

# AI for Urgent and Emergency Care

## Revolutionising Urgent and Emergency Care in the NHS

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# AI for UEC Programme's anticipated impact



## Reduced Hospital Admissions

We forecast saving 26,673 unplanned bed days in North East London hospitals.



## Decreased A&E Attendances

We expect a reduction of 13,000 A&E attendances annually



## Improved Patient Outcomes

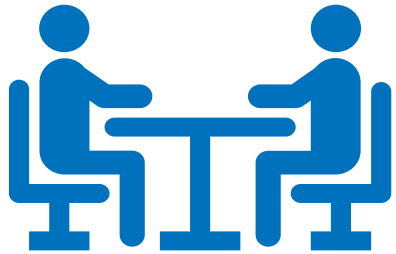
Based on our previous trials, we anticipate enhanced quality of life for patients, with more confidence in their own health management



## System-wide Impact

This project will serve as a template for how the NHS can use modern technology to deliver predictive, proactive, and preventive care

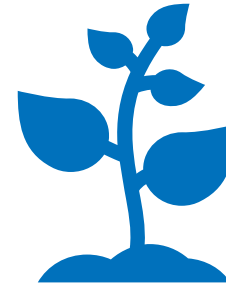
# Fostering innovation ecosystem



**Knowledge sharing  
between partners**



**Providing safe,  
innovative solutions to  
processes**



**Contributing to the growth  
of the Digital Health  
Innovation Ecosystem**



**Focusing on health  
inequalities to deliver a fair  
system**

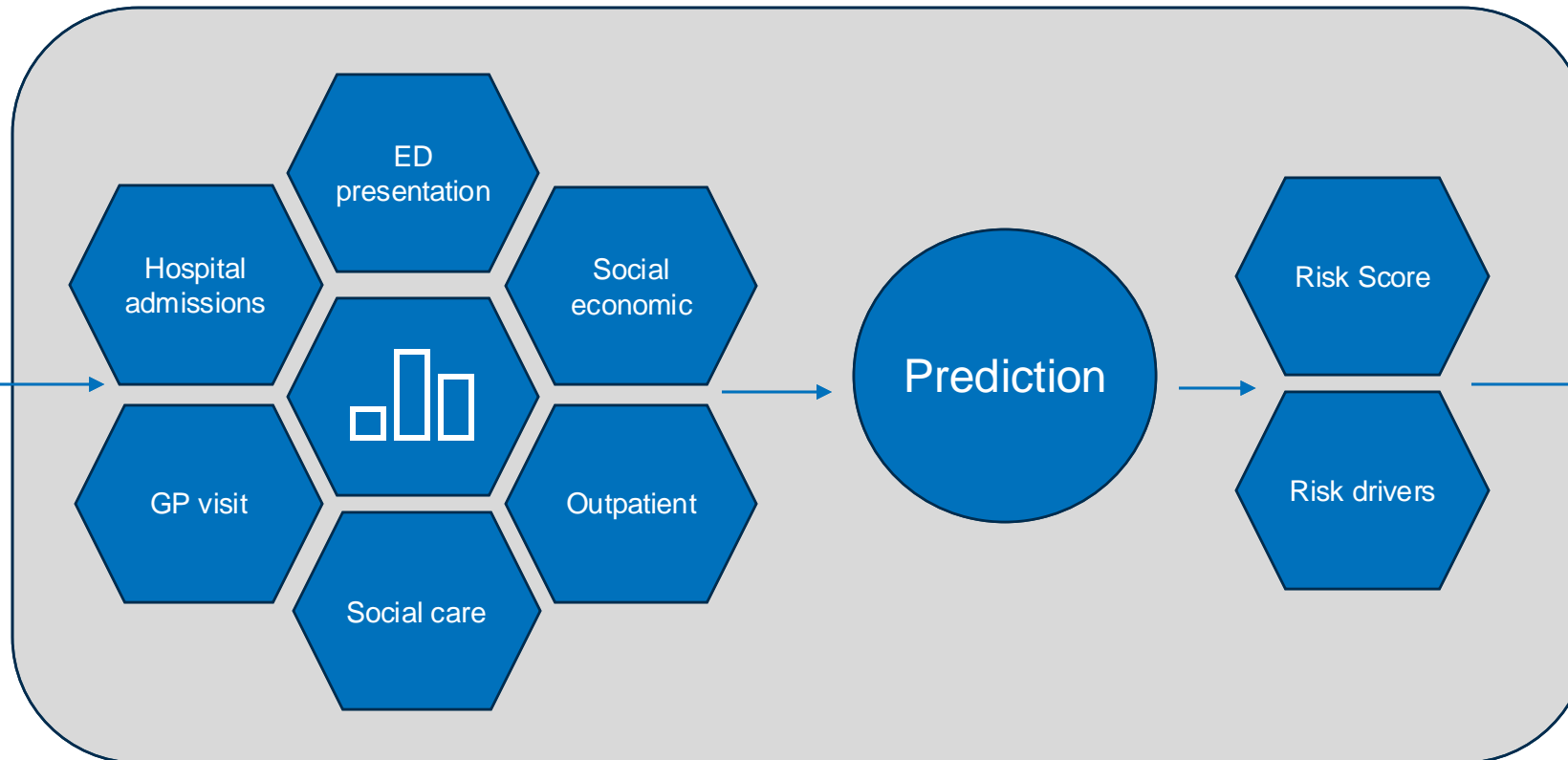
# Clinically validated prediction and prevention technology

AI reviews available patient data

Risks are predicted

Outputs routed to  
appropriate system

Patients  
interact with  
healthcare  
system



## Multiple endpoints:

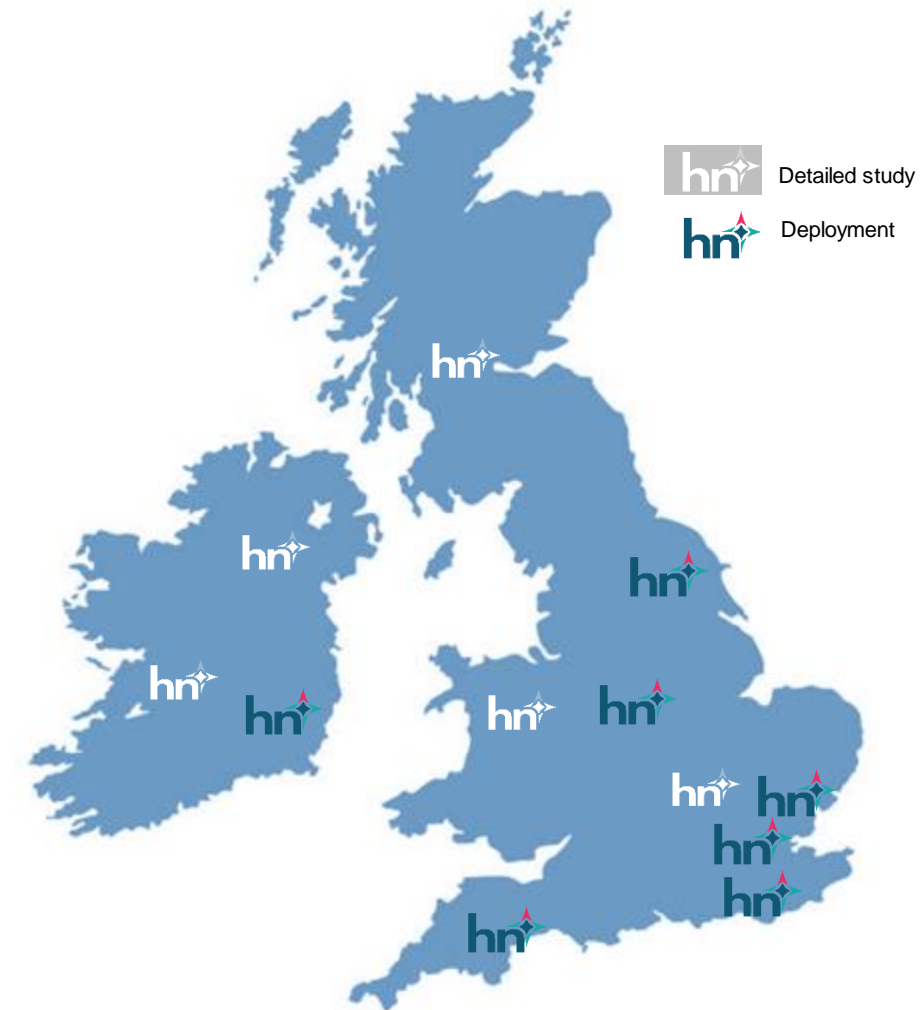
- HN Engage
- Patients routed to other services
- Prediction Outputs dashboard
- Lists for healthcare triaging
- API into system software

# Experience built on multiple deployments and strong NHS evidence base

Solution - Deployed in Different Geographies

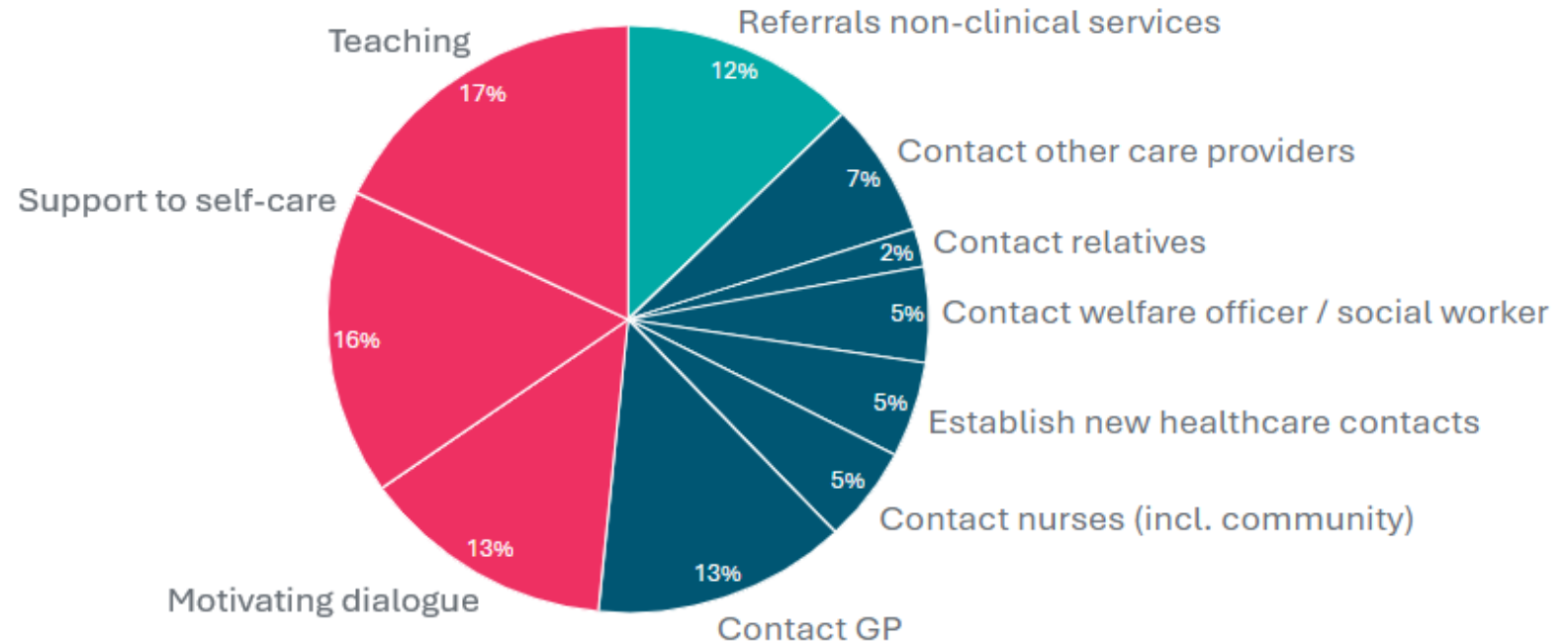
Evidence - Published with the Nuffield Trust

- Largest study of its kind supporting +1,600 patients
- **Reduced A&E Attendances:** A 34% reduction in A&E attendance
- **Improved Patient Outcomes:** Patients reported increased quality of life, improved physical health, and better ability to manage their health conditions
- **Mortality Reduction:** A 46% reduction in deaths among men over 75



# HN's managed clinical coaching service provides a nurse-led, scalable, remote, digitally inclusive and clinically validated preventative intervention

Remotely delivered clinical and psychosocial intervention that promotes health literacy, empowerment, and care coordination as required.



- Motivational Coaching & Health Education
- Links to 3<sup>rd</sup> Sector/ARRS Teams
- Care Coordination



All Clinical Coaches are trained Healthcare professionals, and have undergone our PCI Accredited Training Programme

# Patient level impact

We anticipate significant improvements in patient outcomes, including:



**Reduced frequency and severity of exacerbations in chronic conditions**



**Improved medication adherence**



**Better self-management of symptoms**



**Enhanced overall quality of life for patients with long-term conditions**

# Key ingredients of the programme

- HN's smart technology – screening, predictive analytics and personalised clinical coaching
- Phased roll-out enabled through system engagement and collaboration
- System Leadership and collaboration
- Information Governance and data access
- Focus on Health Inequalities to deliver a fair system
- Public and Patient Involvement and Engagement strategy
- Clear messaging and communication with programme stakeholders, patients and the public
- Independent academic Evaluation of the programme
- Learning Health System to learn and improve in real time

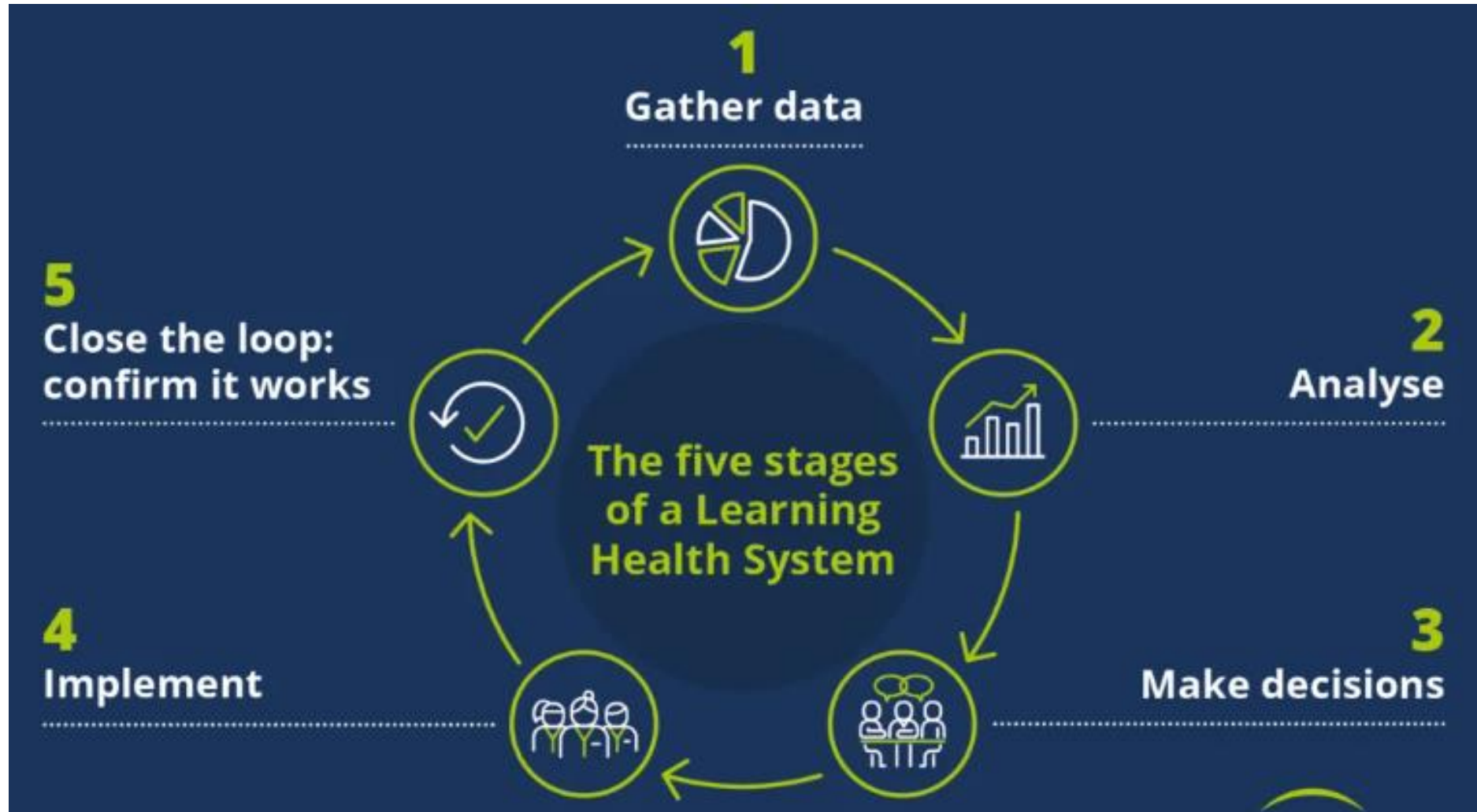




# Evaluation aims and objectives

- Understand the effectiveness of an AI-guided clinical coaching (AICC) intervention on non-elective hospital admissions, healthcare resource utilisation and clinical outcomes
- Understand the adoption, acceptability, and implementation of the HN health coaching intervention and its impact on patient recorded outcomes and health inequalities
- Understand the cost-benefit and budget-impact at system and national level for AICC
- Understand a system wide impact by capturing learning about implementing an AI programme at this scale and complexity.

# Learning Health Systems



# Thank you

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## Academic Papers

- Bull LM, Arendarczyk B, Reis S, et al. [Impact on all-cause mortality of a case prediction and prevention intervention designed to reduce secondary care utilisation: findings from a randomised controlled trial](#). Emergency Medicine Journal Published Online First: 12 October 2023. doi: 10.1136/emmermed-2022-212908
- Cohen, J N. Nguyen, A. Rafiq, M Taylor, P. [Impact of a case-management intervention for reducing emergency attendance on primary care: randomised control trial](#) British Journal of General Practice 2022; 72 (723): e755-e763. DOI: 10.3399/BJGP.2021.0545
- Wieske, M. Poduval, S. Hamilton, F. Kirby, B. Werr, J. [Artificial intelligence enabled clinical coaching impact on patient health outcomes: A prospective cohort study \(2019\)](#) available here. Edgren, G., Anderson, J., Dolk, A., Torgerson, J., Nyberg, S., Skau, T., Forsberg, B. C., Werr, J., & Öhlen, G. (2016).
- Edgren, G., Anderson, J., Dolk, A., Torgerson, J., Nyberg, S., Skau, T., Forsberg, B. C., Werr, J., & Öhlen, G. (2016). [A case management intervention targeted to reduce healthcare consumption for frequent Emergency Department visitors: results from an adaptive randomized trial](#). European Journal of Emergency Medicine, 23(5), 344–350.
- Reinius, P., Fjellner A., Johansson, M., Werr, J., Öhlén, G., & Edgren, G. (2013). [A telephone-based case-management intervention reduces healthcare utilization for frequent emergency department visitors](#). European Journal of Emergency Medicine, 20(5), 327–334.

## Wider Evidence

- [East Kent Poster, 2019](#) Poster produced by East Kent NHS analytics team – winners of Association of Healthcare Analysts’ Team of the Year award.
- [Yorkshire Humber AHSN, 2022](#). Patient feedback on the benefits of artificial intelligence guided clinical coaching.
- [HETT Slides, 2019](#) Healthcare Excellence Through Technology (HETT) 2019 – presentation of HN’s RCT results.
- [Sara Reis, 2020](#) Ensuring fairness and inclusion in AI-guided patient screening
- [Prof. Matthew Cooke, 2021](#) – Reducing the high healthcare demand of a few individuals
- [NHSE Case Study, 2020](#) A case study of our York deployment, written by the NHS England Personalised Care Group.
- [Policy paper, 2020](#) produced to explain the benefits of clinical health coaching.
- [Videos](#) Interviews with HN, our NHS partners and patients.
- [North East London joint forward plan](#), June 2023