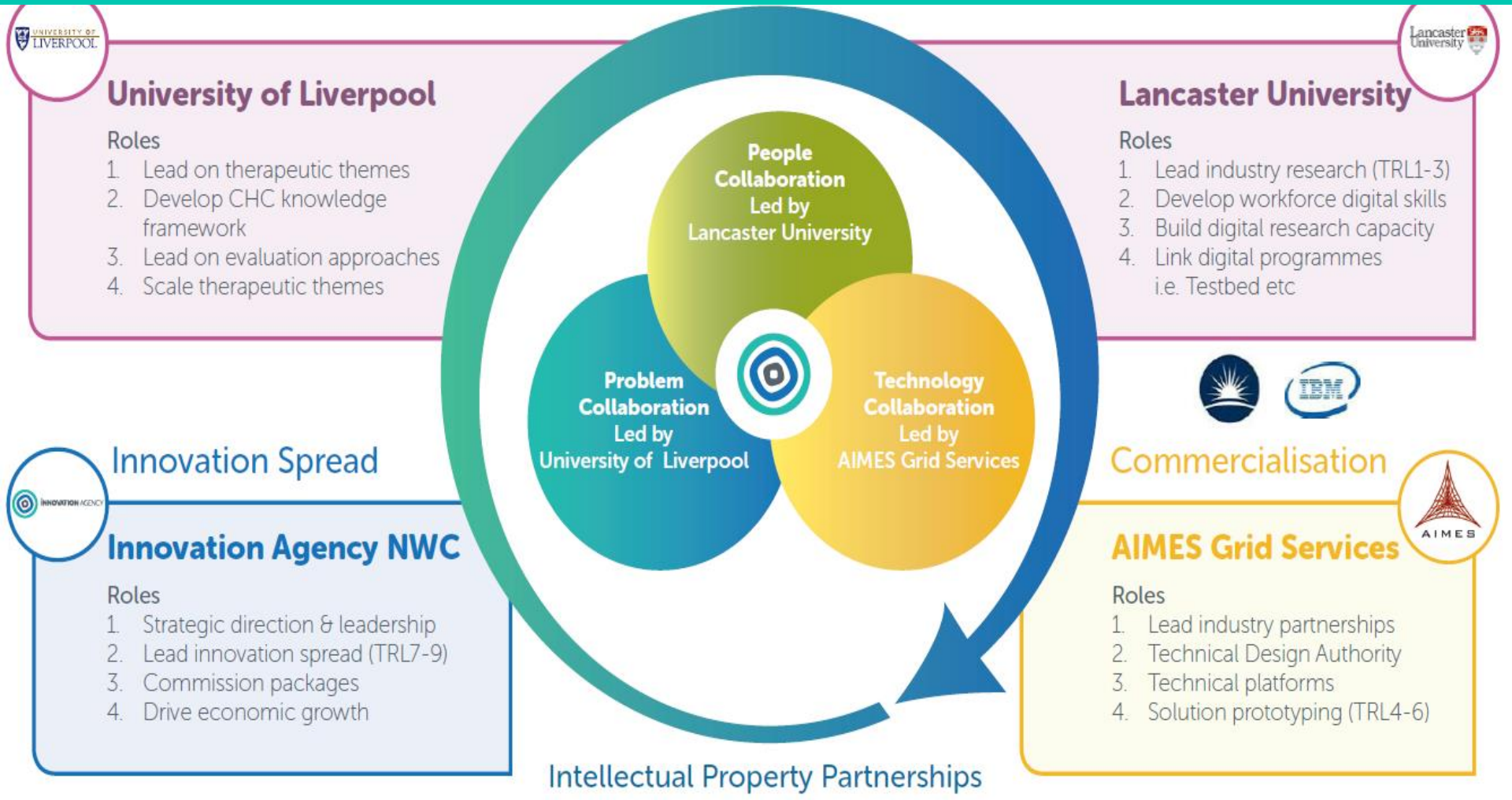
INNOVATION AGENCY
Academic Health Science Network
for the North West Coast

Connected Health Cities

Dr Liz Mear
Chief Executive

@MearLiz

NWC CHC partners



Our aims through Connected Health Cities are to:

- Make information available to front line staff in timely ways that enable them to better plan, review and adjust the care they offer and develop and monitor new and/or more effective pathways
- Develop a model for connecting and engaging people with expertise and experience from across the health, social, local government, voluntary, commercial and public sectors to turn data into information into knowledge
- Harness the power of data and data analytics by collecting, linking and collating data from health and social care and eventually also from a wide range of other sources – putting in place the permissions and systems needed to enable novel uses of data to transform care
- Support industry, academia and others in using data to conduct research that both improves understanding of health care efficiency and effectiveness but also enables new techniques, ideas and organisational forms to be tested.
- Create a sharing environment that enlists the trust, and active involvement, of North West Coast citizens

CONNECTED HEALTH CITIES
A nhsa project

INNOVATION AGENCY
Academic Health Science Network for the North West Coast

We are collaborating in the Connected Health Cities programme in the North West Coast, to develop a Learning Health System

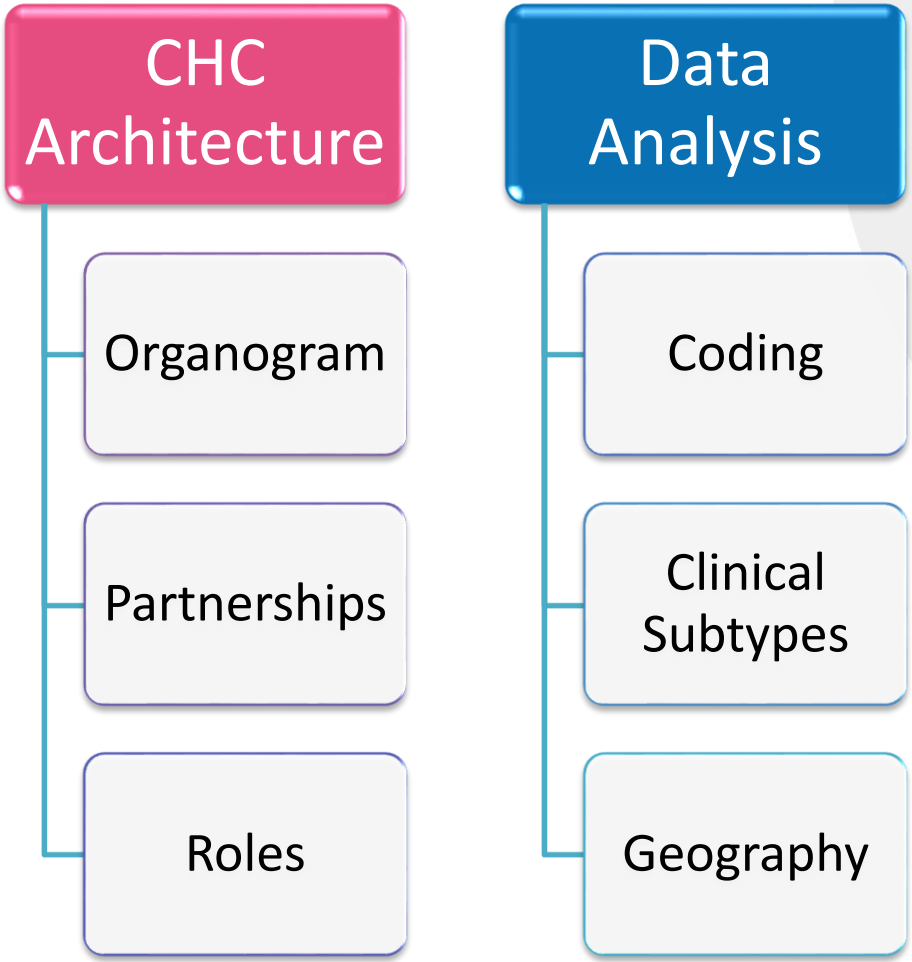
This is an exciting programme of work to demonstrate how bring data together from different parts of the NHS and linking it, can lead to improved services.

The work is part of a Northern-wide Connected Health Cities pilot project with national funding secured by the Northern Health Science Alliance. There are three other Connected Health Cities pilot programmes in Greater Manchester, Yorkshire and North East and North Cumbria.

Our focus is on using this linked data to map pathways of care and improve prevention and treatment of three pathways in the first instance - Chronic Obstructive Pulmonary Disease (COPD), Alcohol-related Illnesses and Epilepsy. By connecting the information and knowledge held by the NHS, social care and other local authority services, systems can be planned and delivered more effectively.

CONNECTED HEALTH CITIES
A nhsa project

INNOVATION AGENCY
Academic Health Science Network for the North West Coast



CONNECTED HEALTH CITIES
A nhsa project

INNOVATION AGENCY
Academic Health Science Network for the North West Coast

Point-of-care medical records

- Each episode has one primary diagnosis and up to 19 secondary diagnoses ‘coded’
- **Primary diagnosis**: **main reason the patient is receiving care**
- **Secondary diagnoses**: relevant co-morbidities and external causes if identified

Clinical coding after discharge

Patient administration system

Most analytics focus on ‘primary diagnosis’

CONNECTED HEALTH CITIES
A nhsa project

INNOVATION AGENCY
Academic Health Science Network for the North West Coast

Diagnoses recorded in a patient with ARLD

Presenting complaint
- Eyes yellow
- Stomach swollen

History of presenting complaint
- Jaundice & abdominal distension
- - increasing over last 2 weeks

Past medical history
- Alcohol withdrawal – admitted 3/12 ago

Social history
- Up to 1 bottle vodka per day

Examination findings
- Jaundice +
- Mildly confused
- Ascites + (moderate)

CONNECTED HEALTH CITIES
A nhsa project

INNOVATION AGENCY
Academic Health Science Network for the North West Coast

Diagnosis

Q1. How is the diagnosis recorded in the patient's clinical record?

A: There are a range of alternatives:

- **Diagnosis:** 1. Alcohol-related cirrhosis
- **Diagnosis:** 1. Ascites / 2. Cirrhosis (alcohol-related)
- **Diagnosis:** 1. Chronic Liver Disease / 2. Alcohol Dependence

---

Q2. Does this impact of what is coded after discharge?

A: Yes, the 'primary diagnosis' may be completely different in each case

CONNECTED HEALTH CITIES
A nhsa project

INNOVATION AGENCY
Academic Health Science Network for the North West Coast

Clinical subtypes

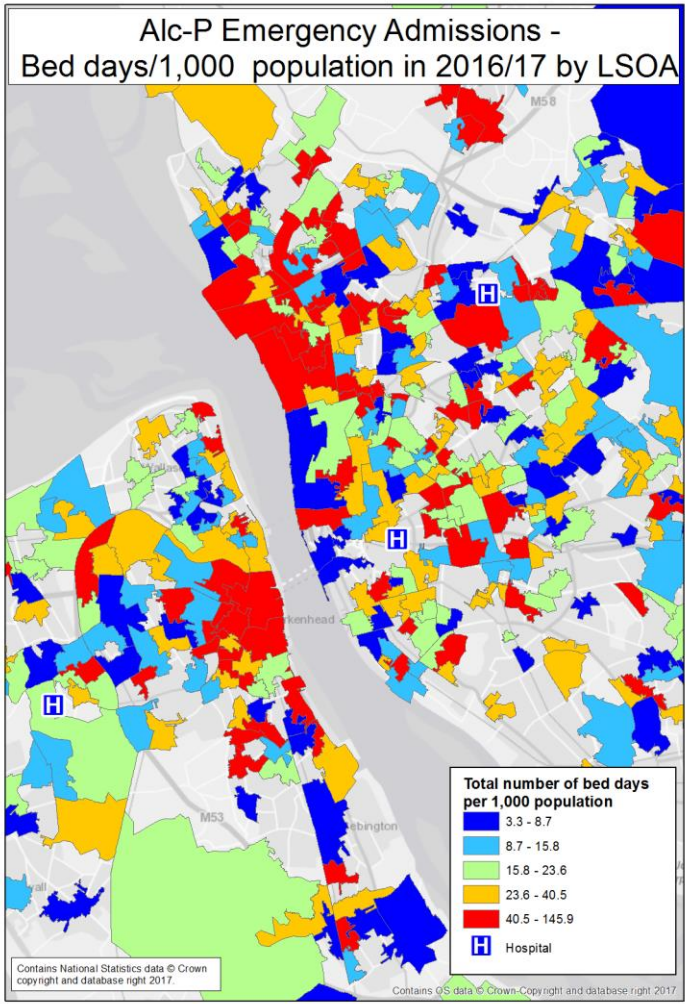
Clinically Generated Algorithms To Map The Patient Journey

Early stage

Advanced stage

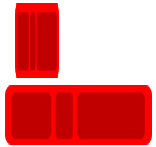
CONNECTED HEALTH CITIES
A nhsa project

INNOVATION AGENCY
Academic Health Science Network for the North West Coast



Conversion Rate (AED to Admission)

Short Stay (0/1 day admissions) v Longer Stay



Readmission

Frequent Flyer (Short Stay v Longer Stay)

Clinic Non-attendance

CONNECTED HEALTH CITIES
A nhsa project

INNOVATION AGENCY
Academic Health Science Network for the North West Coast

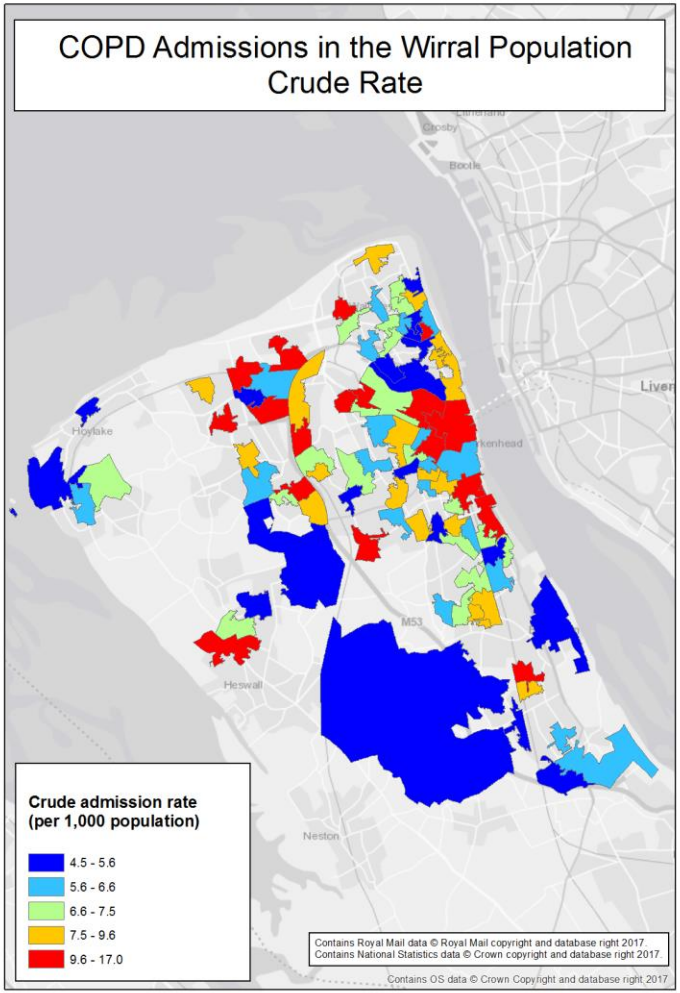
Hypothesis: A seizure admission indicates a need to re-examine epilepsy control, or to provide an expert diagnosis for someone who has suffered their first suspected seizure.

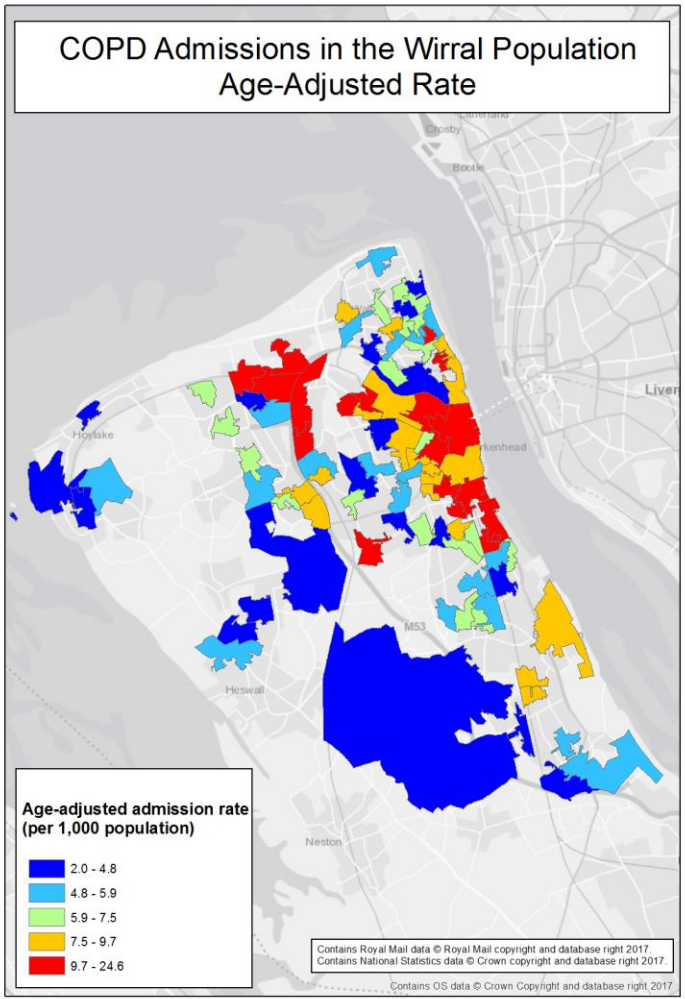
- A&E, admitted patient care data and outpatient data, allowing us to link the records of patients who have been admitted with a seizure to their outpatient appointments
- A neurology follow-up appointment is the most likely place for this. NICE guidance recommends that a person who has suffered their first suspected seizure should be referred for an appointment with a neurologist within 2 weeks, but the National Audit of Seizure management in Hospitals (NASH) shows this rarely happens
- After classifying a patient as having been admitted due to a seizure (using an algorithm as per the ARLD work) we can look at their outpatient history both prior to, and following, their admission. This allows us to classify patients who are ‘known’ or ‘unknown’ to the neurology service.
- The OPD dataset codes clinics so that we know which are neurology clinics (coded 400 in the data), and thus relevant to their admission.

CONNECTED HEALTH CITIES
A nhsa project

INNOVATION AGENCY
Academic Health Science Network for the North West Coast

Geography: Hotspot Mapping





CONNECTED HEALTH CITIES
A nhsa project

UNIVERSITY OF LIVERPOOL

Data Processing
Clinical algorithms
Metrics
Reports
Visualisations

Healthcare Data Lab

(1) Development

Sharing Methods & Outputs
Gathering Feedback
Modifying

- Clinical Leads
- Steering Group
- Front line teams
- Stakeholders

CONNECTED HEALTH CITIES
A nhsa project

(2) Deployment of aggregated reports

Anonymized data (inform services)

- Activity and case-mix
- Metrics of process
- Metrics of outcome
- Target groups
- Target localities
- KPIs and bench-marking
- Service performance

Centrally generated reports

Web-based access

+/- interactivity or customizable

Locally generated reports*

Pathway Team

(3) Deployment of patient-level tools

Identifiable data (inform direct care)

- Instant electronic patient summary
- Alerts within local systems
- Prediction tools
- Decision-support
- Services available

INNOVATION AGENCY
Academic Health Science Network for the North West Coast

** Locally-generated analytics allowing linkage to richer individual-level data for direct care*

INNOVATION AGENCY
Academic Health Science Network
for the North West Coast

Merseycare Telehealth Hub

Alan Davies
Director of Digital Health /
Regional Digital Expert Group - Chair

Telehealth

- Primary care pathway
- Clinically led hub monitoring vital signs
- Patient at home
- Clinical assessment
- mPhone or online triage
- Direct clinical referral
- Evolved a sophisticated on-boarding process

Figure 2: Clinical hub process engagement and recruitment process

Where are we now?

- 95% of GP Practices now referring
- 4650 patients have received service
- 801 patients live of the system
- New flo monitoring pathways:
  - Asthma
  - quit smoking
  - hypertension
- Asthma kids gaming app development
- Procurement under way

European Union
European Regional
Development Fund

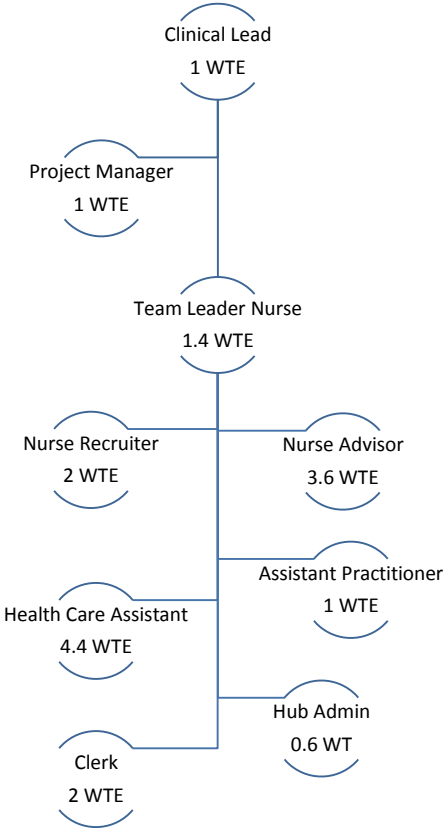
INNOVATION AGENCY
Academic Health Science Network
for the North West Coast

Hub size

17 Members of staff

7 Nurses

801 patients monitored daily



European Union
European Regional Development Fund

INNOVATION AGENCY
Academic Health Science Network for the North West Coast

Patient Reported Outcomes

54% of telehealth users reported a decrease in at least one form of healthcare utilisation (GP visits, community matron or hospital)

63% of telehealth users who report improved self-care also report reduced healthcare service use

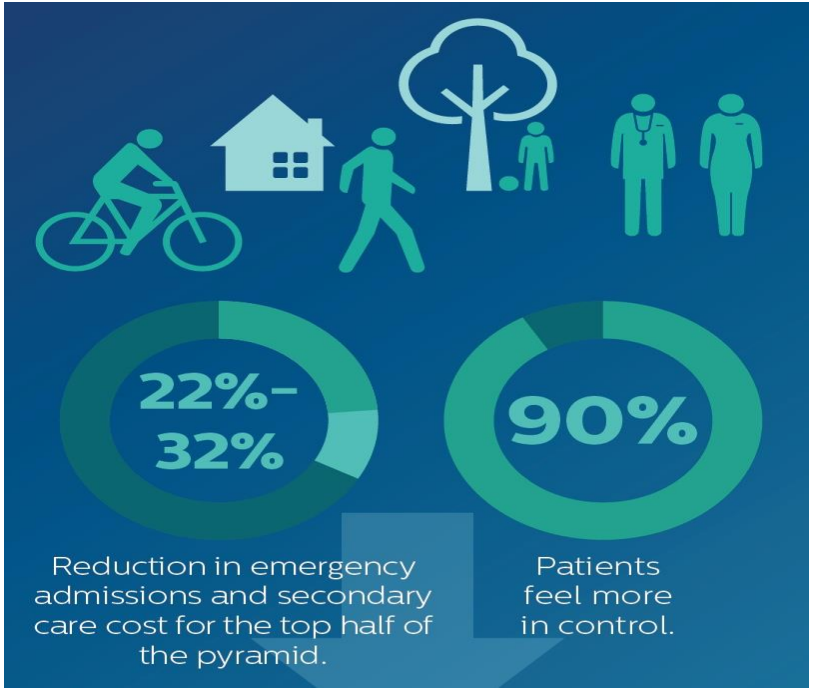
Overall, reported behaviour change accounts for **70%** of self reported changes in healthcare usage.

91% **of patients feel more in control, have gained confidence and/or feel better able to cope with their long-term conditions.**

European Union
European Regional Development Fund

INNOVATION AGENCY
Academic Health Science Network for the North West Coast

International Research to Evidence Innovation



European Union
European Regional Development Fund

Future plans

- Secondary care integration (early discharge)
- Seamless care incl. preventative apps and wearables
- Expanded interfaces (social care)
- PHR’s / Citizen.ID
- Additional care pathways
    - Chronic diseases: Renal, Cancer

Business as usual

Digitally enabled health and social care workforce

Digitally enabled citizen

European Union
European Regional Development Fund

INNOVATION AGENCY
Academic Health Science Network for the North West Coast

INNOVATION AGENCY
Academic Health Science Network
for the North West Coast

Lancashire and Cumbria Innovation Alliance

Alan Davies
Director of Digital Health /
Regional Digital Expert Group - Chair

Lancashire and Cumbria Innovation Alliance

The Lancashire and Cumbria Innovation Alliance (LCIA) was formed in 2015 as part of NHS England's wave 1 Testbed pilots. The LCIA Testbed has been 'live' delivering health improvements with the collaboration of patients, clinicians, strategic partners and innovators since December 2016

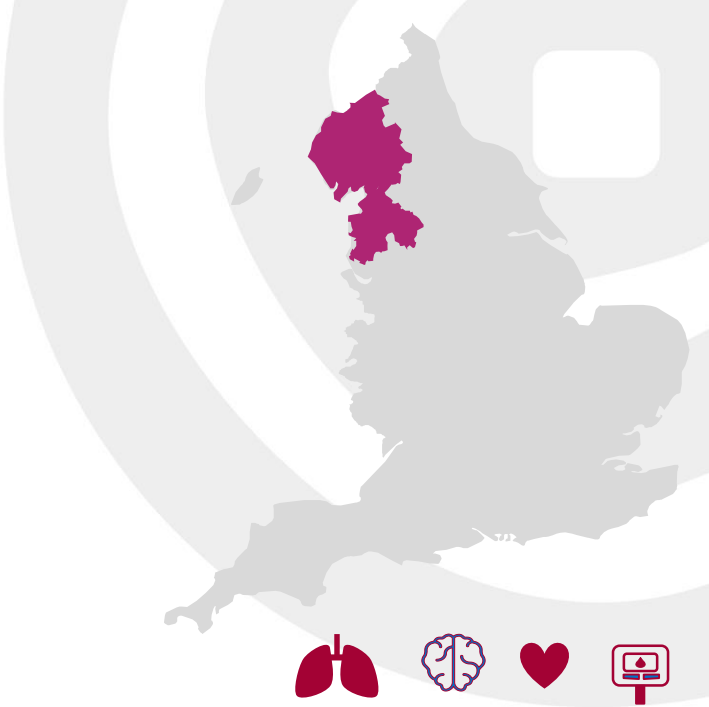
With lead innovator Philips and a number of SMEs, a technology enabled supported self-care programme using a combination of innovative technologies was developed to provide modernised healthcare.

The clinical challenge is to reduce hospital admissions, create capacity, reduce overall costs, maximising patient outcomes for a targeted population suffering from multiple morbidities including COPD, heart failure, and dementia.

European Union
European Regional Development Fund

INNOVATION AGENCY
Academic Health Science Network for the North West Coast

Lancashire and Cumbria Innovation Alliance



Scope?

Lancashire and Cumbria has **1.4 m people.**
2 in every 100 have a long term condition. This project focuses on people 55+ with lung disease, dementia, health problems and diabetes

Aim of project

- **23%** reduction in emergency admissions
- **18%** reduction in healthcare visits
- **20%** reduction in healthcare costs

Who has been involved in this project?

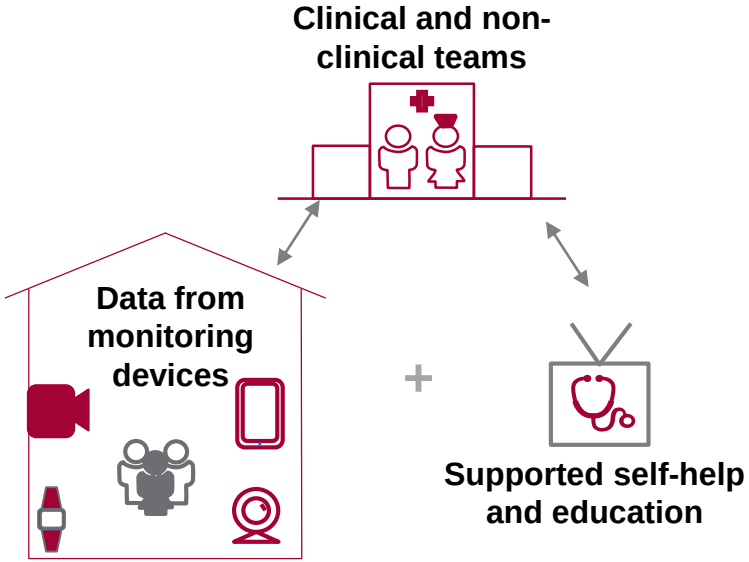
- 30 core team embers
- 8 innovator partners
- 9 NHS partners
- £1.2m estimated innovator in-kind investment

European Union
European Regional Development Fund

INNOVATION AGENCY
Academic Health Science Network for the North West Coast

What is the solution?

Use technology to enable people to self-care an manage their condition. It allows healthcare professionals to coordinate care and make informed clinical decisions



Expected outcomes

Increase

- Patient activation
- Communication and care coordination
- Use of technology

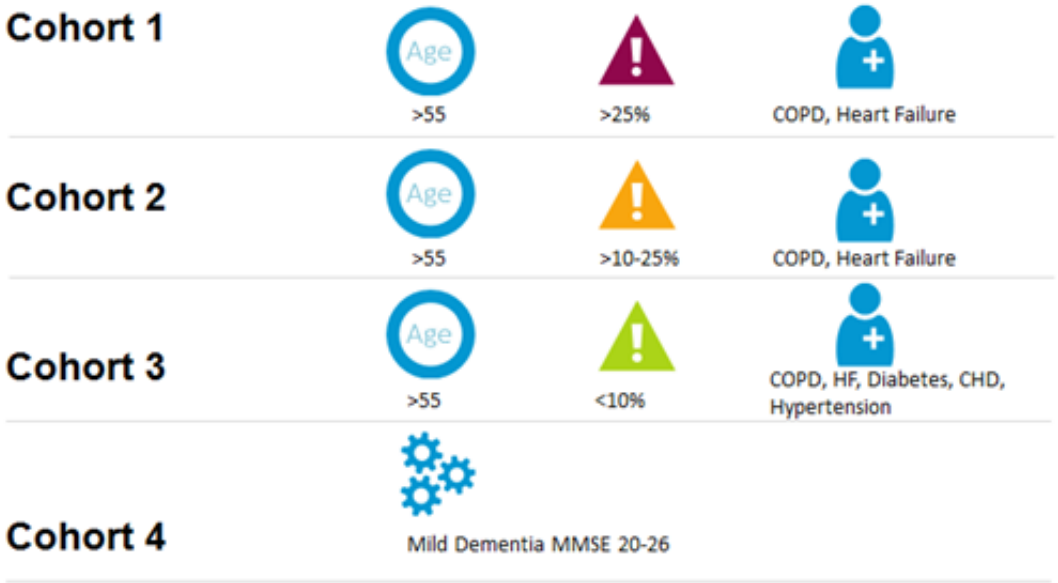
Decrease

- Healthcare utilisation such as A&E and GP services

European Union
European Regional Development Fund

INNOVATION AGENCY
Academic Health Science Network for the North West Coast

Target cohorts



European Union
European Regional Development Fund

INNOVATION AGENCY
Academic Health Science Network for the North West Coast

Innovators and partnership wave 1

Lead Innovator:

- Philips

Helped identify other innovators to provide bespoke combinatorial solutions for the programme

Test Bed Innovators:

- Speakset
- Cambridge Cognition
- uMotif
- Intelesant
- Simple Telehealth
- House of Memories
- Good Things Foundation

Clinical Delivery:

- Fylde Coast Vanguard
- Better Care Together Vanguard

Evaluation:

- Lancaster University's Centre for Aging Research (C4AR)

Governance:

- Lancashire Care NHS Foundation Trust
- Lancaster Health Hub
- The Innovation Agency

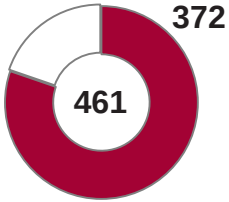
European Union
European Regional Development Fund

INNOVATION AGENCY
Academic Health Science Network for the North West Coast

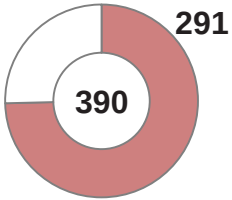
Target cohorts

Primary outcomes

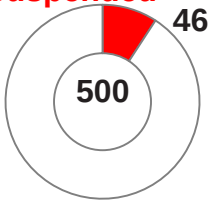
1. Self management



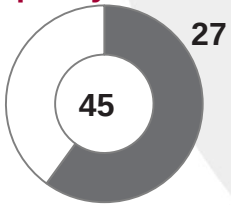
2. Compliance and adherence



3. Health engagement - **Suspended**



4. Improved quality of life



Patients recruited

Overall target – 941
Current – 740 (as at March 2018)

Technology updates

13 innovations currently being trialled with 10 health organisations

Future of the Test Bed programme

The formal evaluation of Test Bed Wave 1 will be launched on Thursday 28 June 2018, marking the closure of Wave 1.

European Union
European Regional Development Fund

INNOVATION AGENCY
Academic Health Science Network for the North West Coast

INNOVATION AGENCY
Academic Health Science Network
for the North West Coast

Interop. Session Questions

Alan Davies
Director of Digital Health /
Regional Digital Expert Group - Chair

Afternoon Interoperability session

1. Getting the balance right between ongoing strategic local trust EPR enhancements vs standardisation across an STP / regional interoperability footprint

2. Cloud storage and service providers who and what should we be looking for

3. Leveraging the ambulance services – where have we got in terms of better interoperability with Adastra

European Union
European Regional Development Fund

INNOVATION AGENCY
Academic Health Science Network for the North West Coast