



# CSO as an engine for innovation and entrepreneurship in Scotland

Prof Dame Anna Dominiczak, Chief Scientist Health, Scottish Government

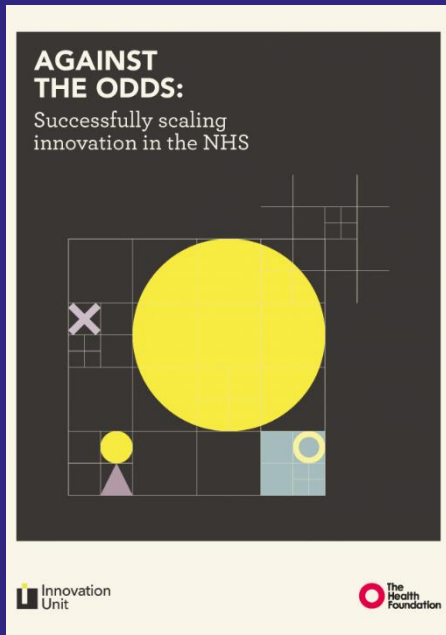
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# THE OPPORTUNITY

**“There is broad agreement that the pressures and challenges currently facing health and social care can only be addressed if outcome-improving, experience-enhancing and value-adding innovations can be rapidly identified and adopted”**

**“Radical, perhaps even disruptive, innovation at scale has become a necessity, not a luxury”**



# THE CHALLENGE

**“Health and social care in Scotland currently has a rich but uncoordinated landscape for innovation, with many players. Some are duplicating others and some are pulled in at the wrong point of the innovation pathway, which can slow down momentum.”**

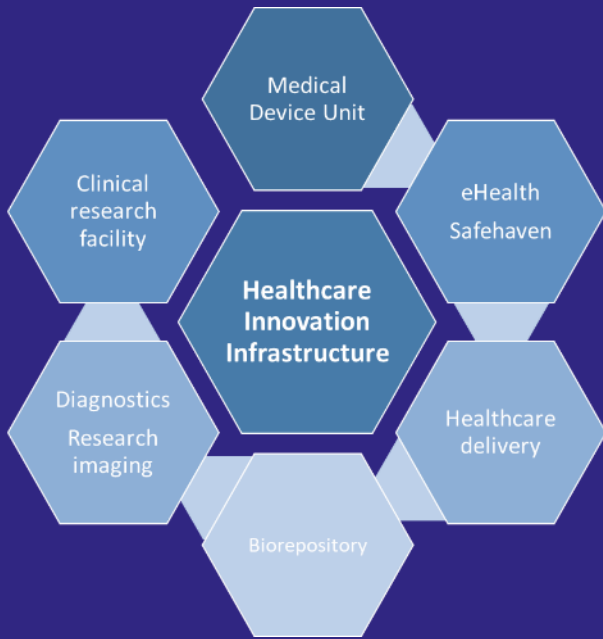
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# RESEARCH AND DEVELOPMENT

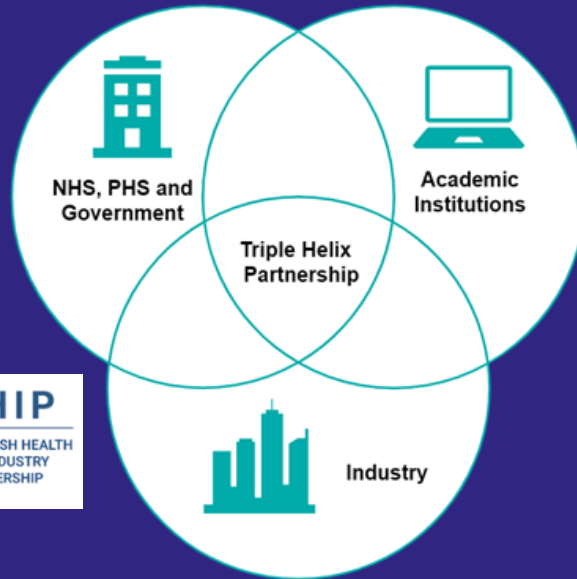
## Three Regional Test Beds



Twinning with Tech  
Scalers with DG  
Economy



## Triple HELIX



## Industry Partnership Group



Bristol-Myers Squibb



Daiichi-Sankyo

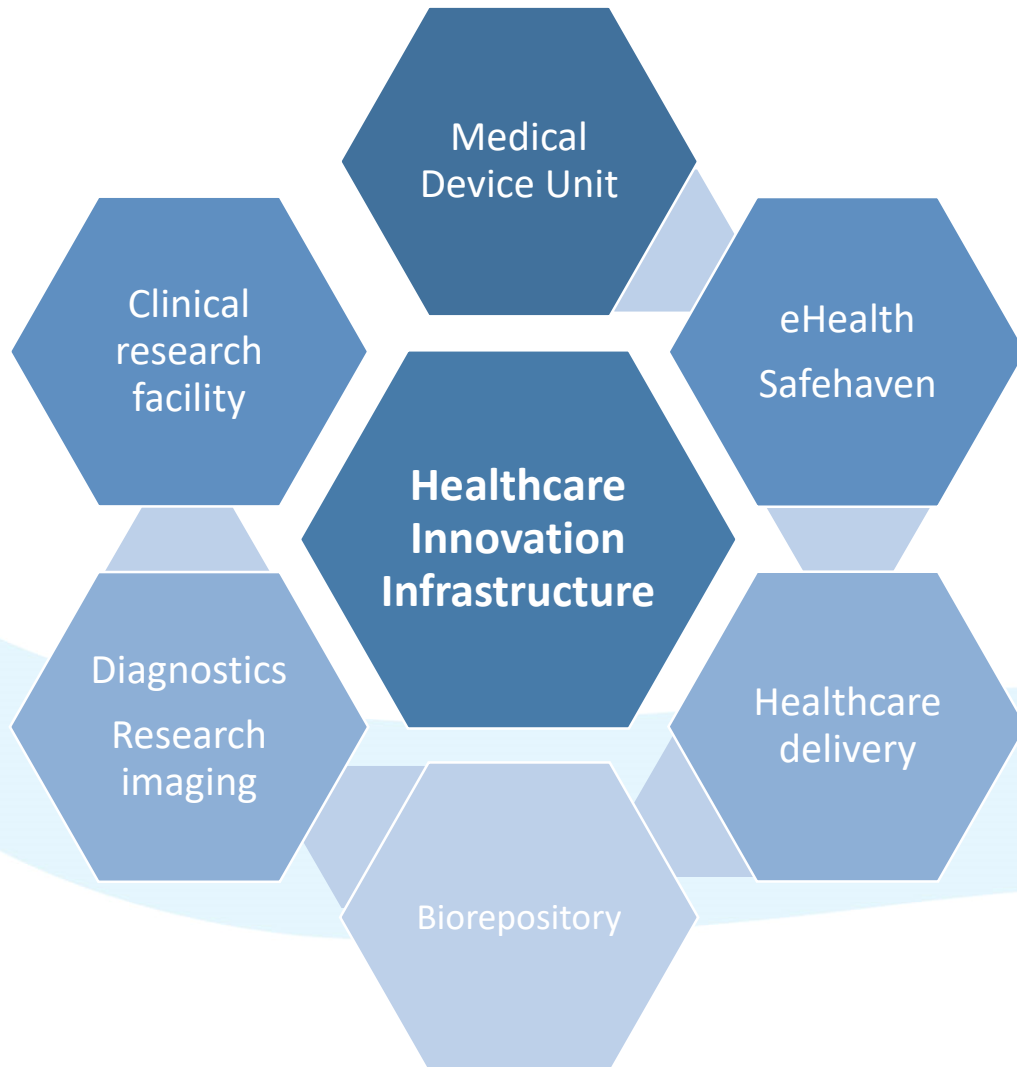


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# TEST BED INFRASTRUCTURE



- Infrastructure such as hosting and connectivity
- Expertise and knowledge
- Access to systems and data
- Governance and evaluation
- Cost-model for typical resources
- Common building blocks to re-use
  - Health Data Exchange platform
  - National integration hub connectivity
  - Entrepreneurship with Economy

# Innovation Fellowship Programme



- Senior Fellow
  - Clinical Senior Leadership
  - Amplify Engagement
  - Established Industry Partnerships e.g.
    - Microsoft, Kheiron, Roche, Lenus
- Innovation Academic Fellow
  - Early career clinicians
  - Embed within industry
  - Chimeric function
- Future themed industry calls
  - Aligned with entrepreneurship
  - Enhancing engagement
  - Creating value

## Clinical Themes

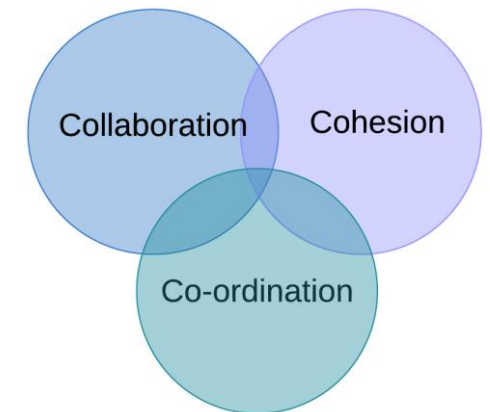
- Frailty / Stroke
- Diabetes / osteoporosis
- Child health
- Mental Health

## Industry Themes

- Data science
- Artificial Intelligence (Imaging)
- Point of Care Testing
- Virtual Reality

## Industry Impact

- Market Validation
- Evidence Generation
- Accelerated Adoption



# Once for Scotland approach to innovation adoption

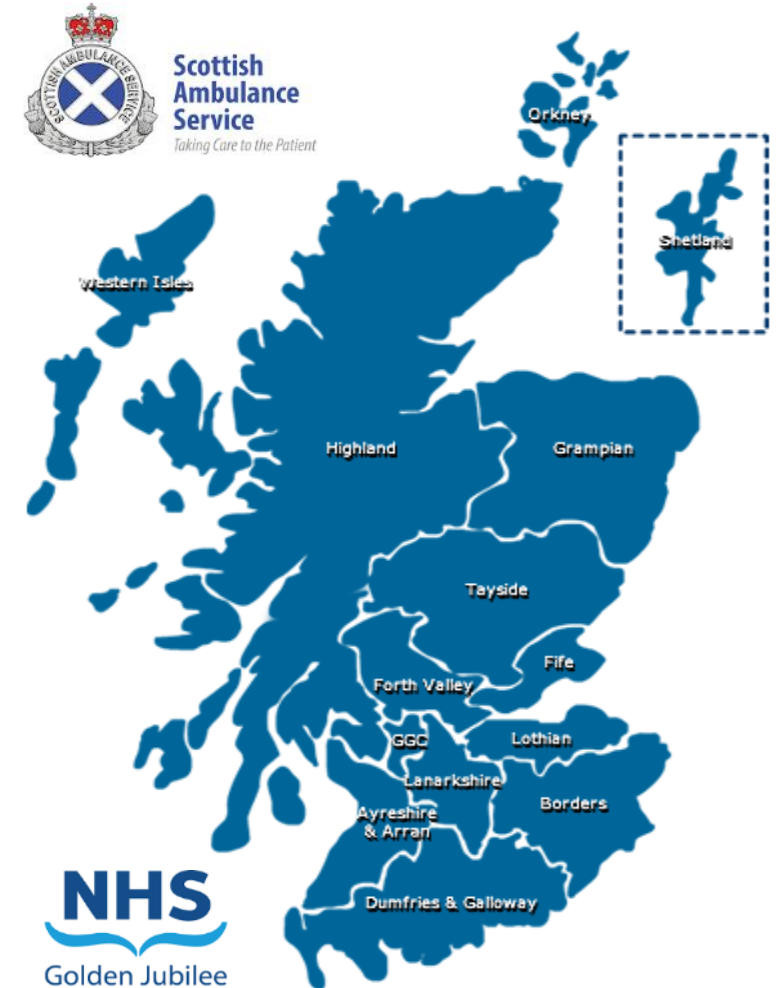


**GOVERNANCE**  
**Innovation Design Authority (IDA)**  
brings together **SG**  
& **NHS leadership**

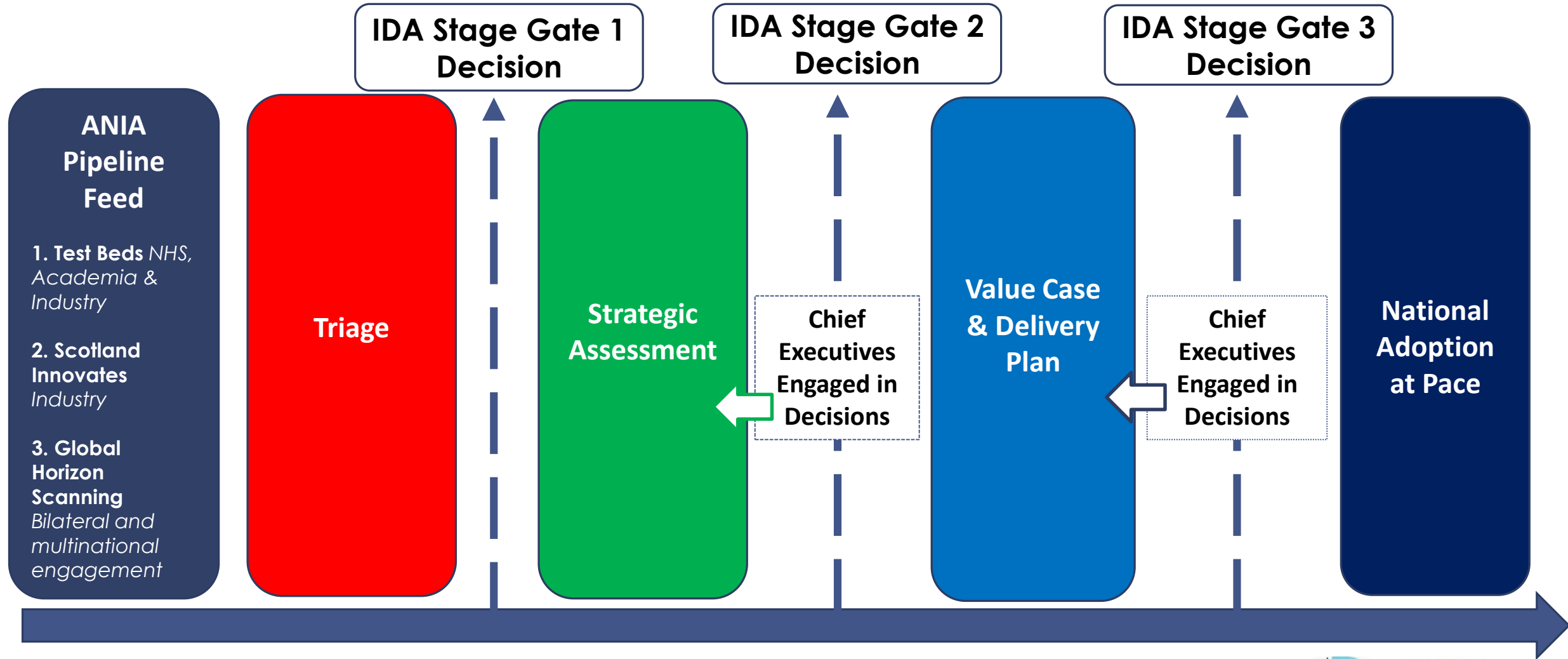


***Proven innovations that can transform how we deliver health care***

## 14 Territorial Health Boards, SAS & NHS Golden Jubilee

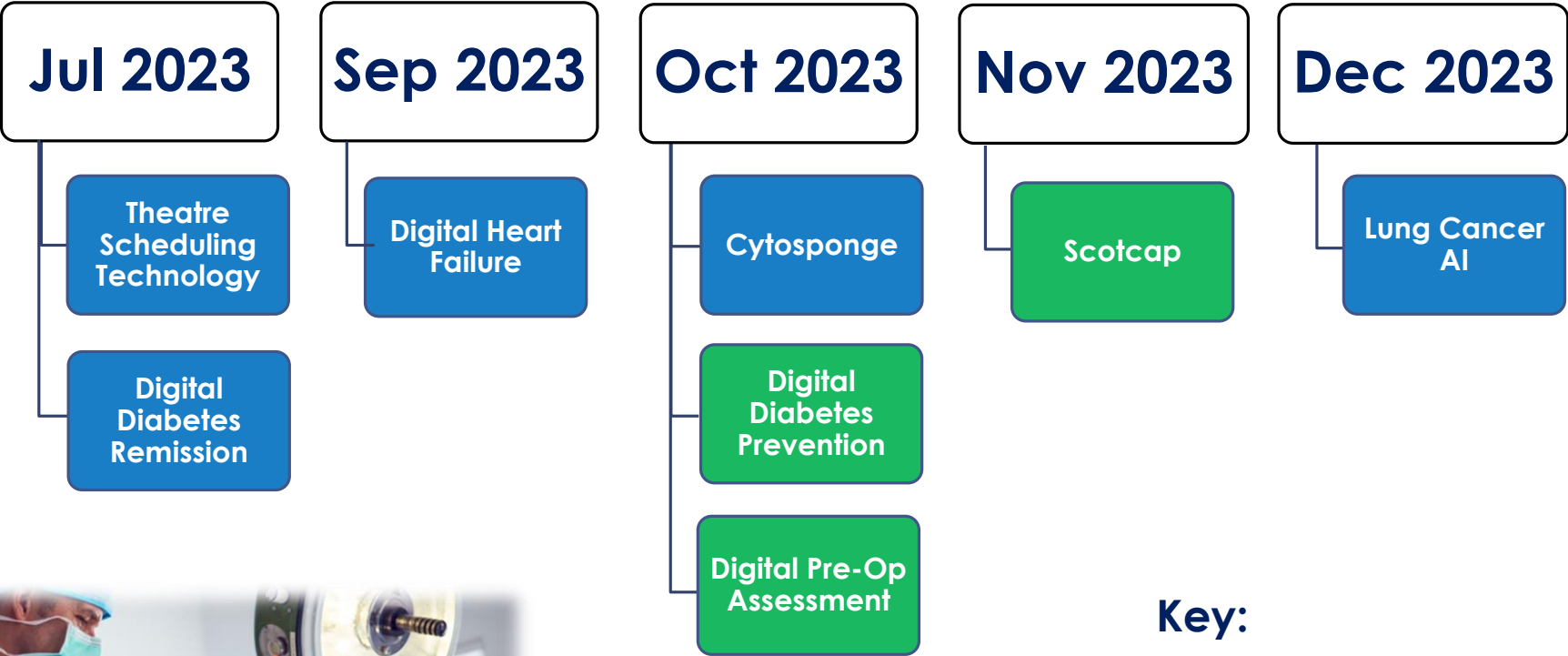


# Accelerated National Innovation Adoption Pathway





# Upcoming IDA Stage Gates Decisions





# Innovations under consideration



# Digital Dermatology

- **The Problem:** Growing Backlog – 44,000 patients waiting for 1st outpatient appointment, with 50% waiting longer than 12 weeks
- **The Innovation:** Image acquisition at point of referral supported by digitised pathway including asynchronous interaction with patients
- **The Potential Impact:** 70% of patients may not need a face-to-face appointment, with some that need surgery directly scheduled

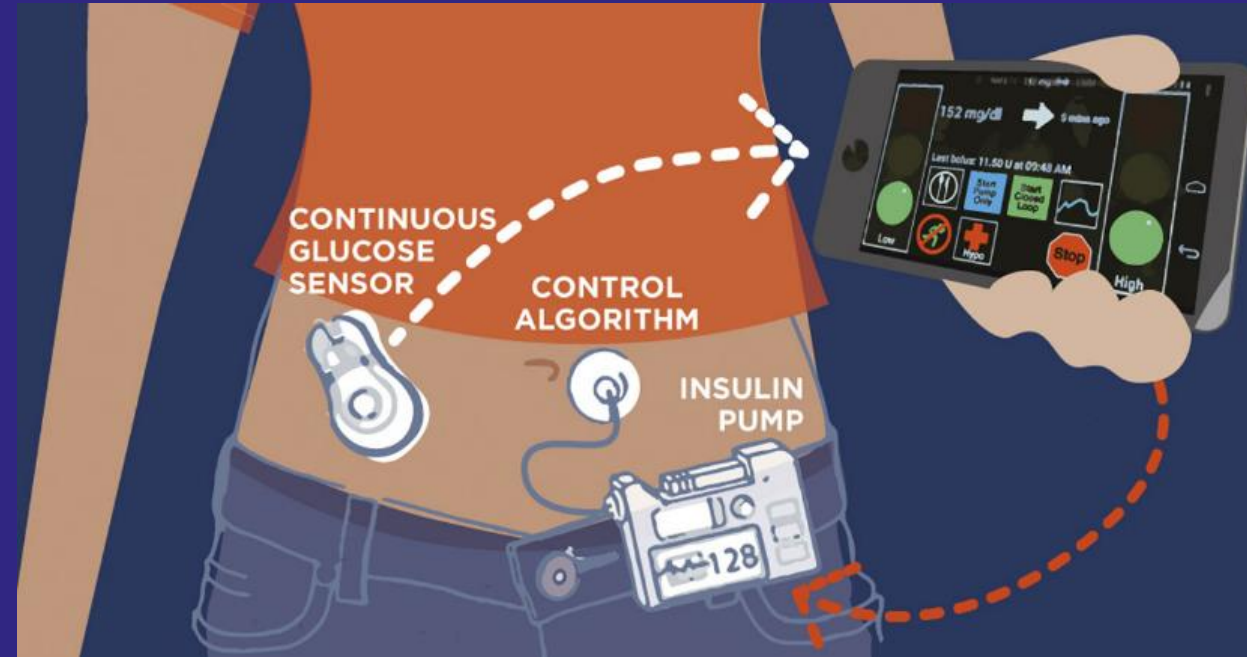


Top five specialisms with largest waiting lists for a new outpatient appointment at June 2022

Speciality	Total
Ophthalmology	59,034
General Surgery	54,979
<b>Dermatology</b>	<b>44,152</b>
Gynaecology	42,374
Orthopaedics	40,421

# Type 1 Diabetes - Closed Loop System

- **The Problem:** 34,000 people in Scotland with type one diabetes. Only 26% patients achieve glucose targets. Failure to achieve diabetes control can lead to long term complications such as blindness, kidney failure, amputation and premature death.
- **The Innovation:** Diabetes Closed Loop System for Type 1 Diabetes. These systems link pumps & glucose monitors to help patients automatically manage their diabetes
- **The Potential Impact:** Improved patient outcomes, including quality of life, reduced admissions & clinic visits



- The **peak age** for diagnosis is 9–14 but you can be diagnosed as a **young child or adult**.
- It's an autoimmune condition that's **not** caused by lifestyle.



## Theatre scheduling technology & Pre-Op

- NHS Lothian and Forth Valley
- 15-30% improved optimisation rate in early study (Lanarkshire)
- Working with the National Treatment Centres programme



## Lung Cancer AI / Same day CT

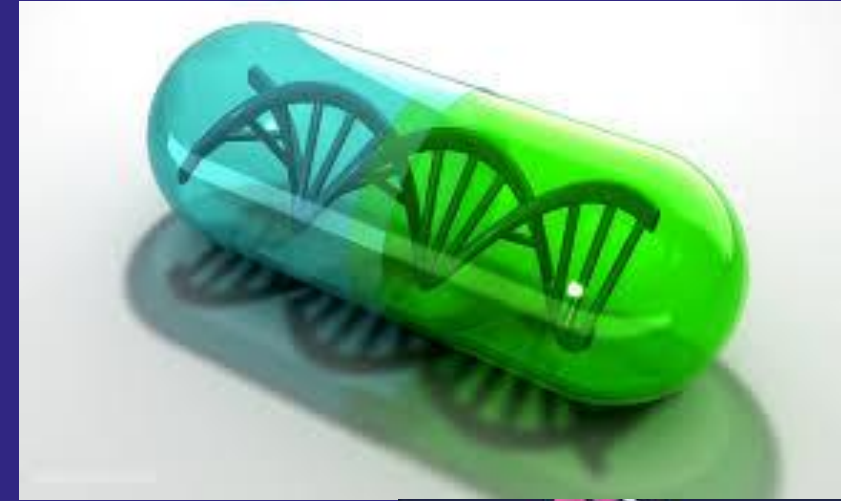
- NHS Grampian
- Could potentially deliver significantly earlier diagnosis
- Working with the AI Hub

## Diabetes Remission

- Likely to be 500k T2DM patients by 2035 (reducing life expectancies by a decade)
- Currently accounts for 12% of NHS Scotland budget (c.£2.5k per patient per year)
- Published research from Universities of Glasgow and Newcastle shows that 50% of new T2DM cases could be put into remission via an innovative programme
- Digital technology will allow a scalable national remission programme.

# Pharmacogenomics

- **The Problem:** Around 11% of all acute hospital admissions are due to adverse reactions from medicines. Some of these reactions can be predicted and prevented through genetic analysis.
- **The Innovation:** Through a pharmacogenetic panel, multiple genetic variants that affect drug responses are tested simultaneously and stored in a patient's electronic medical record
- **The Potential Impact:** Improved outcomes for patients receiving the right medicine first time, reduced pressure on hospitals and cost savings (Glasgow analysis suggested >£85M over 3 years)





# Precision Medicine Landscape in Scotland

**Global PM market - \$66.1bn in 2021  
Forecast to reach \$206bn by 2027\***

**Over 100 PM related firms in Scotland  
25 already working with PMS-IC**

**63 firms located in Beauhurst database  
Workforce in 40 companies increased by 57% over last 3 years to 2k staff**

\*Source: PR Newswire – Valuates Report - Global Opportunity Analysis and Industry Forecast, 2021–2027 – Nov 2021



**By working together across academia, industry and the NHS, and within Government, we can unlock the potential of scientific innovation to:**

- **support NHS recovery and reform**
- **provide longer, healthier, happier lives for people across Scotland**
- **grow the economy and create new high value jobs**

