

NHS Test Bed for the West of Scotland

Support available to the

Medicines and Dementia Challenge

West of Scotland Innovation Hub



NHS SCOTLAND



Health in Scotland is a devolved power, with policy set by the Scottish Government

Services are delivered through:

14 territorial NHS Boards responsible for the protection and improvement of their population's health and for the delivery of frontline services (primary care, secondary care, tertiary services)

7 national NHS Boards who support the territorial Boards by providing a range of national services

1 national public health body

WEST OF SCOTLAND



We are 6 Health Boards, with 81,000 staff and 2.7m population (50% of Scottish population)



OUR HOST BOARD



Largest NHS organisation in Scotland and one of the biggest in the UK

35 hospitals, 6,000 beds, including largest hospital in UK
Work with 6 local authorities
Biggest employer in Scotland

Rich innovation ecosystem including iCAIRD and Strength in Places Living Lab partnerships, Health Data Exchange JWA, and typically 1,000 R&I studies/year

2019-20 activity:

510,000 emergencies
215,000 scheduled inpatients
1,185,000 outpatients
7.5 million GP attendances
13,600 babies delivered
24m prescriptions dispensed

INNOVATION HUB



One of three NHS Scotland regional test beds funded by SG Chief Scientists Office

Established 2019

In 2021, 57 projects, involving mix of devices, sensors, data, software, Machine Learning / Artificial Intelligence, aided diagnostics and screening

From early stage to late stage innovation, and number scaled to BAU and national

Co-team involving Clinical Leads, Research & Innovation staff, eHealth specialists, wider support services and governance

WHAT WE DO



Facilitate collaborations and access to NHS infrastructure for pre-commercial open innovation

Co-design, co-develop and co-deliver with NHS, academia and industry

Provide leadership, support, regulation support, leverage funding, and access to NHS teams, healthcare settings, data and governance

Build evidence, allow innovators to refine solutions, inform strategy and develop thinking, support routes to scale-up and mainstreaming, and seek preferential access for NHS Scotland to final products

OUR TEST BED



Provide access to NHS test bed infrastructure and support



Our services and support



SCOPING

- Develop and co-author grant and funding bids (e.g. SBRI, UKRI)
- Reference cost model for NHS R&I, eHealth and clinical services resource as we are required to ensure all subsequent innovation project work is cost-recovered
- Access to clinicians, health and social care settings to explore and scope ideas
- Early consideration of regulatory, ethics and governance approvals required
- Exploring current landscape such as devices, systems, service pressures, data, other ongoing projects and initiatives
- Exploring availability of data, cohorts and linkages



PROJECT DELIVERY

- Project management
- Contracting
- Governance approvals (including organisational, Information Governance and IT compliance)
- Ethics approvals
- Co-design, co-development and co-delivery of solutions
- Access to eHealth, R&I, data and clinical subject matter experts



EVALUATION

- Service evaluations
- Clinical studies (e.g. feasibility, evaluation)
- Unregulated clinical trials
- Regulated clinical trials of non-medicinal products (e.g. medical devices such as AI or software which aid clinical decisions)
- Input to academic publications
- Advice on optimisation / refining solution
- Working with specialist partners to undertake
 - Innovative Medical Technology Overviews (IMTO)
 - Medtech briefings
 - Health Economics and Health Technology Assessments (HEHTA)



SCALE-UP SUPPORT

- Knowledge and know-how for all parties
- Future strategies informed
- Local adoption / scale-up routes
- National adoption / scale-up routes
- Preferential access for NHS Scotland to final products
- Post-market surveillance
- Future collaborations
- Comms and media channels



TEST BED

Medical Devices Unit

Diagnostics & Research Imaging

Safe Haven (data)

Biorepository

Clinical Research Facility

Clinical Trials Unit

Research Pharmacy

eHealth, including Health Data Exchange, a secure cloud-based innovation enabling platform which provides a standardised way of managing identity (login) and consented data sharing, integrations with new and existing health and care systems, and hosts industry developed applications based on re-usable components



PARTNERS

- Our core innovation programmes and partnerships including WoS Regional Test Bed, iCAIRD, Living Laboratory, Health Data Exchange
- Joint working agreements and MoUs including with Astra Zeneca, GSK, Digital Health & Care Innovation Centre
- Academic including most Scottish Universities, and in particular University of Glasgow
- Scottish innovation ecosystem including peer Test Beds in East and North Scotland, InnoScot, HealthCare Improvement Scotland (SHTG), Centre for Sustainable Delivery, Scottish Health and Industry Partnership, Chief Scientists Office, NES Digital, NSS, SAS

Relevant current experience

NHS Greater Glasgow & Clyde has the largest Research & Innovation service in Scotland's NHS and hosts the West of Scotland Innovation Hub on behalf of the six NHS Boards in the West of Scotland.

West of Scotland NHS Boards

- The West of Scotland contains three of the four NHS Board areas in Scotland with the highest rates of drug deaths, with NHS Greater Glasgow & Clyde having both the highest rate in the country and most rapidly increasing rate (<https://www.nrscotland.gov.uk/files/statistics/drug-related-deaths/21/drug-related-deaths-21-report.pdf>).
- In 2021 the Hub established a dedicated Innovation Clinical Lead for Mental Health to increase focus and encourage innovation in the broad area of Mental Health. This leadership has allowed development of a network of clinical staff within WoS health services with active interest in the wider field of Mental Health as well as more specifically ADRS.
- NHSGGC specifically have a fully integrated alcohol and drugs recovery service that includes clinical research sessions by senior staff and a digital innovation lead with addictions background.
- Operationally, WoS Boards continue to focus on Urgent & Unscheduled Care priorities such as reducing ED attendances and admissions, which includes working with other agencies such as Scottish Ambulance Service on prevention and non-admission-based treatment.

General innovation experience

- Co-developing innovation-enabling infrastructure, in particular through Health Data Exchange programme supporting integration of data between NHS cornerstone systems, wearables, devices, citizen provided data, and supporting service redesign in conjunction with public sector and industry innovators.
- Leading and participating in multi-centre UK research and innovation studies such as covid vaccine efficacy and safety trials, a wide range of commercially funded hosted drug trials and multi-centre studies sponsored by NHSGGC.
- A research quality management system that has been expanded to cover regulated trials of the full range of medical devices to ensure inspection readiness by the MHRA
- Meeting information governance and data protection requirements to provide data into a range of cloud and on-premise research environments, including established Trusted Research Environments and other environments that require additional contracting and indemnification

Current WoS Addictions / ADRS related studies and innovation projects

- **Devices:** ARM-ED - Advanced Respiratory Monitoring Events in Drug toxicity within NHSGGC involving wearable biosensors (<https://api.ltb.io/show/ABRFL>)
- **Data cohort building:** Glasgow City Council Alcohol and Drugs Partnership pilots based on Safe Haven integration of data from NHS Greater Glasgow & Clyde, Glasgow City Council and Police Scotland.
- **Data collection and early warning:** NHS Greater Glasgow & Clyde Queen Elizabeth University Hospital Emergency Department is a sentinel site for illicit substance misuse funded by Public Health Scotland as part of the RADAR programme (<https://publichealthscotland.scot/our-areas-of-work/substance-use/surveillance/rapid-action-drug-alerts-and-response-radar/what-is-radar/>)

Our core team



Aileen McIntyre

- Project Manager (eHealth)



Alastair Robertson

- Programme Manager (eHealth)



Cameron Thomson

- Living Laboratory Programme Manager (eHealth)



Craig Bell

- Industry Collaboration Project Manager (R&I)



David Coyle

- Communications Lead



Dr Ana Talbot

- Innovation Clinical Fellow (Frailty and Falls)



Dr Chris Sainsbury

- Innovation Clinical Fellow (Diabetes and Endocrinology)



Dr Ioanna Nixon

- Innovation Clinical Theme Lead (Cancer)



Dr Nagore Penades

- Innovation Clinical Theme Lead (Mental Health)



Dr Neil Patel

- Innovation Clinical Lead



Dr Roma Armstrong

- Innovation Lead (R&I)



Ela Fergusson

- Industry Collaboration Project Manager (R&I)



Elaine O'Neill

- Industry Collaboration Project Manager (R&I)



Jacqueline Anderson

- Project Manager (Clinical Research Facility, R&I)



James Blackwood

- iCAIRD Programme Manager (eHealth)



John Berry

- Communications Lead



John Costello

- HDE Programme Manager and Architect (eHealth)



Lee Irvine

- Innovation Financial Accountant



Linda Conroy

- Senior Innovation Administrator



Neil Warbrick

- Innovation Programme Director (eHealth)



Professor David Lowe

- Innovation Clinical Lead



Professor Steven Lo

- Innovation Clinical Fellow (Plastic Surgery)



Ray Syed

- Industry Collaboration Project Manager (R&I)



Ruairidh Davison

- Contracts Manager (R&I)



Ruchi Lalwani

- Project Lead (eHealth)



Scott Hanley

- Project Manager (eHealth)



Simon Rae

- iCAIRD Project Manager (eHealth)



Wiki Gembalski

- Interoperability Lead (eHealth)

An example of a WoS Innovation Hub project and journey

Based on the sustained patient use, reduction in hospital admissions and range of improved secondary outcomes observed in RECEIVER trial and the DYNAMIC-SCOT COVID-19 response scale-up project we are continuing to innovate via -

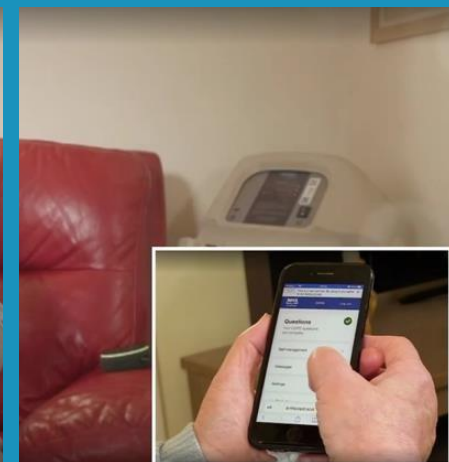
DYNAMIC-SCOT²

Adopt and extend the co-designed LenusCOPD based digital service across clinical pathways. Empower patients to better manage their condition at home.

Improve clinician's access to data and insights, to support delivery of proactive personalised management for patients with COPD.

An exemplar transformation of long-term condition management underpinned by:

- Early diagnosis, optimised co-management, recognition and management of associated conditions, early response to deteriorations.
- Implementation-effectiveness methodology, to gather evidence and inform scale-up strategy.
- Use of Health Data Exchange, to enable evaluation of emerging technologies and treatments including AI-based predictive insights.



Journey from a single innovation project through multiple follow-on innovation projects and scale-ups funding:



“The West Scotland Innovation team have led the way in Scotland to collaborate with local and global businesses to rapidly bring new solutions into health and social care. Offering access to patients, clinicians, support staff and pathways of care they have brought to life Test Bedding in Scotland. Through experimental research and development, they have accelerated the pace of innovation processes, navigated regulatory hurdles, interoperability challenges and taken on board external investment to meet the needs of West Scotland citizens. Companies have worked together and commercialised new products and services benefiting the economy and providing much needed jobs in Scotland. They are a national success story- particularly during the response to Covid-19.”

Andrew Fowlie, Executive Lead for Life Sciences, Chief Scientist Office, Scottish Government

“Opportunity for health and industry partnership: Lenus Health

Edinburgh-based Lenus Health partnered with one of Europe’s largest healthcare providers, NHS Greater Glasgow and Clyde (NHSGGC), and the Digital Health and Care Institute (DHI) with funding from Innovate UK to deliver a digital COPD Support Service underpinned by the company’s health data-exchange platform. The service aggregates data from wearables, respiratory devices and patient reported outcomes with clinical history data from EHR to provide clinical care teams and patients with a more robust view of their COPD condition. The service has been proven to reduce COPD emergency admissions by 28%, and hospital bed days by 38%. The company is also working in partnership with NHSGGC to operationalise AI risk stratification scores for exacerbation, readmission and mortality within point of care clinical workflows. In November 2021, global health leader ResMed, announced a minority equity investment in Lenus Health to support the international scale out of the company’s technology through a joint go to market strategy.”

The Campbell Report: A roadmap to investment for health innovation life sciences and health tech in Scotland (2021)

Innovations that have scaled following co-development and evaluation:

3 digitally supported pathways in CfSD ANIA assessment and value case process for national scale-up	COPD Dermatology Early Diagnostic Heart Failure
4 solutions showcased in NHSx Digital Playbooks	Cardiology (Heart Failure) Dermatology Remote monitoring (vCreate) Respiratory (COPD)
3 products available to all NHS Scotland Boards via SoftCat or G-Cloud framework	Lenus asynchronous appointments TraumaApp vCreate
Plus	3 AI related products CA/CE marked COVID-19 Assessment Application made available to all NHS Scotland Boards

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Hear about us:

The experience of industry and clinical partners:
<https://www.youtube.com/watch?v=w-vfoq2M>

Scottish Digital Health and Care Awards 2022

Industry Collaboration Award

Dynamic AI

Scottish Digital Health and Care Awards 2022

Data Driven Innovation Award

iCAIRD Pathology Digitisation & AI

HSJ Awards 2021
Digitising Patient Services Initiative

Digital Dermatology Assessment

Scottish Digital Health and Care Awards 2021

COVID-19 Response Award

vCreate

Scottish Digital Health and Care Awards 2021

Technology Enabled Independent Living Award

Dynamic Scot

Scottish Life Sciences Awards 2021

Innovative Collaboration Award

iCAIRD

The Scottish Health Awards 2020

Innovation Award

vCreate