

North Thames Genomics Medicine Service Event

# Enhancing Pharmacogenetics Knowledge and Implementation



Thursday 26th Sept 2024 | 9:00am - 4:30pm



The Royal Pharmaceutical Society, 66-68E  
Smithfield, London, E1W 1AW

# Housekeeping





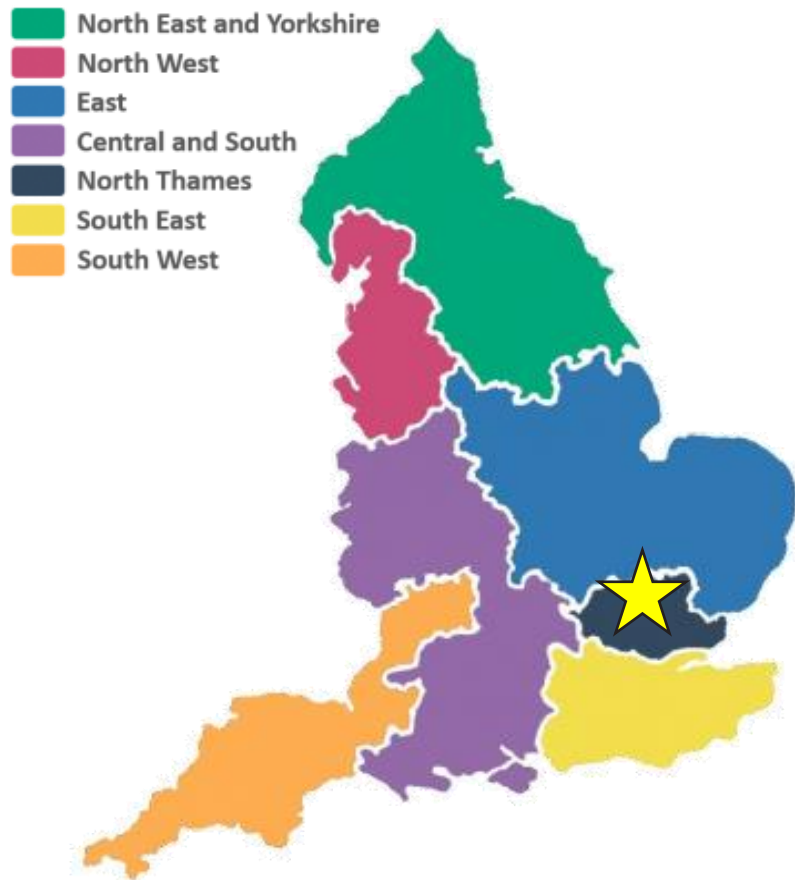
# Enhancing Pharmacogenetics Knowledge and Implementation

*Welcome!*

Dr Angela George, Co-Medical Director



# NHS Genomic Medicine Services



★ North Thames GMS covers, North London, Hertfordshire and Mid and South Essex

A network of **7 Genomic Laboratory Hubs (GLHs)** and partner **Genomic Medicine Service Alliances (GMSAs)**: each responsible for coordinating genomics for part of the country.

For North Thames GMSA we are split into:

- **North Thames Genomic Laboratory Hub (GLH)** where genetic testing & analysis are delivered
- **North Thames Genomic Medicine Service Alliance (GMSA)** which provides education and training to enable you to embrace genomics
- Together to deliver equitable uptake of genomic testing across cancer, rare diseases and pharmacogenomics.

# NHS Networks of Excellence (NoE)

- Genomics is a fast-paced and evolving field, to ensure the NHS adopts and implements new technology and testing pathways, 6 Networks of Excellences (NOEs) were established.
- Of these, **THREE** will directly impact how we prescribe medicines.

Clinical area	Networks of Excellence	Direct impact on medicines
Rare diseases	Transformative approaches to diagnosing rare and inherited disease including functional genomics and new technologies	
Cancer	Innovation in delivering cancer genomic testing, covering solid tumour, haemato-oncology and inherited cancers	Precision medicine + personalising treatment plans
Maternity	Expanding access to innovative approaches to delivering prenatal genomic medicine	
Medicines optimisation	Supporting the expansion of pharmacogenomics across the NHS	Personalising treatment plans
Infectious diseases	Genomic sequencing for severe presentation of infectious disease and pathogen sequencing.	Antimicrobial stewardship
Diagnostics	Exploring the potential of artificial intelligence and computational tools for accelerating diagnosis for patients.	

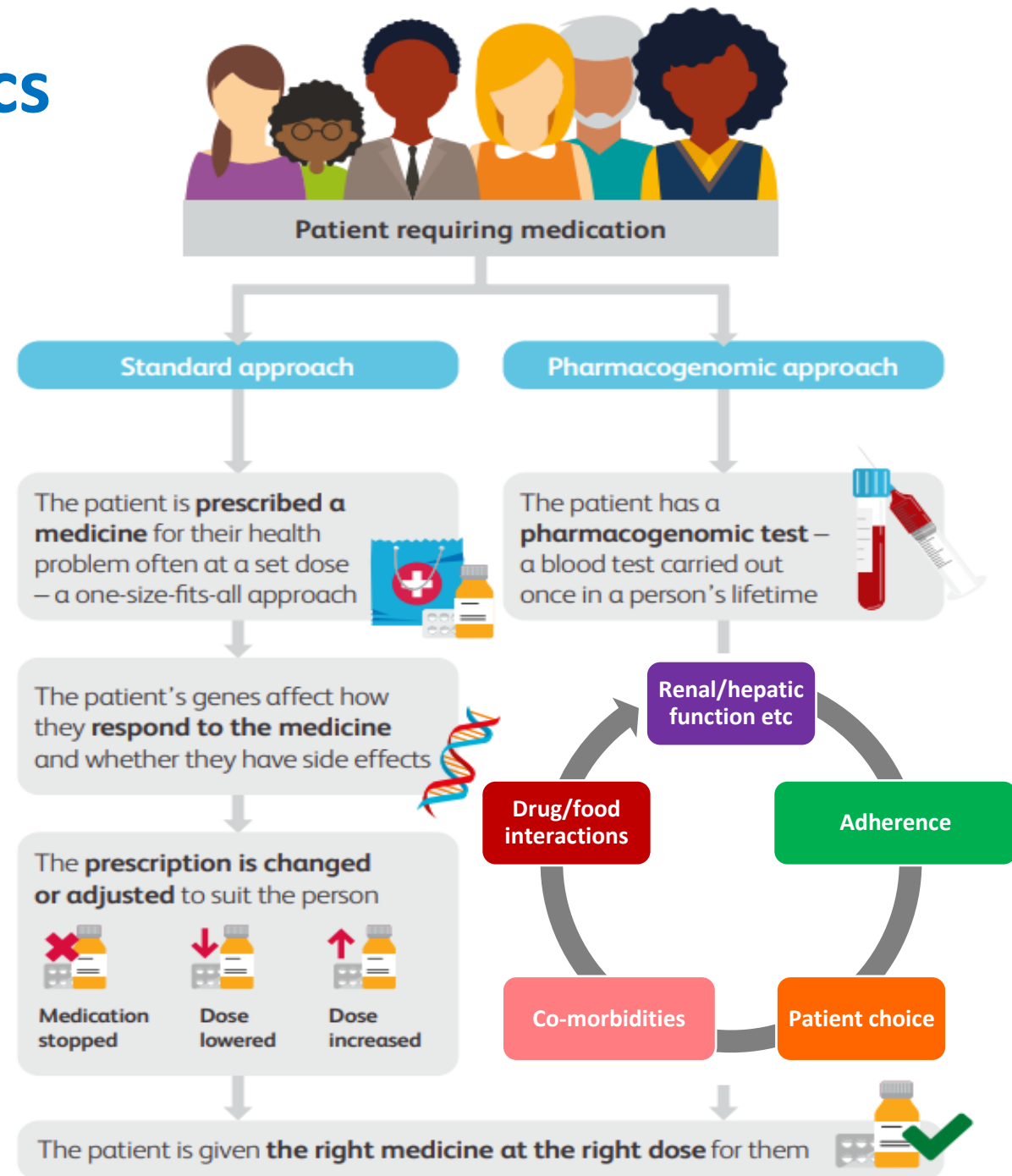


# Spotlight on pharmacogenetics

- Pharmacogenetics is the combined study of genetics and pharmacology.
- Allows us to identify individuals who are more likely to respond to medicines and/or experience severe adverse reactions (ADR).
- 1 in 15 UK hospital admissions linked to ADR, costing NHS >£2.2 billion/year.
- >95% of the population carry at least one actionable variant

## However,...

- Pharmacogenomics **will not replace** our clinical judgement; it is an **additional tool** within our medicines optimisation toolbox to enable safe and effective prescribing.







# *How is pharmacogenetics implemented and expanded within the NHS?*



# IMPLEMENTING pharmacogenetics via the National Test Directory (NTD)

Gene	Clinical area	Drug	Testing required to
<i>DPYD</i>	Oncology	Fluoropyrimidines	Reduce risk of severe side effects e.g., diarrhoea, stomatitis.
<i>TPMT</i>	Acute Lymphoblastic Leukaemia	6-mercaptopurine	Identify those at risk of severe neutropenia
<i>NUDT15</i>			
<i>MT-RNR1</i>	Neonatal care/cystic fibrosis	Aminoglycosides	Prevent hearing loss, in severe cases bilateral hearing loss
<b>What's coming next?</b>			
<i>CYP2C19</i>	Stroke	Clopidogrel	Increased risk of another stroke or cardiovascular event if a patient is a poor metaboliser

Specialised clinical settings



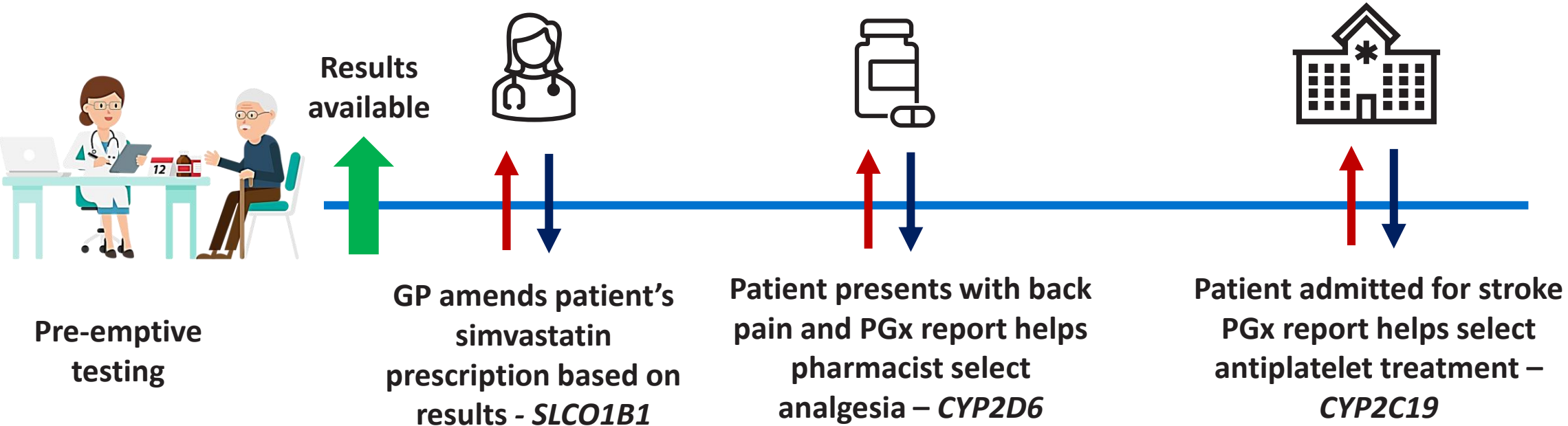
Commonly prescribed drugs



# Supporting the EXPANSION of pharmacogenetics via Network of Excellence (NoE): e.g., The PROGRESS study

NW GMSA  
project

- Pharmacogenetics Roll Out – Gauging Response to Service (PROGRESS)
- Investigating **healthcare economics** and **implementation strategy** to ensure panel testing is affordable for the NHSE and the way it can be adopted.
- Pre-emptive testing for *CYP2C19*, *CYP2D6* and *SLCO1B1* with recruitment via selected GP surgeries.





**NHS**

North Thames  
Genomic Medicine Service

# NHS England Genomics Workforce Education and Training Strategic Framework

Dharmisha Chauhan, Lead Pharmacist



# Pharmacy genomics workforce, education and training strategic framework

Document first published: 22 January 2024

Page updated: 22 January 2024

Topic: Genomics,  
Pharmacy,  
Primary care,  
Workforce

Publication type: Guidance

This strategic framework sets out a 3-year approach to integrate genomic medicine into pharmacy education, training and workforce development. It will empower the pharmacy workforce to use the increasingly available genomic tools to support medicines optimisation and deliver the benefits for patients.

- **Published January 2024 via NHS England**
- **Four strategic aims:**
  1. Integrate awareness of genomics as part of pharmacy practice
  2. Build and join networks
  3. Identify pharmacy genomics workforce needs
  4. Educate and develop the pharmacy workforce

Sets out a  
3-year plan

# Today's objectives

- Improve pharmacogenetic knowledge and raise awareness of the benefits and limitations of testing.
- Understand how pharmacogenetics can be implemented into clinical pathways.
- Raise awareness of the pharmacogenetic resources available for healthcare professionals.
- Share new advances in pharmacogenetics.

# Agenda – Pre lunch

<b>10:15 to 11:15</b>  Strategic aim 1 Integrate awareness of genomics as part of pharmacy practice  Strategic aim 4 Educate and develop the pharmacy workforce	<b>Session 1: Improving knowledge</b>  1. The role of pharmacogenetics to <u>prevent severe side effects</u> - Veronica Chorro-Mari 2. The role of pharmacogenetics in <u>drug dosing</u> – Rachel Palmer 3. Impact of pharmacogenetic testing on <u>medication adherence</u> – Lucy Galloway
<b>11:15 to 11:45</b>	<b>Refreshment and Networking Break - Strategic aim 2: Building networks</b>
<b>11:45 to 13:00</b>  Strategic aim 3 Identifying workforce needs	<b>Session 2 – Implementation pharmacogenetics and key considerations</b>  1. Implementation and equity: EDI and pharmacogenetics – Emma Magavern 2. Pathway and governance considerations for <i>CYP2C19</i> testing – Dharmisha Chauhan
<b>13:00 to 14:00</b>	<b>Lunch</b>

# Agenda – Post lunch

<p><b>14:00-15:00</b></p> <p>Strategic aim 1 Integrate awareness of genomics as part of pharmacy practice</p> <p>Strategic aim 3 Identify pharmacy genomics workforce needs</p> <p>Strategic aim 4 Educate and develop the pharmacy workforce</p>	<p><b>Session 3: Workshop - raising awareness of pharmacogenetic resources</b></p> <p><b>Workshop 1: CYP2C19 and clopidogrel (ORANGE dot on badge)</b></p> <ul style="list-style-type: none"><li>• Lecture room</li></ul> <p><b>Workshop 2: CYP2C19 and lansoprazole (PURPLE dot on badge)</b></p> <ul style="list-style-type: none"><li>• Downstairs</li></ul>
<p><b>15:00 – 15:15</b></p>	<p><b>Refreshment/comfort break</b></p>
<p><b>15:15 to 16:15</b></p> <p>Strategic aim 1 Integrate awareness of genomics as part of pharmacy practice</p>	<p><b>Session 4: Keynote lecture – New Advances</b></p> <p><b>Genomic medicine and the role within antimicrobial stewardship - Professor Judith Breuer, Professor of Virology, University College London.</b></p>
<p><b>16:15 to 16:30</b></p>	<p><b>Closing remarks – Dr Sophie Varadkar, North Thames GMS Co-Medical Director</b></p>

