Advanced uses of data and analytics: SenseMaker

Rosanna Hunt

What does this presentation cover?

- A taster of the methodology (imagery, stories, triads and dyads)
- Deep dive into one case study
- When to use SenseMaker
- An invitation....

SenseMaker® is an online platform that helps us to gather and analyse insights from narratives

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1. **Imagine you are a healthcare professional who has had a recent experience at work, particularly related to patient care or safe working**

Take a moment
to reflect.....

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SENSEMAKER®

HORIZONS

2. What image would fit that experience the best?

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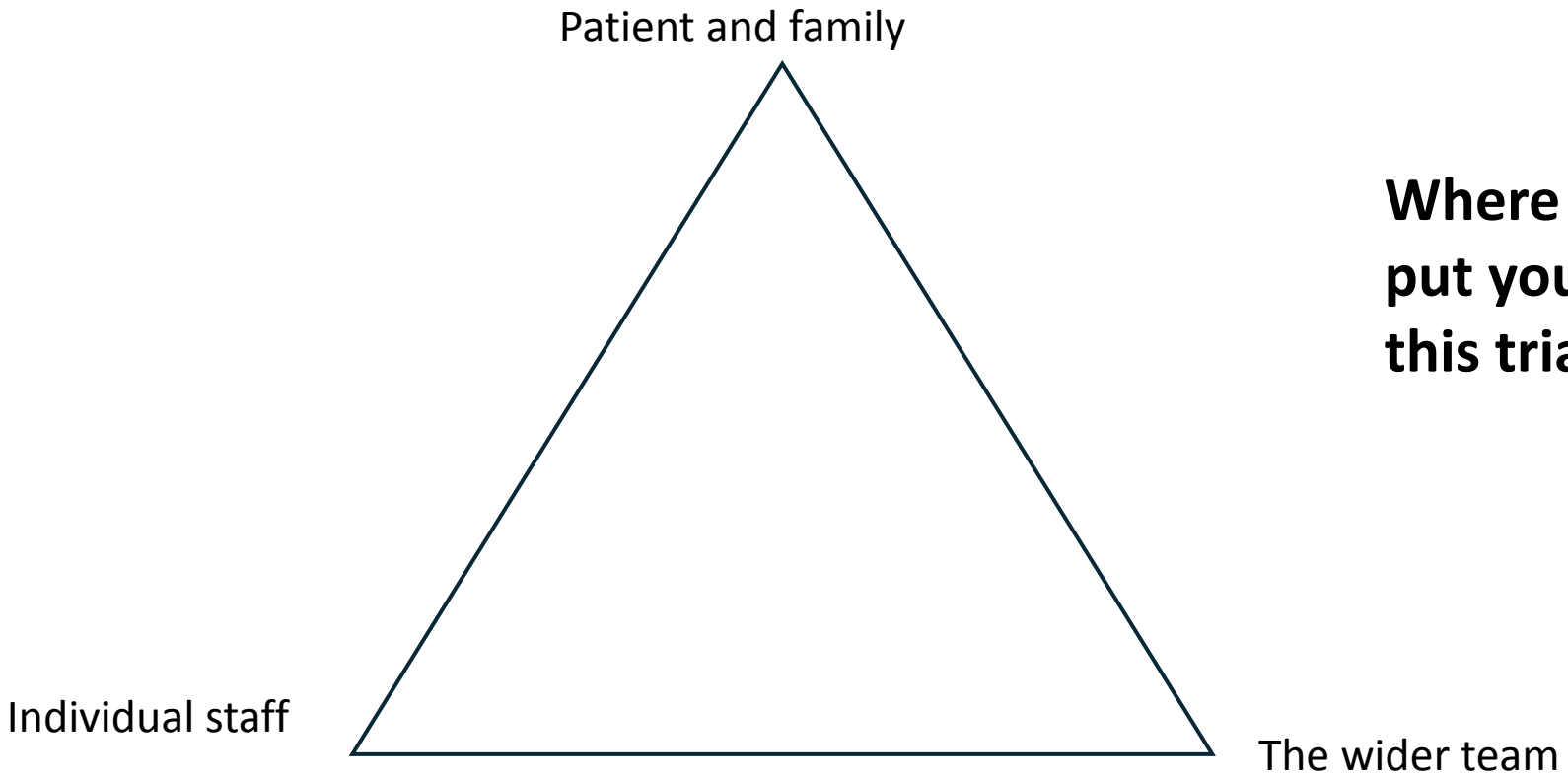
3. Thinking about that specific experience, what did it relate to?



Where would you put your dot on this triad?

N/A

4. How much pressure was on you at the time of the experience?

Low pressure

High pressure

Where would you put your dot on this dyad?

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4. How did this experience make you feel?

Strongly positive ☐

Positive ☐

Neutral ☐

Negative ☐

Strongly negative ☐

Which box would you check?

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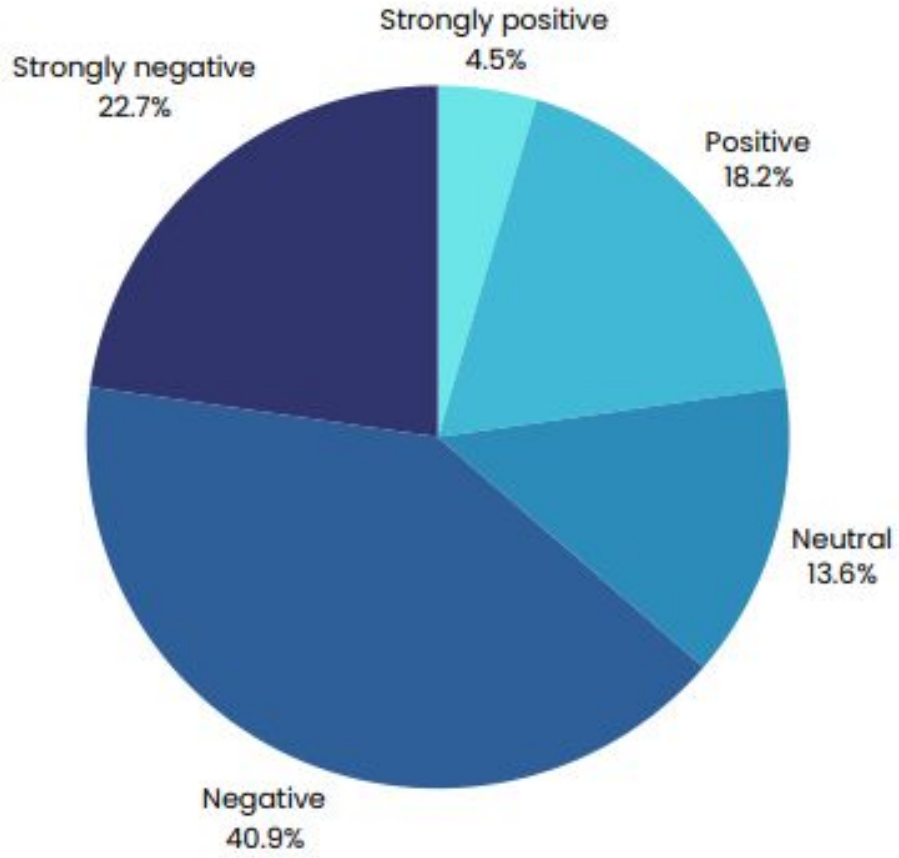
Learning from large numbers of narratives allows us to:

- Explore the conditions for enabling positive experiences of patient care and safe working
- Make statistical comparisons between different groups and contexts
- Use the narratives to collectively define the future we all want to work towards



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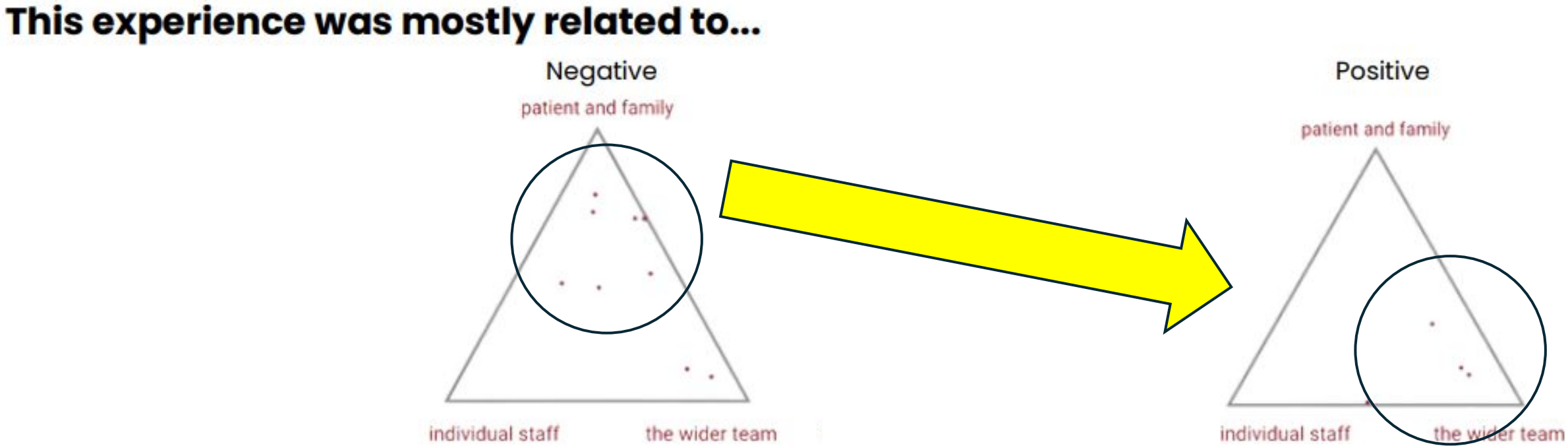
We can explore the differences between positive and negative experiences



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We can drill down into stories that show the way to the future we want

Positive experiences of safe working under high pressure

#Team work creates a healthy balance

0.6 on a scale of low (0) to high (1) pressure

As a team we share our responsibilities fairly in order to create a healthy work balance. Covering the medical care for inpatients can be an extremely stressful role. After a busy day on the ward, a colleague took handover to continue the role the following day whilst I was able to follow up on outpatient queries and catch up with admin. This created a sense of partnership and built on our strong team bond.

#Working together 0.8 on a scale of low (0) to high (1) pressure

Able to sort beds for SEEG week and telemetry. Met with cns and nurse manager several times to plan staffing and admissions. Was really helpful and took the stress out of the planning and decisions.

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Time to vote!

1

Building a world-class approach to patient safety at a children's hospital in the UK

2

An agile approach to the development of policy and guidance through Wellbeing Guardians (Non-Executive Directors on hospital Boards) experiences of staff wellbeing in UK NHS hospitals post-Covid

3

Large scale (250 stories) exploration of staff experiences of improving retention and recruitment of international nurses in the UK

Which case study interests YOU?

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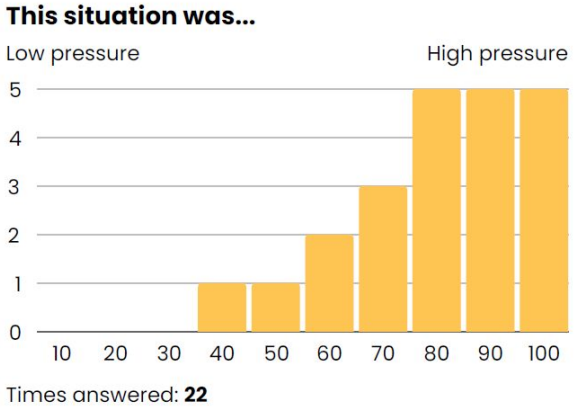
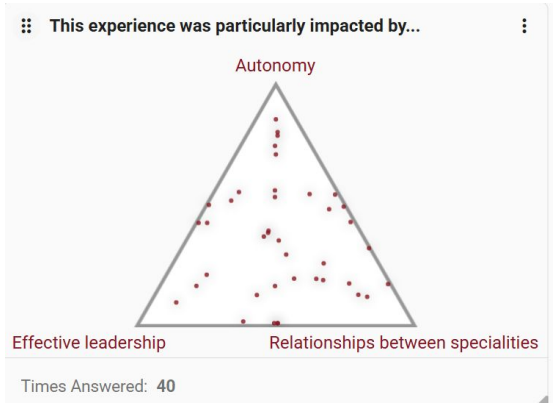
The use of micro-narratives with signification data (using SenseMaker®) from clinical staff working in the Brain department at the UK's Great Ormond Street hospital

Building a world-class approach to patient safety at a children's hospital in the UK

Purpose:
To improve safety and quality of care by facilitating conversations about current experiences at work

To create the conditions for change by providing a safe space for staff to express what they want the future to look like





Approach
Narratives were collected from 22 staff including medics, Allied Health Professionals and nurses and brought to two futures learning workshops on November 20th and 25th 2024.

We asked participants what they observed about their collective experiences using the triads.

We provided all the narratives with permission to share on paper and asked participants to sort the experiences into two piles: those we "want more of" and "those "we want less of".

With a strategic facilitator, participants collectively identified the actions they could take to move towards the shared future.

Impact
Staff learned from positive stories about high-pressure situations

Staff activated a "Safety-II" approach that can inform the quality and safety strategy *and* motivate clinicians to take action as opportunities arise

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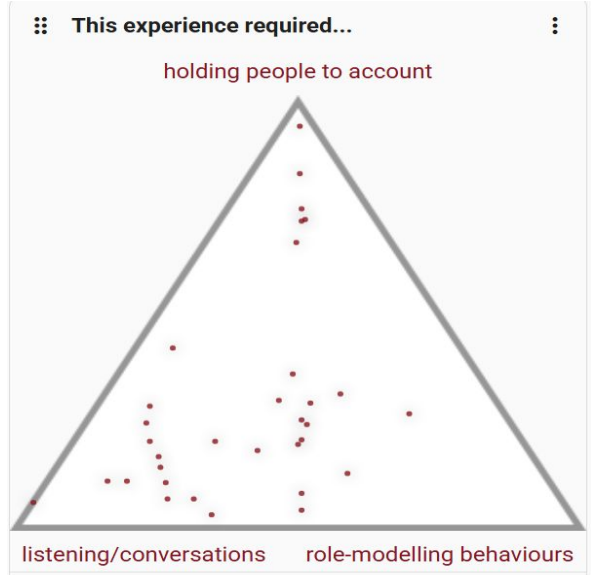
The use of micro-narratives with signification data (using SenseMaker®) from Non-Executive Directors and HR Directors in UK hospitals



Exploring how Wellbeing Guardians (Non-Executive Directors on hospital Boards) are responding to staff wellbeing in UK NHS hospitals post-Covid (2021-23)

Purpose:
To implement an early warning system and track change over time

To enable hospital-based Wellbeing Guardians to access peer support from other UK hospitals

As a mechanism to influence National wellbeing policy and guidance

Approach:
Collect and workshop micro-narratives (stories) of day-to-day experiences

Convene policy makers and hospital senior leaders and non-executive directors

Use workshops to examine the differences between positive and negative stories and the key insights for action

Impact:
Changes to the way the UK hospital regulator (the Care Quality Commission) inspects to help drive wellbeing improvement

Suicide prevention guidance developed with the Samaritans (a global charity providing emotional support)

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The use of micro-narratives with signification data (using SenseMaker®) from UK NHS staff working to improve the recruitment and retention of international staff as part of the Stay & Thrive programme

Experiences of using positive deviance to improve retention and recruitment of international nurses in the UK

Approach

243 stories were collected between 2021 and 2023 at 3 annual national learning events

Participants were allocated to random sense-making groups to sort stories into “those we want more of” and “those we want less of”

Purpose:
To support tacit knowledge sharing across organisations on a large-scale change programme

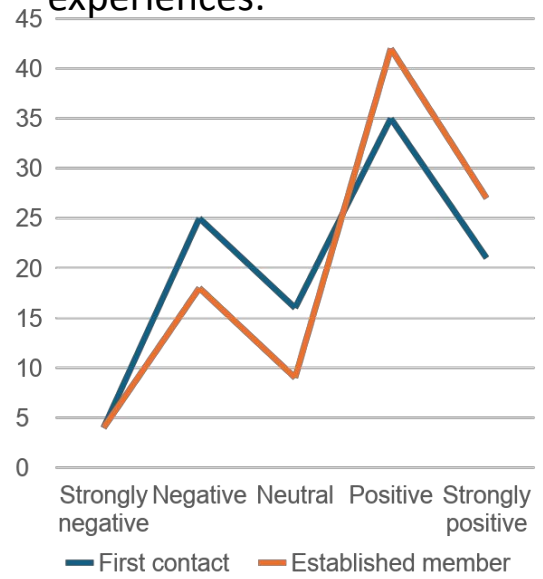
To collect longitudinal data and facilitate sense-making conversations to define and move towards a new future

Impact

Established members of the programme are more likely to have positive experiences of recruitment and retention.

Established members who have positive experiences are more likely to cite professional growth (20%) than those who are new to the programme (10%)

Impact of Stay & Thrive on experiences:



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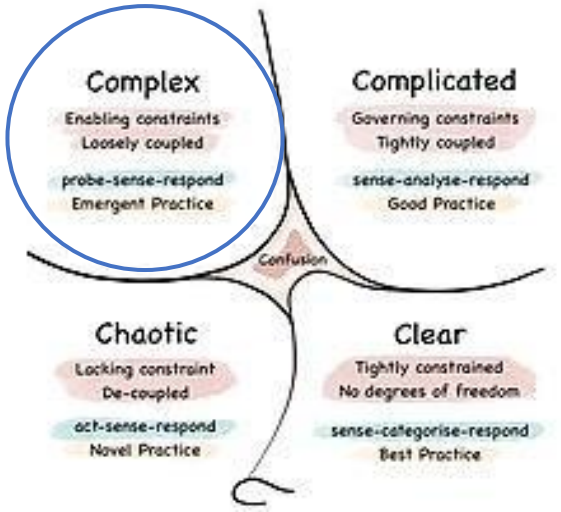
When to use SenseMaker

- If the change environment is complex
- When decisions benefit from broader engagement
- When actions require an iterative, learning oriented approach



The Cynefin Framework
https://en.wikipedia.org/wiki/Cynefin_framework

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Want to share and learn more about this approach? Scan the QR & join our whatsapp group today!

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GLOBAL INTEREST GROUP

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Contact Us!

We want to hear from you!

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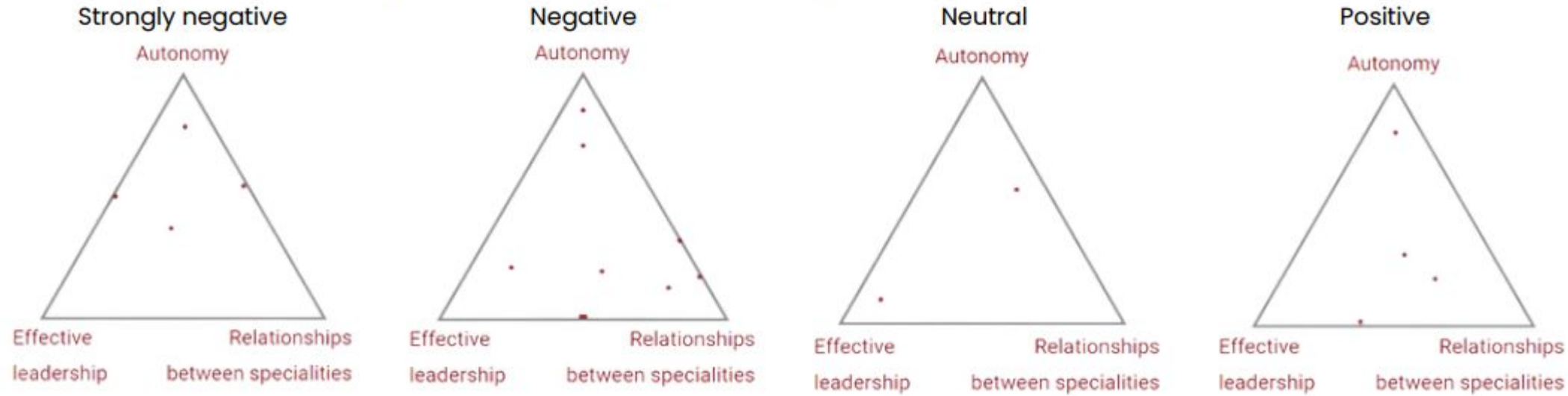
HORIZONS

This experience was particularly impacted by...



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Beyond run & control charts: advanced uses of data and artificial intelligence (AI) to support quality improvement

Erik Mayer

Director iCARE Digital Collaboration Space & Secure Data Environment

22nd May 2025

International Forum on QUALITY & SAFETY in HEALTHCARE UTRECHT

Declaration of Interest

Funders:

- The National Institute for Health & Care Research
- The Health Foundation

Take home messages

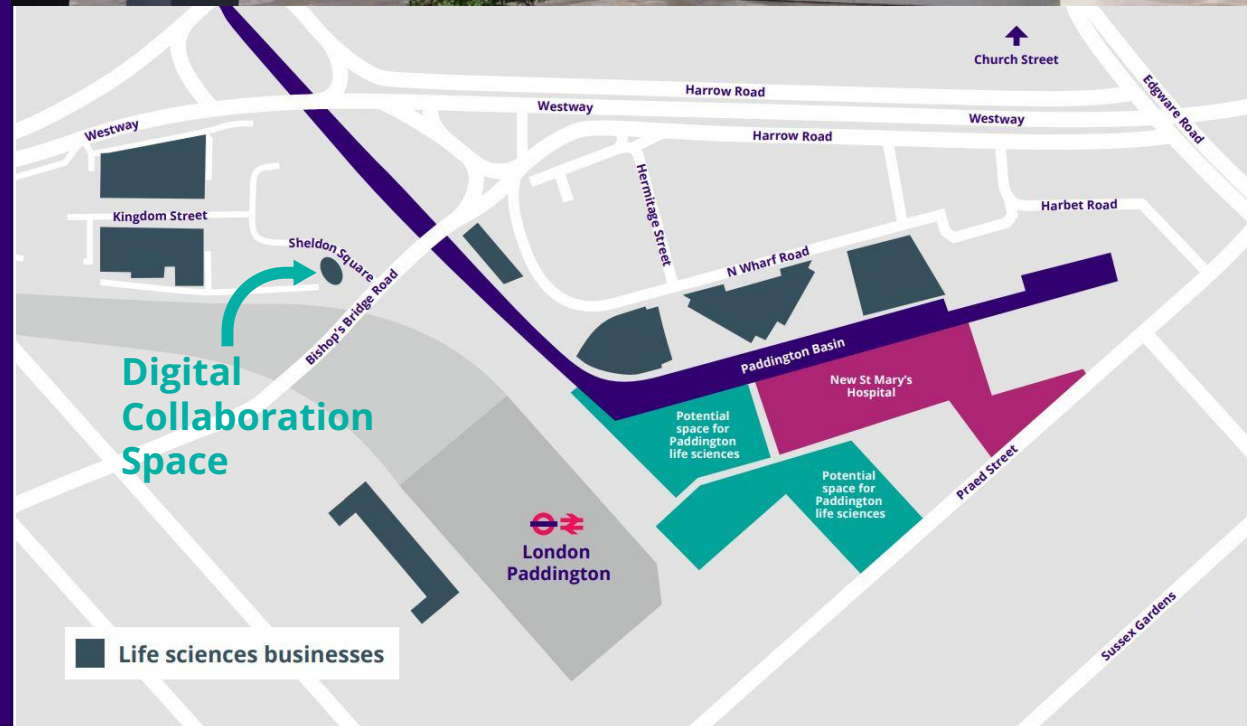
- To learn from the latest advances in the field of data and analytics to support quality improvement
- To understand how data science can transform and accelerate quality improvement work, through natural language processing
- To take away some practical ideas to start exploring the potential of AI in supporting quality improvement, and to do this within a framework that supports this to be undertaken safely and equitably

Digital Collaboration Space

1A Sheldon Square, W2 6PY

The Digital Collaboration Space is home to the BRC Digital Health iCARE team, and acts a space for academics, clinicians, local communities, and partners to come together and work on research to **improve the health and wellbeing of Northwest London.**

It is part of **Paddington Life Sciences** which is a group that includes Imperial College Healthcare NHS Trust, Imperial College London, data and pharmaceutical companies based in Paddington.



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Digital Health Theme Overview

"create, implement and evaluate digital and data-driven tools to support diagnosis, clinical management and service delivery"

"to improve the quality of digital and data-transformed health and social care delivery"

Translational Data Analytics

Ensure front-line healthcare staff have the information needed to provide high-quality and safe care at the point of clinical decision-making

AI testbed for digital health

Enable safe, effective and ethical adoption and evaluation of AI-driven technologies in health and social care

Real-World Evidence

Develop new approaches to evaluating healthcare interventions through data-enabled trials embedded in routine clinical practice

Improving health and wellbeing through digital and data

North West London
Whole Systems Integrated Care

Developed and managed by the NWL ICB, **Whole System Integrated Care (WSIC)** is a population health dataset of routinely collected health data**.**

Community, Social Care, Mental Health

- 4 community health Trusts
- 2 mental health Trusts
- 8 local boroughs

Primary Care and Acute

- 346 GP practices
- 10 acute & specialist hospitals

2.8 million diverse North West London population

iCARE

Developed and managed by the Digital Collaboration Space team, using clinical and non-clinical systems at **Imperial College Healthcare NHS Trust (ICHT)**.

ICHT Clinical Data

- Inpatient, outpatient, A&E, pathology, cancer, imaging treatments, e-prescribing, procedures, clinical notes
- Consent, clinical trials, tissue bank samples

ICHT Non-clinical Data

- Patient safety and incidents
- Patient experience
- Staffing
- Environmental

Research ready curated data available in our shared **secure data environment** architecture to ensure use of the data is co-produced and benefits our North West London patients and communities.

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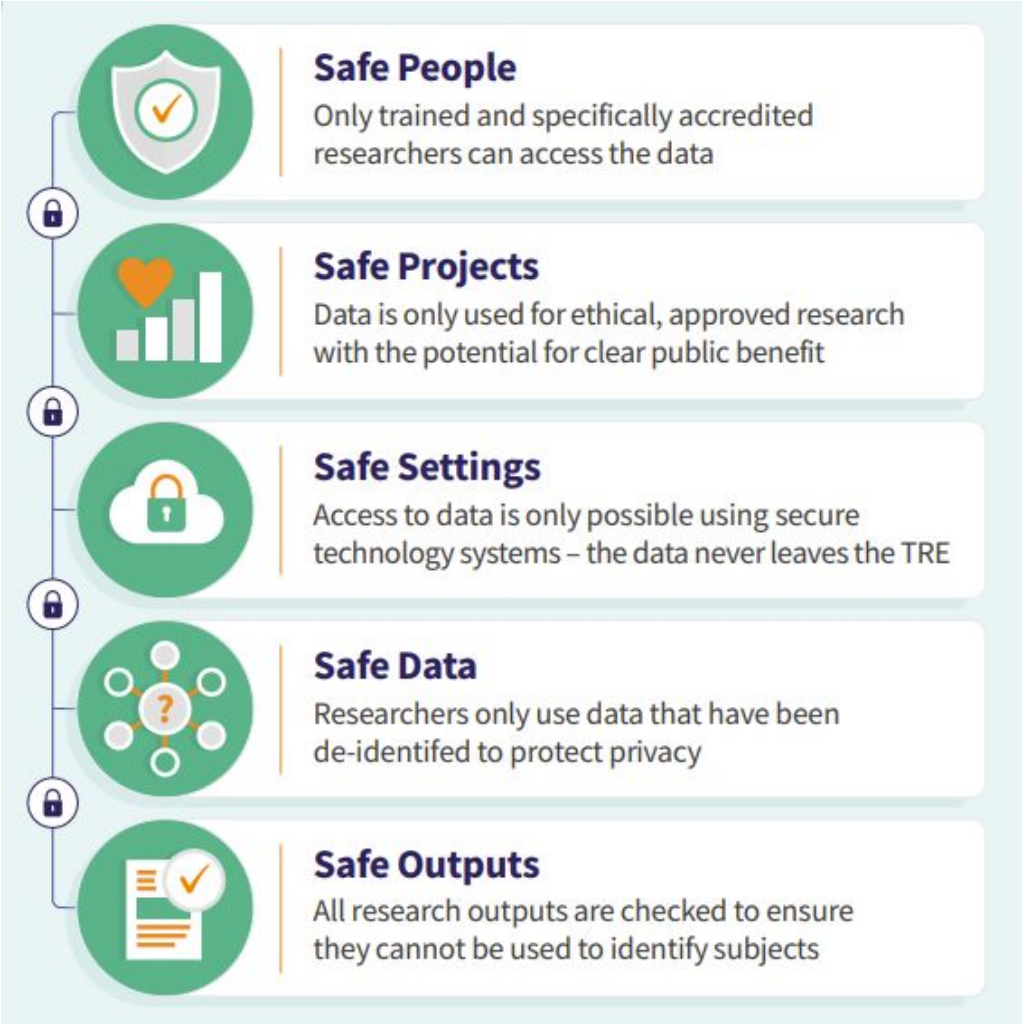
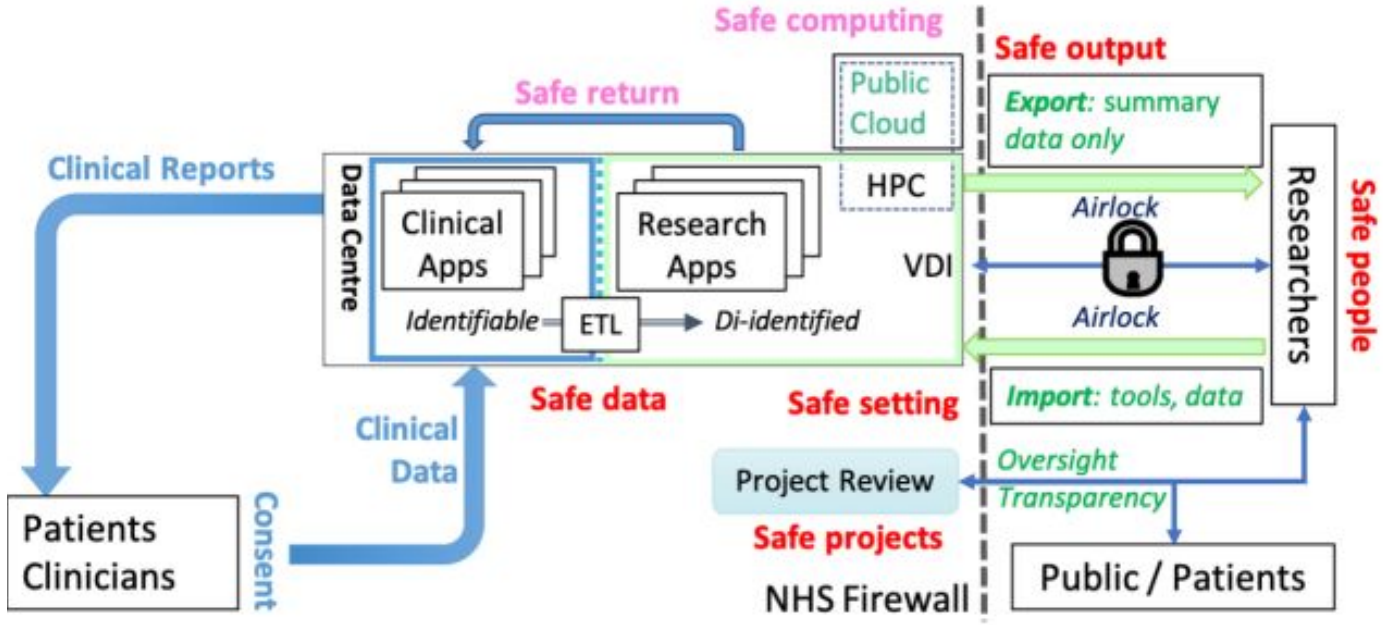
HDR UK data Alliance Secure Data Environment safes

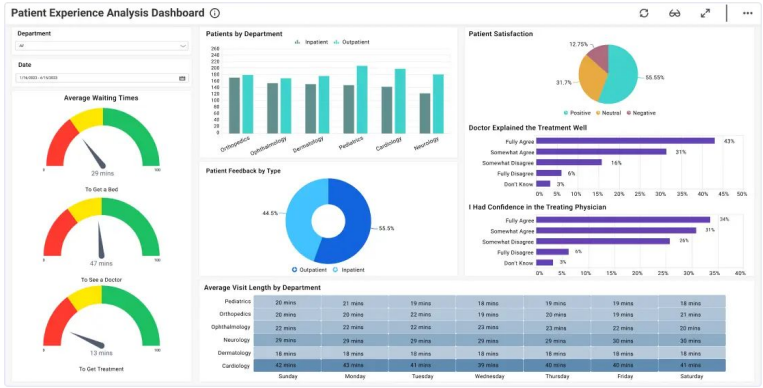




Clinical staff identify relevant data & explain the nature & caveats of these data

Healthcare delivery generates data in clinical systems

Data scientists transform these data into actionable insights for clinical teams



Learning Health Systems

‘Better Care Loop’

Data to Knowledge

Knowledge to practice

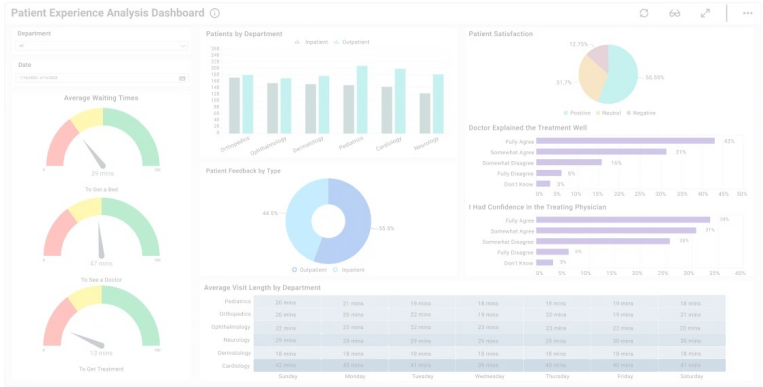
Practice to Data

Integrated informatics platforms, safe return into front-end systems

Data-driven insights support clinical decision making & quality improvement

Monitor QI changes using routine data

Data scientists transform these data into actionable insights for clinical teams



Clinical staff identify relevant data & explain the nature & caveats of these data

Healthcare delivery generates data in clinical systems

Data to Knowledge

Co-production
Multi-professional expertise across healthcare, data science & research
Rapid-cycle digital evaluation

Practice to Data

Knowledge to practice

Integrated informatics platforms, safe return into front-end systems

Monitor changes using routine data

Data-driven insights support clinical decision making & quality improvement

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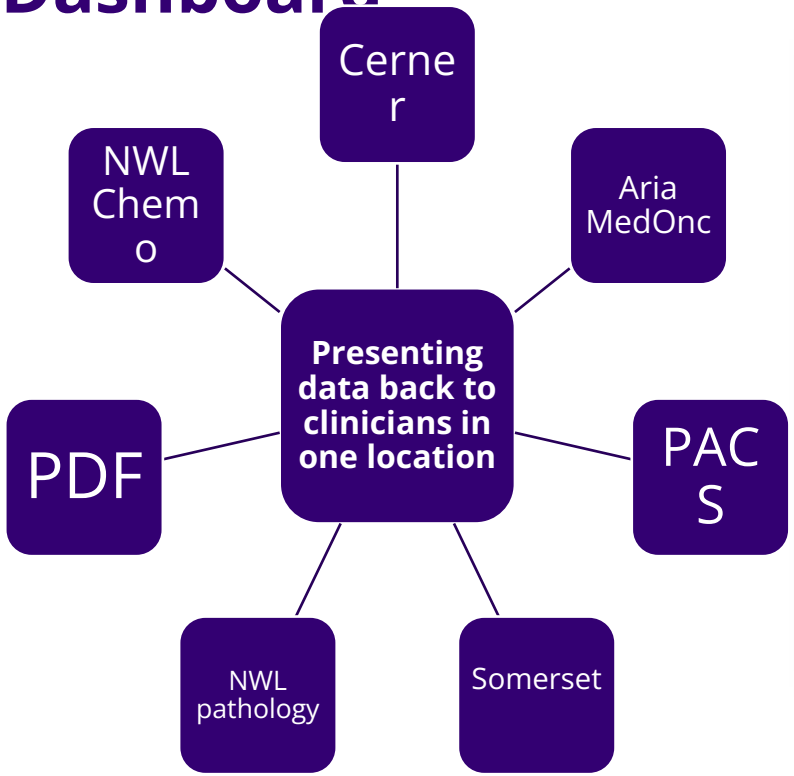
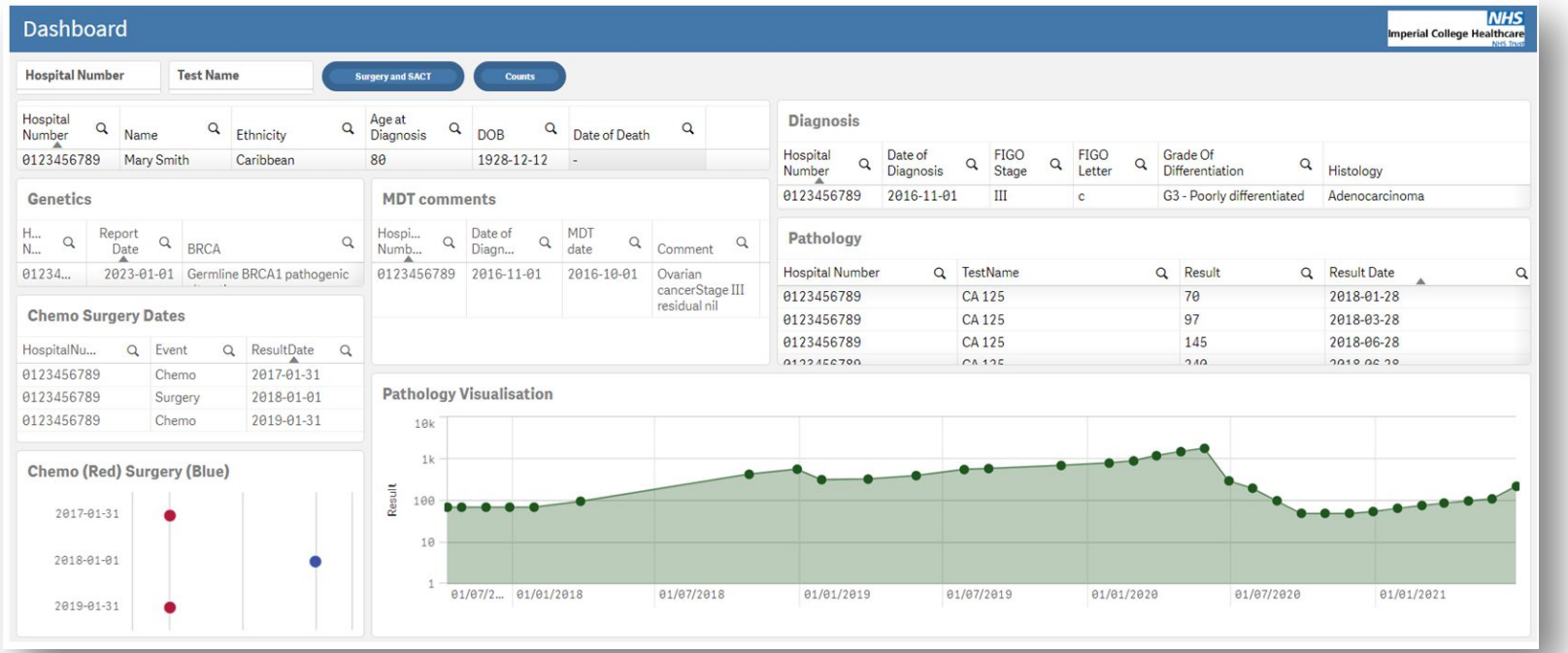
Example Use Cases:

Clinical Decision Support
Operational Efficiencies
Corporate Function

Supporting Cancer Multidisciplinary Teams - Ovarian Cancer Dashboard





National survey of EHR use in gynae oncology
Nearly 70% survey respondents said **genetic test results** were difficult to find.

NLP to extract genetic test results from free-text reports

- 97% accuracy

	EHR	Dashboard
Total time taken to look up genetic test results for 30 patients	**01:12:24**	**07:47**

Releasing time to improve patient safety - inpatient falls

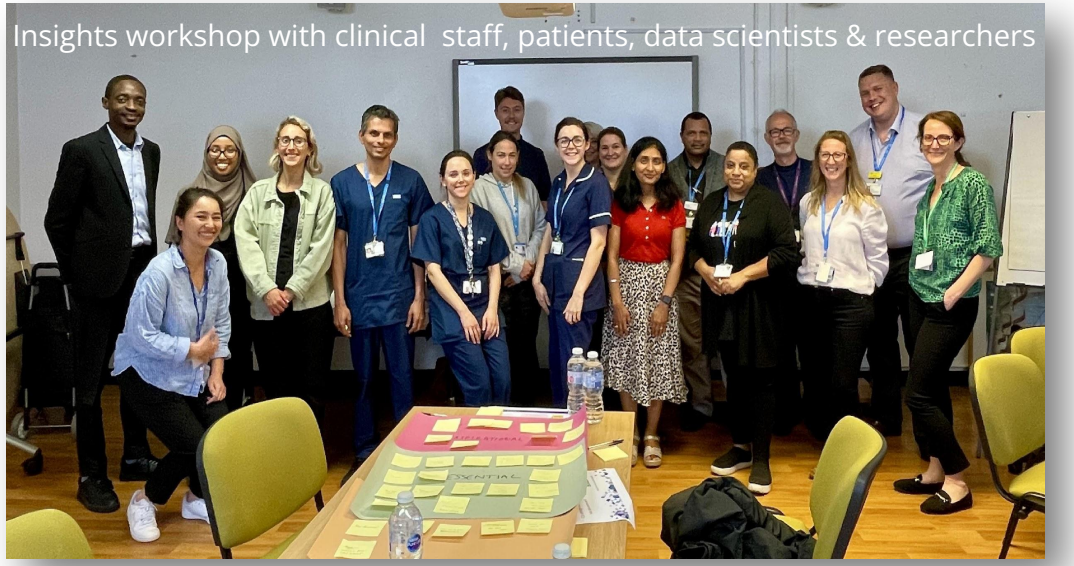
Falls are the most **frequently reported patient safety incident** in hospitals

Clinical teams don't have access to good data to understand **why** patients are falling

Manual review/investigation is **time-consuming**

Macrae **The problem with incident reporting.** *BMJ Qual Saf* 2016

"We collect too much and do too little"


Insights workshop with clinical staff, patients, data scientists & researchers

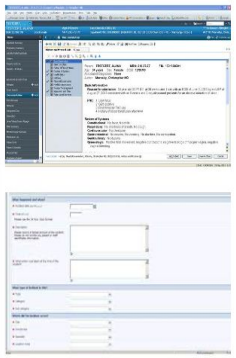
We are **co-producing** an **integrated informatics platform** to provide **automated, real-time insights** into patient falls

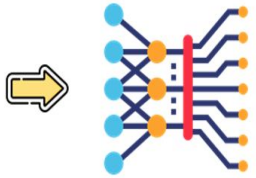
Build Natural Language Processing (NLP) model

Technology that enables computers to **understand and process language.**

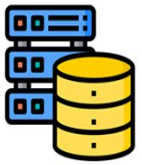
Can assist in managing and **interpreting vast amounts of clinical records.**

Use raw data (Cerner, Datix)





Model extracts data and converts it into useful information



Display insights

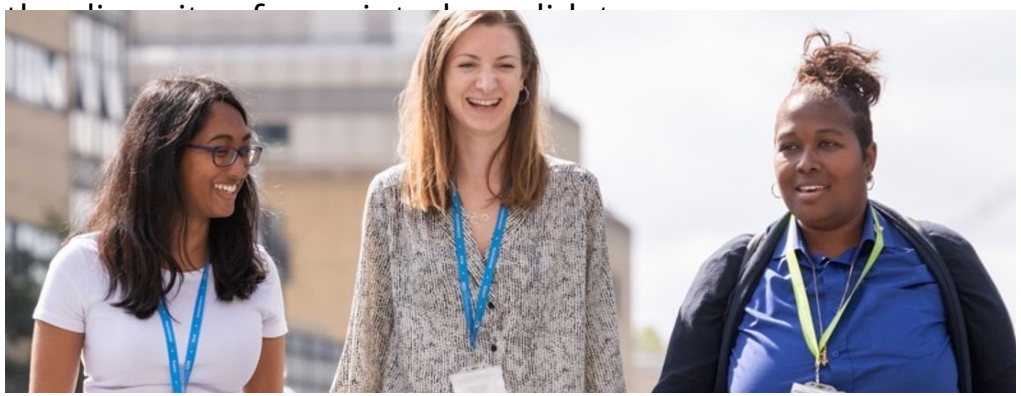
Intended impacts: better learning, clinical staff time liberated for QI, real-time monitoring (assurance), safer care

Increasing diversity in hiring at Imperial College Healthcare NHS Trust

As part of ICHT's **Equality, Diversity, and Inclusion Strategy**, the Trust started its Inclusive Recruitment programme in June 2022 to increase the diversity of the workforce in more senior roles. Programme had two components:

- ✔ mandatory diverse (ethnicity and gender) interview panels
- ✔ Hiring managers must write a letter to the ICHT CEO, Tim Orchard, explaining their hiring decision.

Working with the ICHT Workforce team, we are analysing HR data to understand whether the programme has improved



Analysis of structured recruitment data to understand trends in diversity of candidates through the recruitment stages

Natural Language Processing of over 1200 Letters to the CEO to derive thematic trends in hiring manager candidate assessments

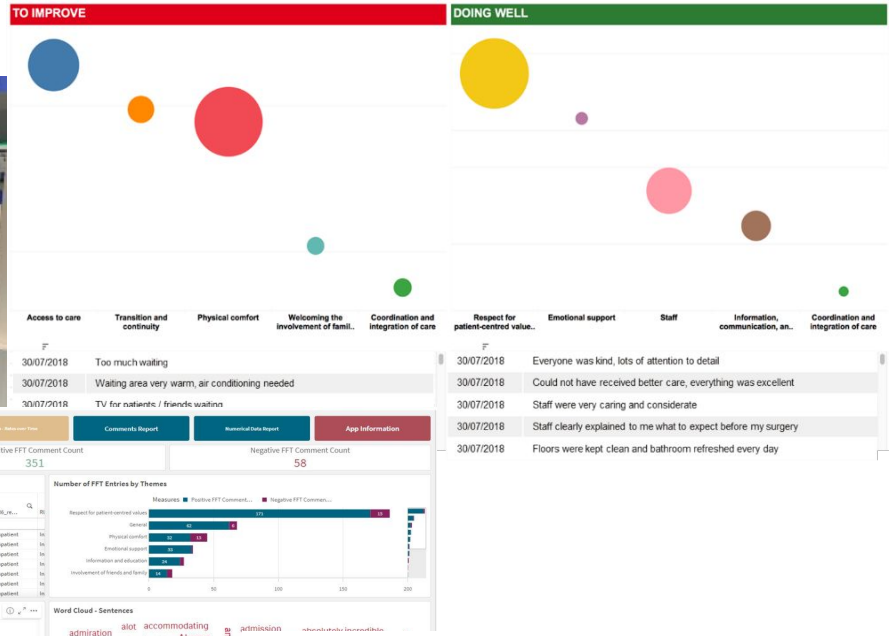
Analysis of staff engagement survey results to understand whether current employees feel they are supported in career progression

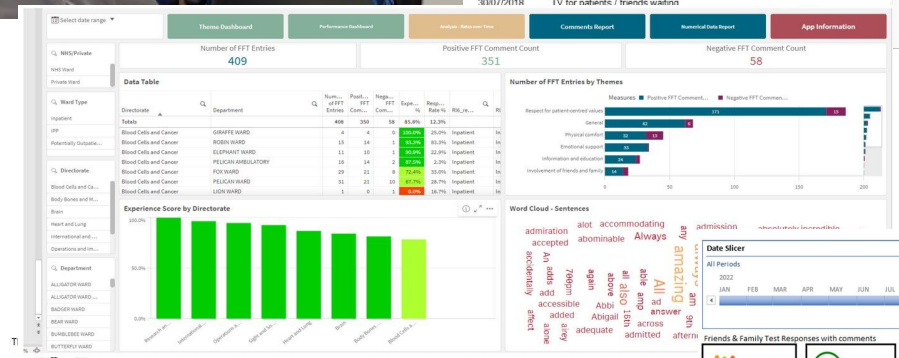
Outcomes:

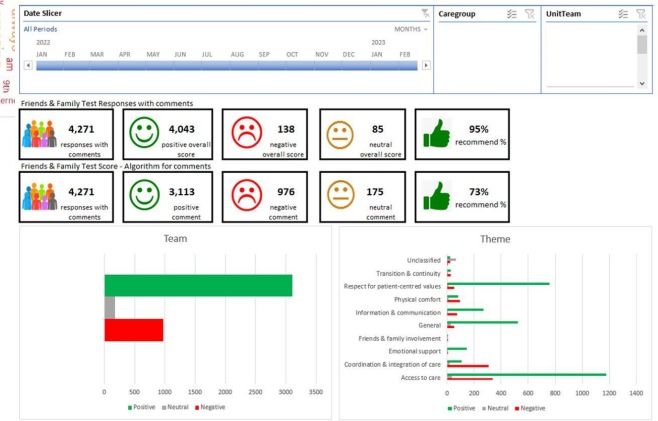
- Trends in the recruitment of BAME and female candidates by interview panel profiles, interview assessment themes, and candidate scoring.
- Mechanism for ICHT workforce team to continuously monitor impact of the inclusive recruitment for operational improvement.

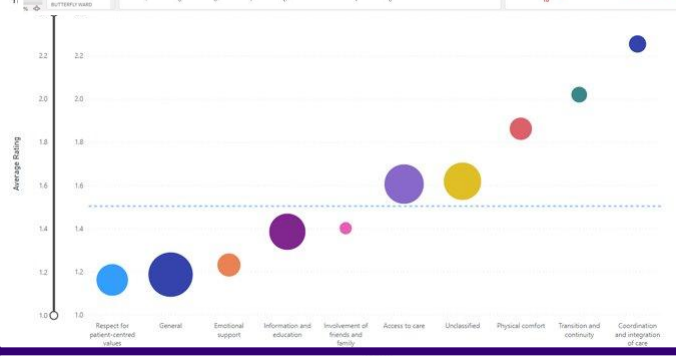
Using Natural Language Processing to improve patient experience

- Currently there is no way to read the tens of thousands of patient feedback comments quickly to affect change because of patient feedback.
- To address this, we create a natural language processing (NLP) algorithm to thematically analyse free text FFT comments for quality improvement.









Collaboration between Patient Experience, Quality Improvement, and IT/Analytics teams

Development and validation of NLP algorithm with data scientists, clinicians and lay partners.

Co-designing visualisations with frontline staff and lay partners.

Wards using patient feedback data for quality improvement.

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Using Natural Language Processing to improve patient experience

Impact:

Saving staff time - time spent on processing 6,000 responses reduced drastically from four days (manual) to 15 minutes

Example of person-centred quality improvements made:

- Facilitating better *Access to Care* in Accident and Emergency
- Improving *Physical Comfort* in Outpatients
- Encouraging early dialogue in *Transition and Continuity* in Inpatients

With support from The Health Foundation, we have **scaled the innovation in 9 Trusts** to understand how to sustainably embed this type of technology in the NHS.

We have now created a **national Implementation toolkit** for other NHS Trusts and have started an online **national community of practice** for continued collaboration.

NHS Lancashire Teaching Hospitals NHS Foundation Trust

NHS Oxleas NHS Foundation Trust

NHS Oxford University Hospitals NHS Foundation Trust

NHS Northern Care Alliance NHS Group

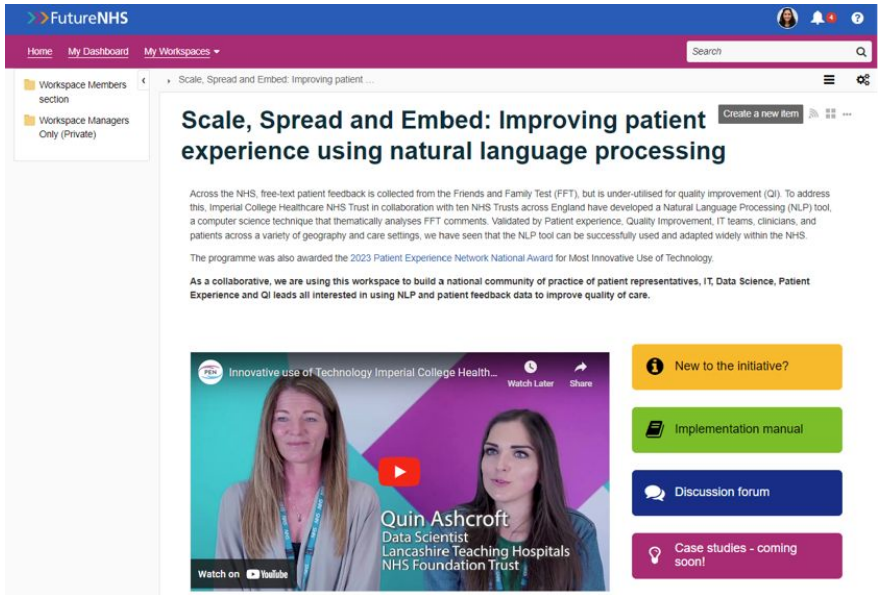
NHS University Hospital Southampton NHS Foundation Trust

NHS Humber Teaching NHS Foundation Trust

NHS Great Ormond Street Hospital for Children NHS Foundation Trust

NHS Maidstone and Tunbridge Wells NHS Trust

NHS Lancashire & South Cumbria NHS Foundation Trust



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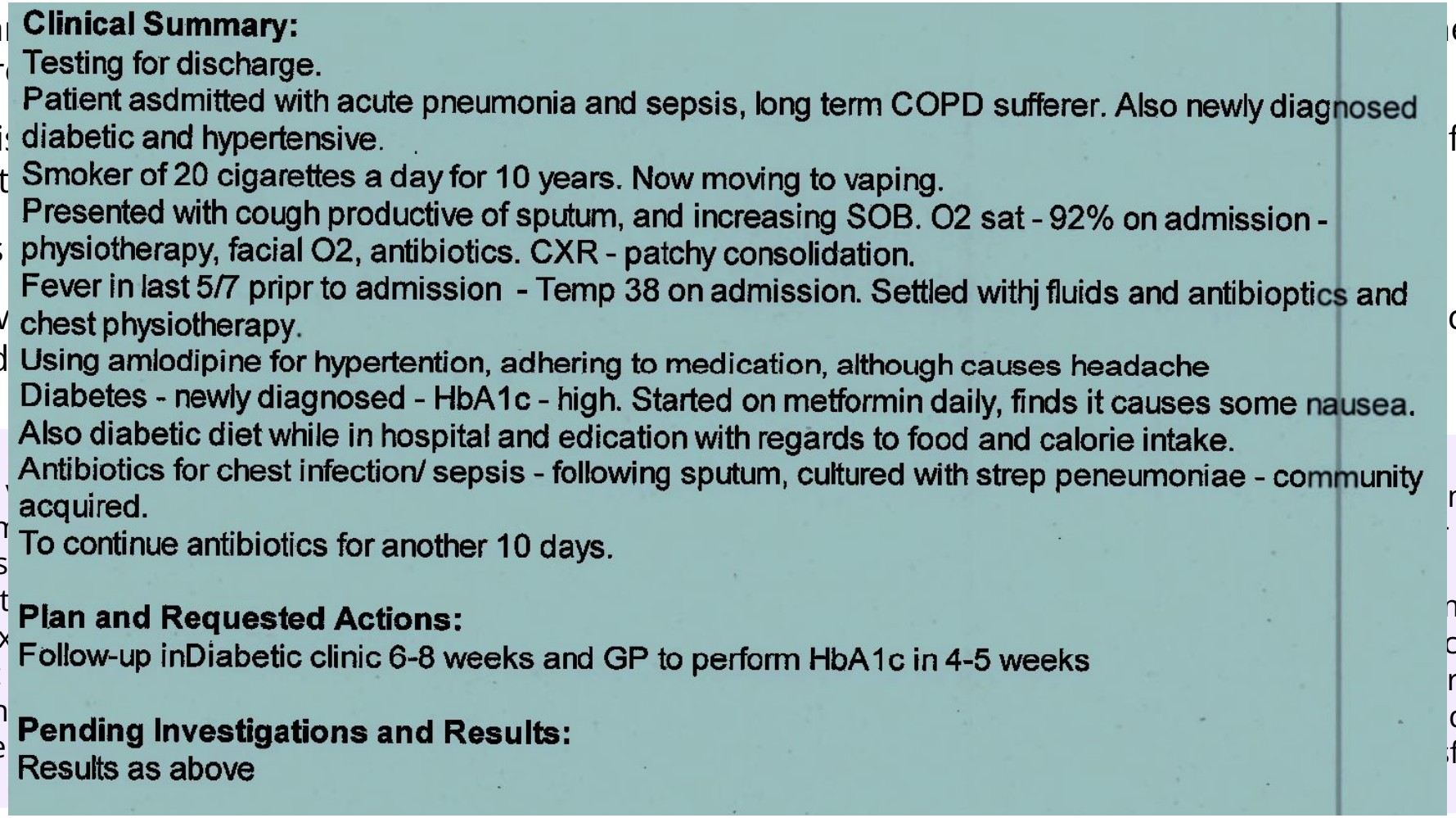
Generative AI - Discharge Summary Project Background

- A discha… e next steps in their car…
- As care i… finding relevant informat…
  - It is …
  - As v… curate, recent, and …

- Patient …
- Assessm… carer or families
- Test res…
- Medicat… munity health
- Free-tex… ces
- Implicit … r health
- Speakin… ders (if being membe… ferred)



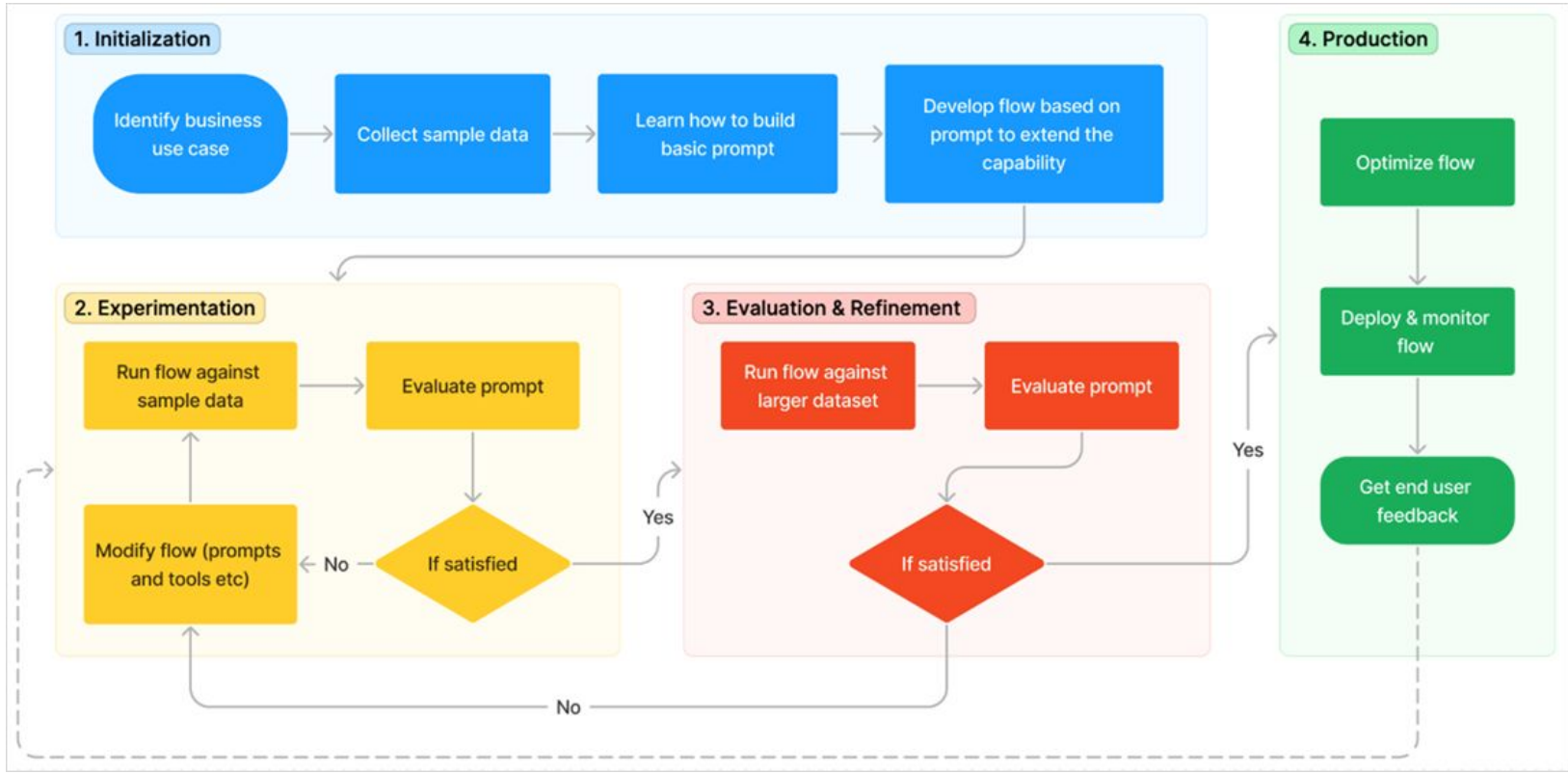
Clinical Summary:
Testing for discharge.
Patient asdmitted with acute pneumonia and sepsis, long term COPD sufferer. Also newly diagnosed diabetic and hypertensive.
Smoker of 20 cigarettes a day for 10 years. Now moving to vaping.
Presented with cough productive of sputum, and increasing SOB. O2 sat - 92% on admission - physiotherapy, facial O2, antibiotics. CXR - patchy consolidation.
Fever in last 5/7 pripr to admission - Temp 38 on admission. Settled withj fluids and antibioptics and chest physiotherapy.
Using amlodipine for hypertention, adhering to medication, although causes headache
Diabetes - newly diagnosed - HbA1c - high. Started on metformin daily, finds it causes some nausea. Also diabetic diet while in hospital and edication with regards to food and calorie intake.
Antibiotics for chest infection/ sepsis - following sputum, cultured with strep peneumoniae - community acquired.
To continue antibiotics for another 10 days.

Plan and Requested Actions:
Follow-up inDiabetic clinic 6-8 weeks and GP to perform HbA1c in 4-5 weeks

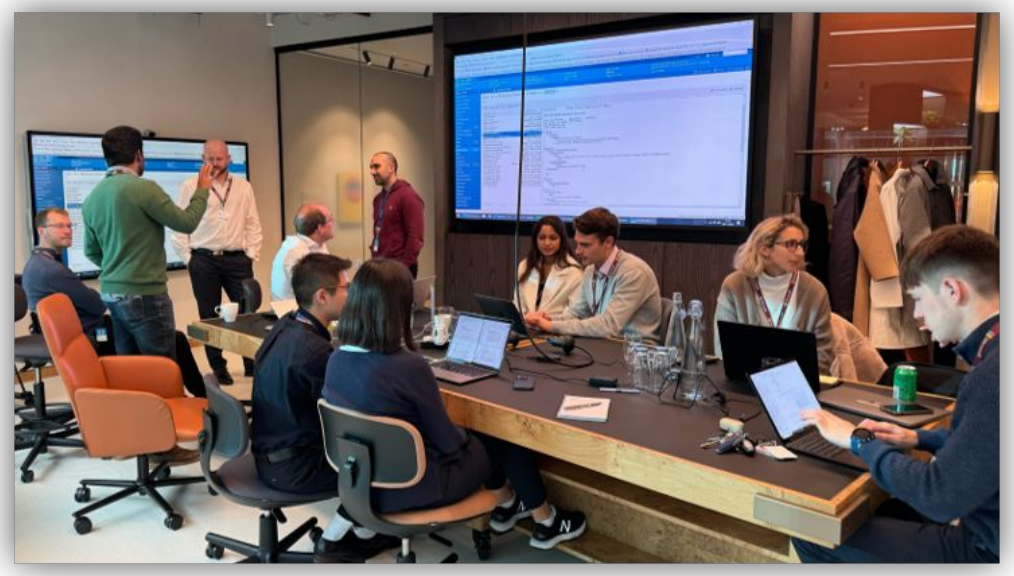
Pending Investigations and Results:
Results as above

Generative AI - Questions?

- Can generative AI be used to provide clinical decision support when creating discharge summaries?
- Would the process be more efficient?
- How accurate and relevant is the information provided?
- How do they compare with human generated discharge summaries?
- How acceptable is the use of generative AI for both patients and staff?



Generative AI - Discharge Summaries



- **Clinical understanding** of current human discharge summary generation through an observational study with junior doctors
- **Curate datasets** based on evaluation to replicate discharge summaries
- **Codesign** algorithm in iCARE to best enable generative AI to produce useable, accurate and factually correct discharge summaries
- **Research** to assess generative AI versus clinician outputs with de-identified data to evaluate accuracy, suitability, and acceptability among patients and healthcare professionals

Take home messages

- To learn from the latest advances in the field of data and analytics to support quality improvement
- To understand how data science can transform and accelerate quality improvement work, through natural language processing
- To take away some practical ideas to start exploring the potential of AI in supporting quality improvement, and to do this within a framework that supports this to be undertaken safely and equitably

Digital Collaboration Space

iCARE

PADDINGTON LIFE SCIENCES

IMPERIAL

NIHR | Imperial Biomedical Research Centre

NHS Imperial College Healthcare NHS Trust

Thank You

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From data to improvement: social mechanisms as a key to quality dashboard adoption

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Please stand up if your organisation has at least one quality improvement dashboard

Please remain standing if this dashboard is successfully used by healthcare professionals to improve the quality of care

Brief introduction

“Something looks so good, that it is assumed to work”[1]

Previous research on (adoption of) dashboards

Focussed on technical and design requirement:

Technical:

- Timely, complete and correct data[2]
- Flexibility in adjusting the content to end-users[3]
- Colour coding[4]

Design:

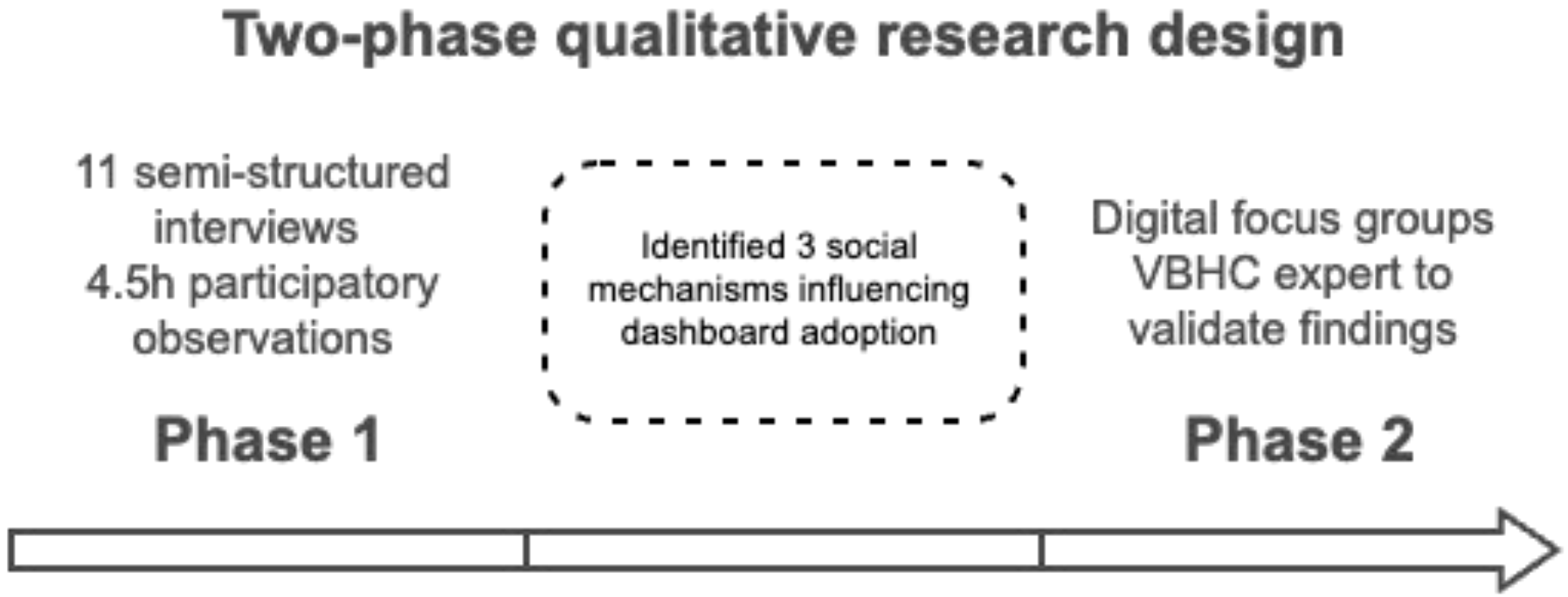
- Human-centred and interdisciplinary[5]
- Using prototypes[5]

Adoption of dashboards?

- Challenging[6]
- Influenced by socio-organisational factors[7]

How do social mechanisms influence the adoption of dashboards in practice?

- Embedded case study of the adoption process of two disease specific dashboards with different adoption outcomes



Three social mechanisms influenced dashboard adoption

Cultivating a supportive team climate

Ensuring trust

Displaying leadership behaviour

Social mechanisms stimulate a learning environment

- Successful dashboard adoption requires individual and team social action;

- Call for attention for both the dashboards' "materiality" (**technical**) and the learning process based on the displayed information on the dashboard (**social**) when developing, implementing and adopting dashboards.

Take home (or to work) messages:

- Social mechanisms play an important role in successful adoption of dashboards for quality improvement;
- Three identified social mechanisms are: cultivating a supportive team climate, ensuring trust and displaying leadership behaviour;
- These social mechanisms stimulate a learning environment in which data can be used to discuss and improve quality and safety of care;
- If quality improvement teams are strugling to achieve quality improvement based on data, consider to evaluate these social mechanisms;
- Do not assume that dashboards will automatically enhance improvements as many interrelated social mechanisms influence successful dashboard adoption.

Thank you for your attention!

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