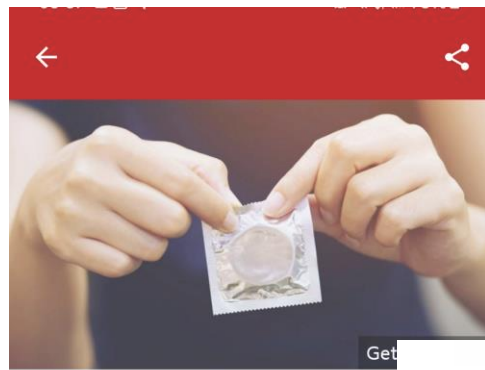


The Problem



Health

Gonorrhoea and syphilis sex infections reach record levels in England

Updated 6 Jun 2023 ■ 3 min read

Support us
News Opinion

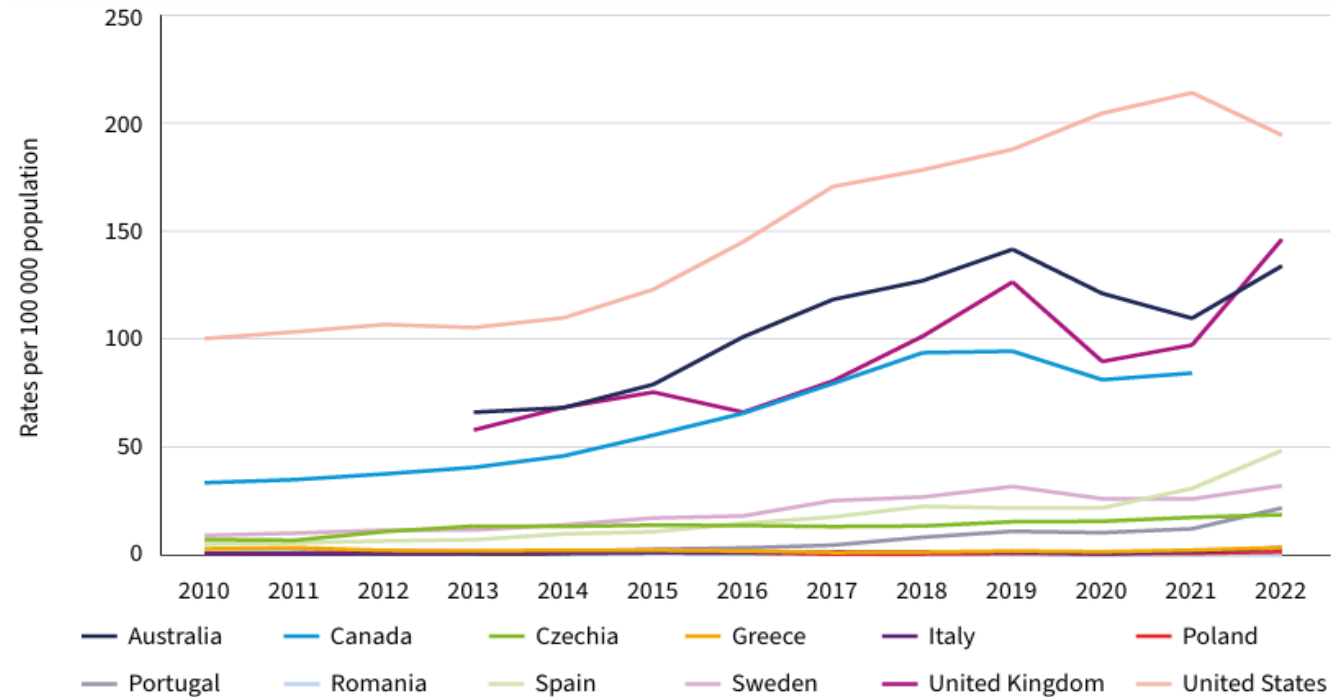
UK World Climate



Sexual health

This article is more than 1 month old

Hospital admissions for easily treatable STIs rise amid funding cuts in England



World Health Organization - Global Report May 2024

08:38 79%

Health

Warning over surge in STIs across Europe as experts say rates of gonorrhoea, syphilis and chlamydia have soared by almost 50% in wake of pandemic

By Emily Stearn, Health Reporter For Mailonline
UPDATED: 18:01 on 7 March 2024

The bar chart shows a significant increase in STI rates across Europe from 2018 to 2022. The rates for 2022 are notably higher than the previous years, with a +3% increase indicated for the most recent data point.

Share 136 comments

- The ECDC team said urgent action was needed to quash high case numbers

"SAY TO THE ISRAELITES,
WHEN ANY MAN HAS A
BODILY DISCHARGE, THE
DISCHARGE IS UNCLEAN.
- LEVITICUS 15:2

STI Key Facts

Every day
worldwide over
1 million new Sexually
Transmitted Infections
(STI) are acquired *

* World Health Organization
– Global Report May 2024



In 2024 the Global testing
market for STI's was valued
at \$11bn

Projected Growth CAGR
of 8.7% to 2032

Fortune Business Insights Report 2025

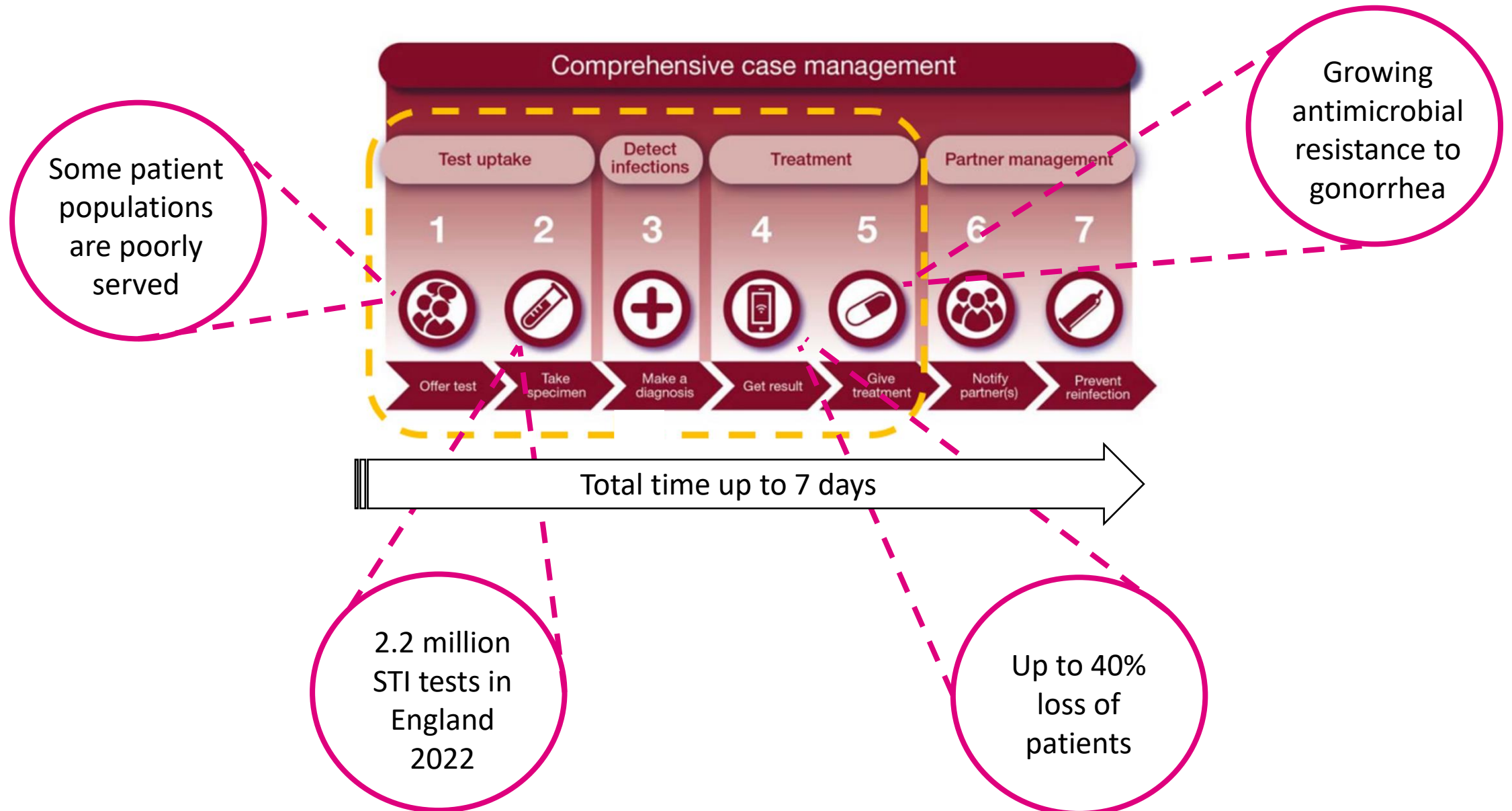


The Next Generation in Near Patient Diagnostics

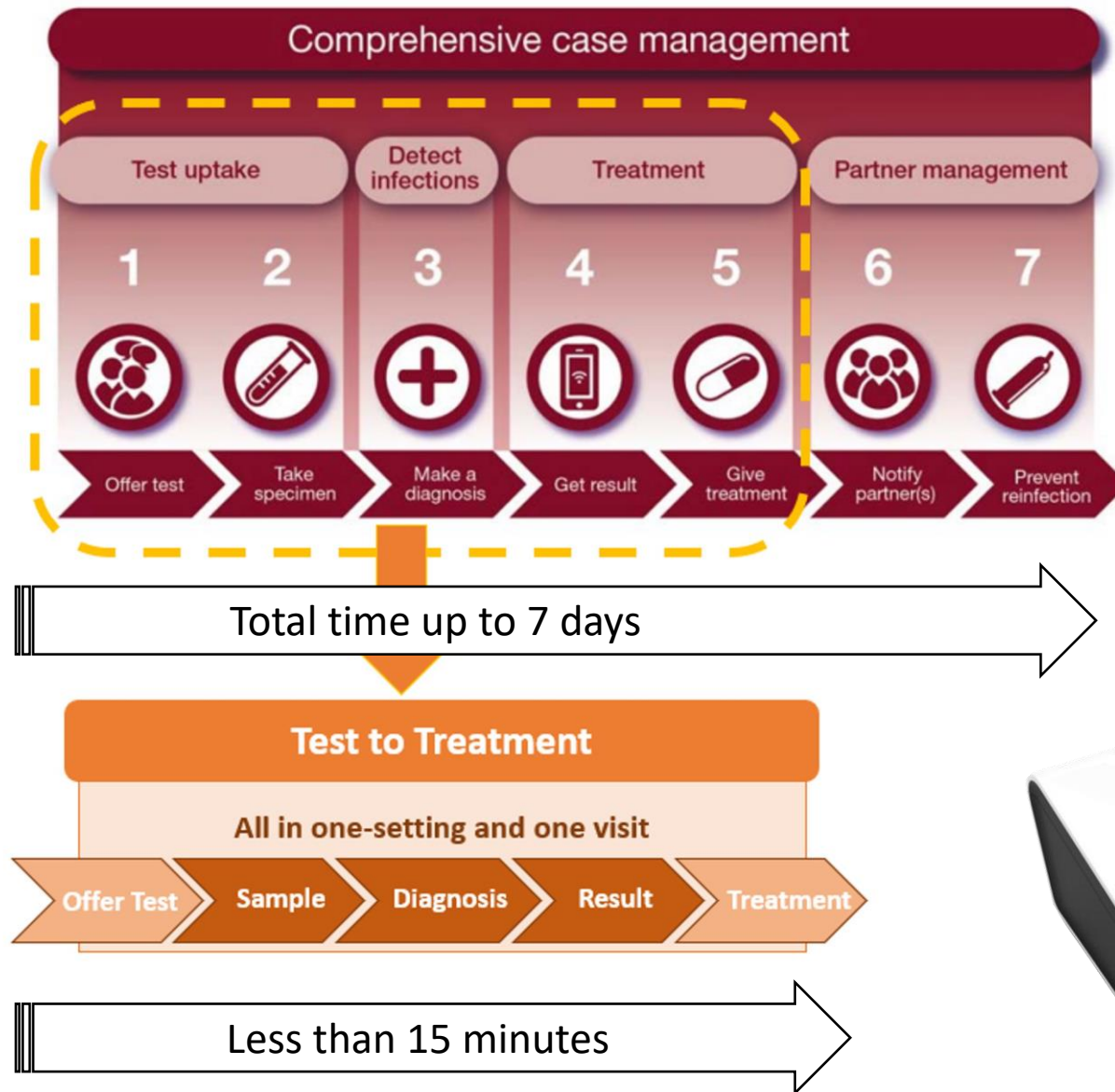


Jean-Louis Duprey
Head of R&D

The Problem

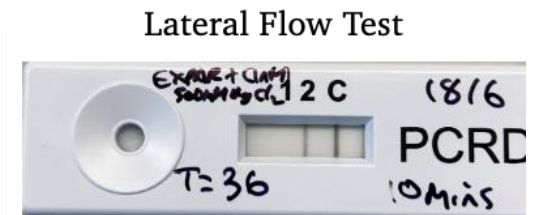
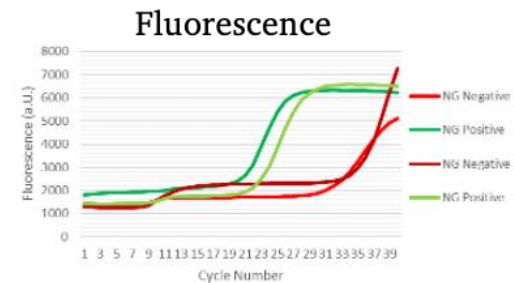


The Solution

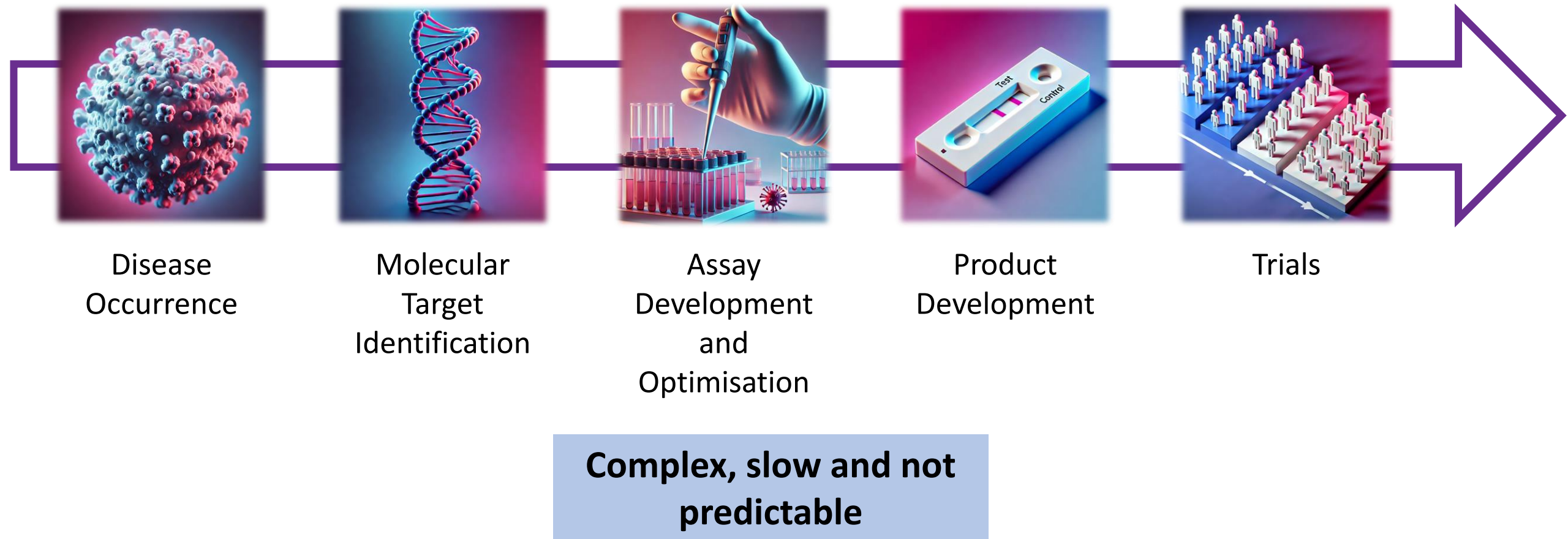


Point-of-Care:
Treatment in
clinic, on-ward
or at GP

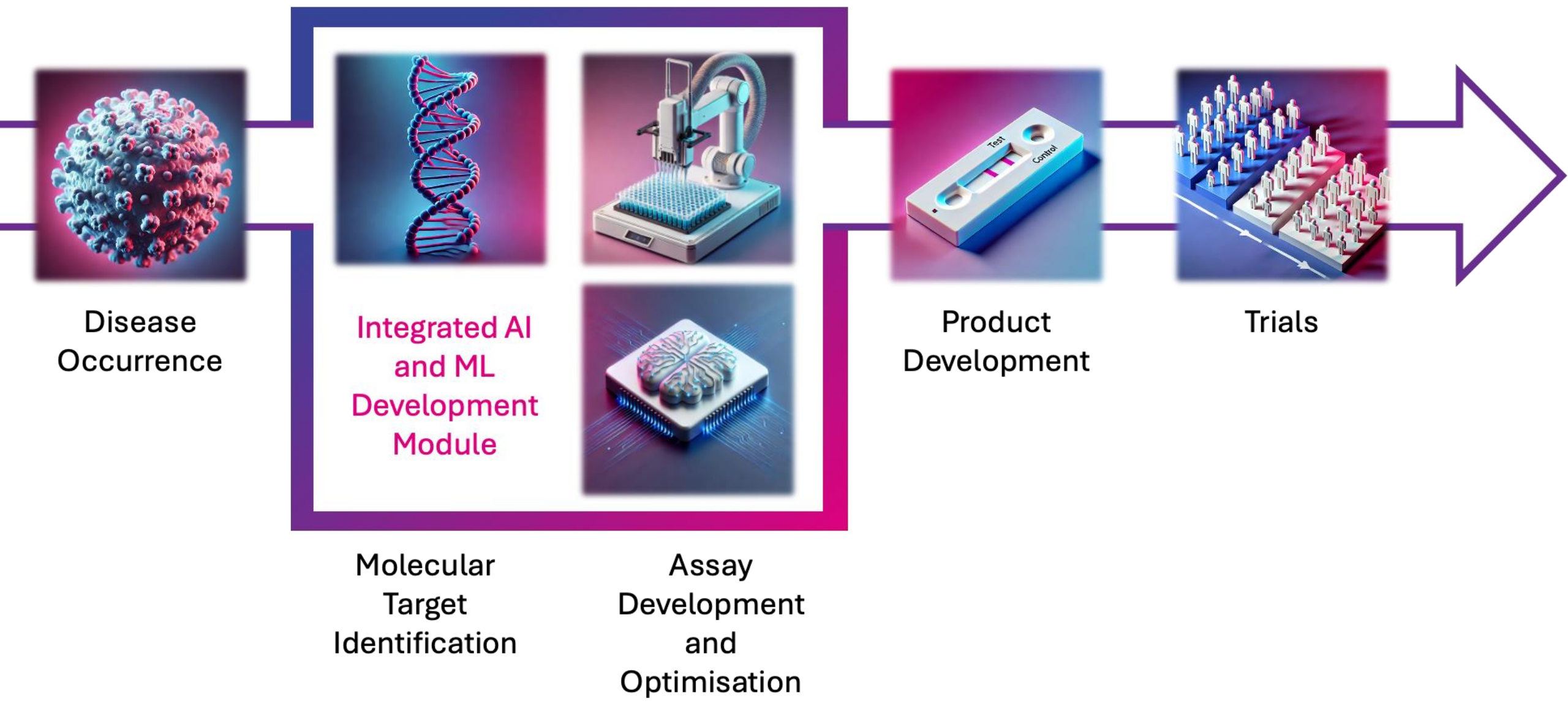
EXPAR Reaction



Current Diagnostics Development Pipeline



A New Diagnostics Development Pipeline



Challenges and Solutions

Challenge 1: Identifying Customers/Partners



Innovate UK – GBIP

- Support to interact with stakeholders e.g. hospitals



West Midlands Health Tech Innovation Accelerator

- Networking and triage support



NIHR National Institute for Health and Care Research

- Adoption and Implementation support program
 - To understand how to sell to NHS

NIHR

Challenge 2: Accessing Support & Funding



West Midlands Health Tech Innovation Accelerator

- Grant for technical development

CPI MedTech Accelerator Rapid Regulatory Support MARRS

- Grant for regulatory support

NIHR National Institute for Health and Care Research

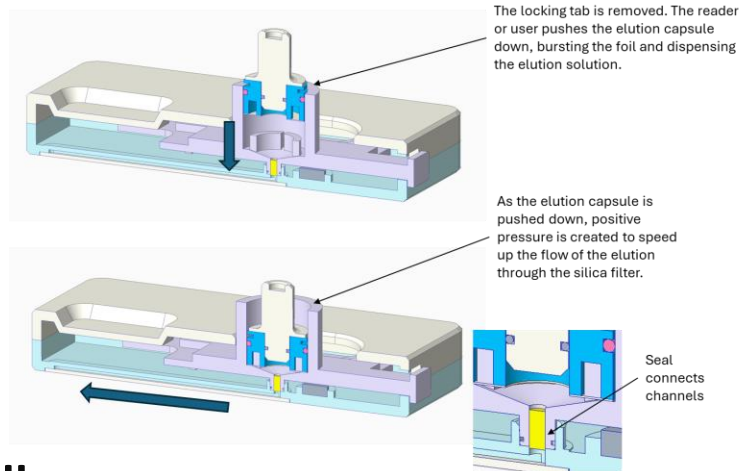
- i4i iFAST and PDA grants

Innovate UK

- UKI2S Accelerator Programme



Challenge 3: Technical Development Support



THE CARTRIDGE SLIDE DEVELOPMENT



■ Challenges:

Cartridge needs to extract and purify DNA

Low cost and low failure rate

Will need to meet NHS Net Zero sustainability requirements

■ Solutions:

CAD and 3D printing for low-cost prototyping

Opportunities:

Create partnerships with existing technologies



Challenge 3: Sourcing Clinical Samples

■ Challenges:

Obtaining large quantities of well characterised samples

Sample quality (freshness)

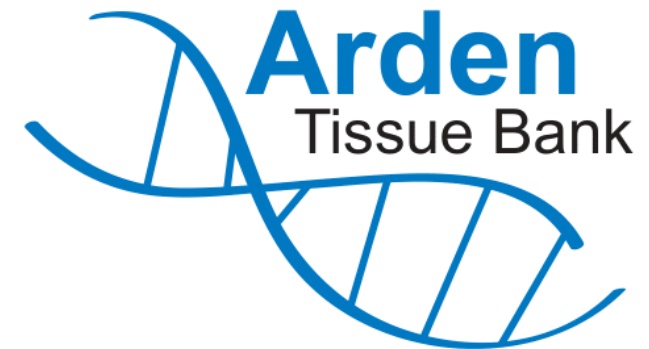
Ethical approval

■ Solutions:

Find good collaborators/institutions

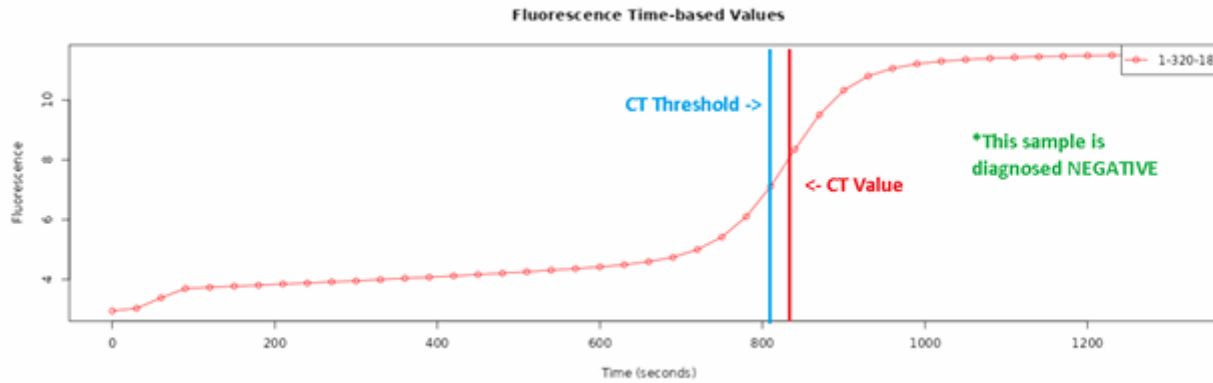
Opportunities:

Use technology for rapid sample screening



Challenge 3: Data

LINEAR DIAGNOSTICS



■ Challenges:

Short amplification and detection times mean data is difficult to separate

Need large amounts of data to optimise

■ Solutions:

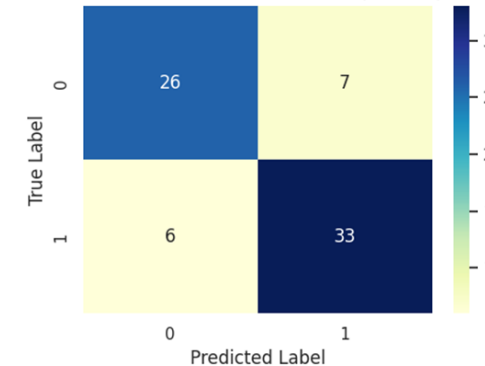
Apply machine learning approaches to improve Accuracy

Opportunities:

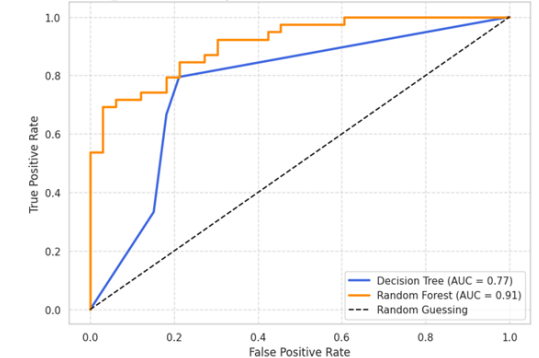
Large scale preventative screening

$$\text{Accuracy} = \frac{(\text{True Positives} + \text{True Negatives})}{(\text{True Positives} + \text{True Negatives} + \text{False Positives} + \text{False Negatives})}$$
$$\text{Sensitivity} = \frac{\text{True Positives}}{(\text{True Positives} + \text{False Negatives})}$$
$$\text{Specificity} = \frac{\text{True Negatives}}{(\text{True Negatives} + \text{False Positives})}$$

Decision Tree - Confusion Matrix (Test Set)



ROC Curve Comparison - Decision Tree vs Random Forest



BIRMINGHAM CITY
University



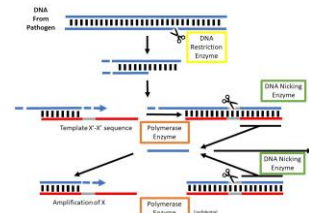
Project Plan

3 Year Time Plan Year 1

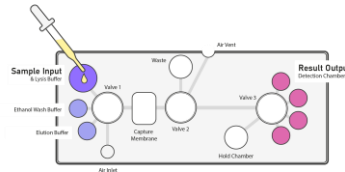
Year 2

Year 3

Patient and Public Involvement (Insight Panel & patient groups)



Assay design



Cartridge design



Unmet needs & value propositions



Care pathway analysis



Reader and Cartridge integration and testing



Clinical trial design



Health economic modelling



Validation testing



Diagnostic accuracy evaluations

Let's Talk



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Confidential

