

## Pharmacogenomic Delivery Plan – Vision section

### Executive summary

Pharmacogenomic testing has the potential to revolutionise healthcare by tailoring treatments to individual genetic profiles, leading to more effective and safer use of medicines.

The development of this Pharmacogenomics Delivery Plan by the National Pharmacogenomics Group for Wales (NPGG) is in response to one of the key aims of the [Genomic Delivery Plan for Wales](#), which is to establish an NHS pharmacogenomics service for Wales. This aligns with ambitions outlined in [Genome UK](#), and with the [All Wales Medicines Strategy Group \(AWMSG\) Strategy](#). The 3-year Pharmacogenomics Delivery Plan will address the development of pharmacogenomic services across community, primary, and secondary care.

With the expansion of pharmacogenomics, the aim of this plan is to:

- Develop clear actions for adoption of pharmacogenomics within routine clinical practice
- Establish networks and governance structures
- Provide a strategic roadmap to construct a comprehensive national infrastructure, encompassing:
  - Digital technology
  - Research and innovation
  - Workforce development
  - Clinical pathways

### Introduction

Pharmacogenomics is the study of how genetic variation between individuals affects their response to medications. The use of pharmacogenomic testing in clinical practice informs the choice and dose of medicines. This ensures individuals receive the most effective treatment, while minimising the risk of adverse drug reactions.

The National Pharmacogenomics Group (NPGG) was established in 2022, following the Welsh Government's Genomics Delivery Plan for Wales. The aim of the NPGG is to ensure that there is a multidisciplinary, coordinated national approach with defined clinical input to the development and introduction of pharmacogenomic services within Wales.

This paper serves as an initial vision statement, intended to guide discussions on addressing challenges and identifying actions for long-term solutions and impact.

### Vision

To enable healthcare providers across NHS Wales, in collaboration with key stakeholders, to integrate pharmacogenomic testing into clinical practice, enhancing the health, wellbeing, and prosperity of the people of Wales.

### Strategic approach

The key principles defining our strategic approach to an NHS pharmacogenomics testing service in Wales centre around the timely availability of evidence-based tests that offer value to the NHS and which promote equitable care across diverse populations.

***Evidence-based practice:*** Recommended pharmacogenomic tests that have demonstrable clinical utility in achieving safer or more effective prescribing will be adopted.

***Timeliness:*** The NPGG will work with partners to ensure that tests are made available in a timely manner following recommendation.

***Value:*** The implementation of testing services will give due regard to the extent to which they offer good value to NHS Wales.

***Equitable access:*** Making pharmacogenomic testing accessible to everyone, regardless of their background, helps address health disparities across diverse populations and promotes equitable care.

***Integration:*** A key enabler is seamless integration of pharmacogenomic testing into clinical pathways to support safe and effective prescribing decisions.

***Informed workforce:*** Education and training are core components of delivering an effective service.

The implementation and delivery of pharmacogenomic testing service requires a collaborative and multifaceted approach with key stakeholders and partners including NHS organisations, academia and industry. This approach aims to integrate pharmacogenomic testing into clinical pathways to support safe and effective prescribing decisions.

A coordinated approach to implementing and delivering pharmacogenomics within clinical practice, aligning with regional and national policies, objectives, and ambitions will ensure an equitable approach to clinical service delivery in Wales. Making pharmacogenomic testing accessible to everyone, regardless of their background, helps address health disparities across diverse populations and promotes equitable care. This will ultimately improve population health for the people of Wales while minimising any differences in delivery across the UK.

### **Phased approach**

Realising the vision of the Pharmacogenomics Delivery Plan will take time. Some actions within the Pharmacogenomics Delivery Plan will be targeted for completion within the plan's lifetime, while others will lay the groundwork for future service provision.

#### ***Realisation during the lifetime of the plan:***

For the establishment of a pharmacogenomics service, several key areas have been identified to ensure readiness and effective implementation.

For the *clinical implementation of pharmacogenomic testing*, pilot projects will be conducted to address and inform the challenges of establishing a robust, well-governed national

pharmacogenetics service in NHS Wales. These projects will include defining patient eligibility, validation and implementation of the right testing methodology, establishing clinical reporting systems, providing guidance on clinical decision-making, conducting health technology assessments, and involving patients and the public. Following the successful completion of these pilot projects, the implementation and commissioning of the service will be supported across NHS Wales through dissemination and education/training initiatives to develop a scale and spread approach.

*Governance* will be provided by the National Pharmacogenomics Group (NPGG), which will ensure a multidisciplinary, coordinated national approach with defined clinical, technical, and academic input to the development and introduction of pharmacogenetic services across NHS Wales. Additionally, a pharmacogenomics strategy will be developed for all care settings, outlining the future implementation of pharmacogenomics in both community, primary and secondary care settings, as well as in specialised centres.

The *digital vision* includes ensuring all patients have pharmacogenomic data profiles within their Electronic Health Record (EHR). Additionally, steps will be made towards developing a pharmacogenomic clinical decision tool that incorporates pharmacogenomic test results to inform prescribing decisions within all healthcare sectors. In addition to the Pharmacogenomics Delivery Plan, a separate Digital Framework for Genomics will be published in 2025.

To advance pharmacogenomic *research and evaluation*, efforts will be made to secure funding dedicated to this field. Coordinated research projects will be executed and evaluated to assess the clinical implementation of pharmacogenomics across Wales. A pharmacogenomic research network will be established to provide leadership expertise across all academic disciplines and institutions in Wales, in partnership with healthcare services. Furthermore, establishing connections with the UK Pharmacogenetics and Stratified Medicine Network and CERSI-PGx, along with nurturing international research collaborations, will position Wales as a leading authority in pharmacogenomics. In addition to the Pharmacogenomics Delivery Plan, a separate Research for Genomics plan for Wales will be published in 2025.

In terms of education and workforce, comprehensive pharmacogenomic *education and training pathways* will be developed for both the current and future NHS Wales workforce. This initiative aims to ensure that healthcare professionals are well-equipped with the necessary knowledge and skills to integrate pharmacogenomics effectively into their practice. In addition to the Pharmacogenomics Delivery Plan, a separate Strategic Workforce Plan Genomics was published in 2024.

*Collaborative working* will involve delivering sustainable, governed national pathways for the implementation of approved therapies identified via horizon scanning activities. This will include working with the four nations through the UK shared commitments to progress the UK Government's vision for genomic healthcare and collaborating with biotechnology and pharmaceutical partners to advance the vision for pharmacogenomic delivery within NHS Wales.

*Commissioning* efforts will focus on mainstreaming pharmacogenomic services, ensuring they are fully commissioned and funded through relevant national pathways across NHS Wales. Agile and scalable genomic testing services will be provided, including newly approved gene-drug pairs via the NHSE National Genomics Test Directory (NGTD) and other evidence-supported gene-drug pairs whilst moving towards the use of pharmacogenomic panel testing for patients in Wales aligned with UK nation developments.

***Building blocks for future provision, beyond the plan:***

To prepare for the future of pharmacogenomics as it continues to develop, several key areas have been identified.

Firstly, a *pre-emptive pharmacogenomic profile* (PGx) of test results should be digitally available within patients' Electronic Health Records (EHR) utilising clinical decision software which is accessible by all healthcare professionals interacting with the patient. This will facilitate informed prescribing, where pharmacogenomic profiles are used to guide prescribing decisions through a shared decision-making process among all healthcare professionals.

Commissioning efforts will focus on ensuring sustainable funding models are in place to support the long-term implementation and maintenance of pharmacogenomic services across NHS Wales. *Commissioning frameworks* that facilitate the adoption of pharmacogenomic testing and ensure equitable access across healthcare settings will enable safe delivery and proper planning to meet national demand and capacity requirements.

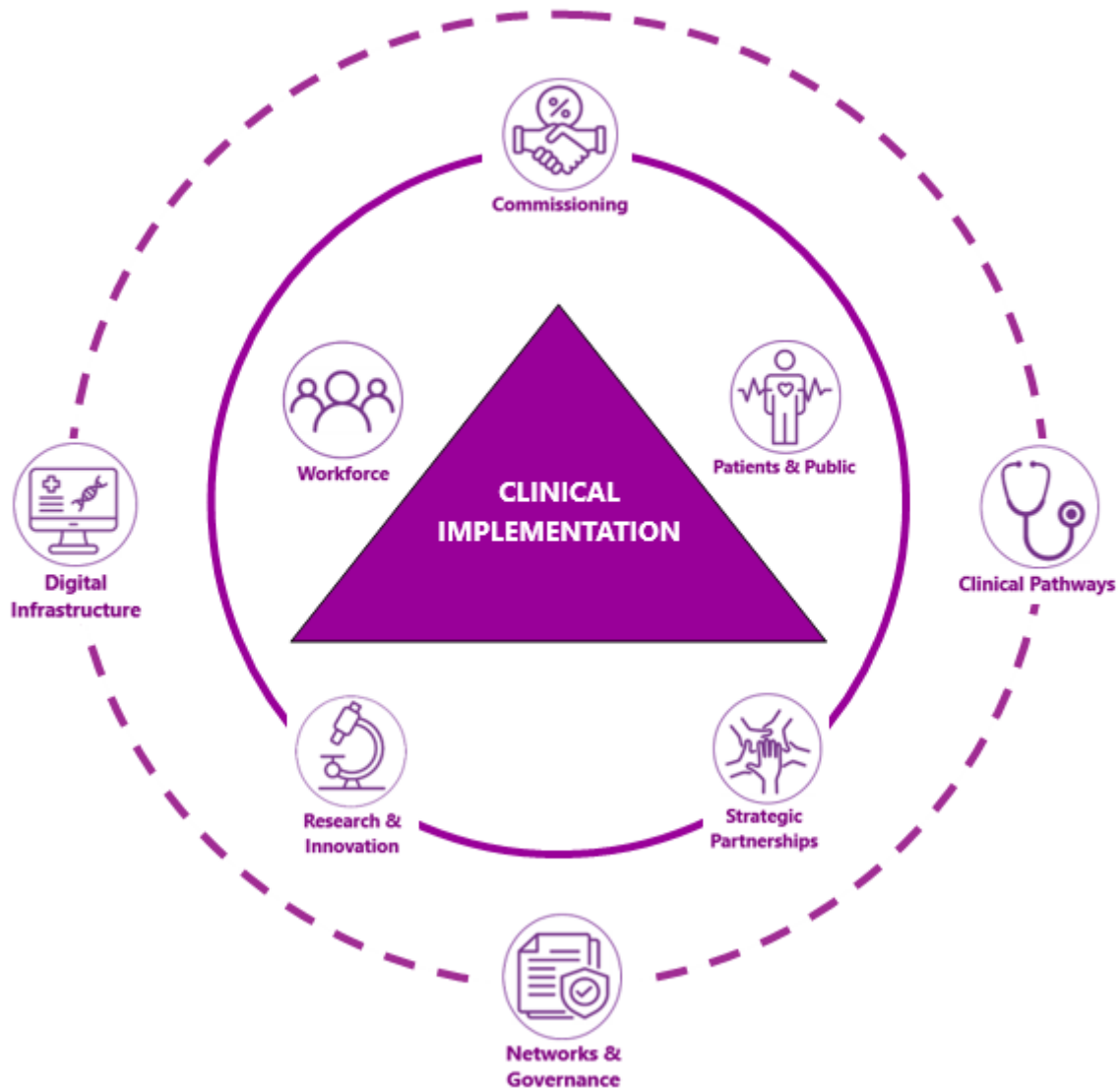
To ensure continuous *education and training*, an ongoing review of the educational offerings will be conducted to keep healthcare professionals updated on the latest advancements in pharmacogenomics. Additionally, pharmacogenomics will be incorporated into appropriate undergraduate curricula to ensure that newly qualified healthcare professionals are well-versed in this field.

Clear *policies and governance frameworks* will be developed to guide the implementation and use of pharmacogenomic testing. Ethical considerations and patient privacy should be prioritised in the development and use of pharmacogenomic data.

Wales aspires to be a global leader in coordinated *pharmacogenomic research*, utilising real-world data to drive innovation and address the clinical utility, effectiveness, and efficiency of pharmacogenomic information. To achieve this, Wales will establish national collaborative networks to share knowledge, resources, and best practices in pharmacogenomics. Additionally, Wales will participate in global research initiatives to position itself as a leader in this field.

This phased approach will enable Wales to effectively prepare for the future of pharmacogenomics, ensuring that the healthcare system is equipped to harness the full potential of this rapidly evolving field. This plan will result in significant advancements in personalised medicine and improvements in patient outcomes through the use of pharmacogenomic testing.

## Pharmacogenomics Ecosystem in Wales



### Delivery Plan: Key Overarching Principles

To implement pharmacogenomic testing effectively, we must achieve nine key overarching principles. These principles are considered fundamental to the delivery of our vision for pharmacogenomics in Wales.

#### ***Principle 1: Establish a robust national governance network in Wales***

**Deliverable:** Develop and agree on a comprehensive governance pathway for reporting to the Welsh Government through the National Pharmacogenomics Group.

**Three-Year Aim:** Ensure a multidisciplinary, coordinated national approach with defined clinical and academic contributions to the development and implementation of pharmacogenetic services in Wales.

***Principle 2: To ensure sustainable and scalable pharmacogenomic testing across Wales***

**Deliverable:** Establish comprehensive and robust pharmacogenomic testing capabilities through coordinated efforts with national UK and local stakeholders.

**Three-Year Aim:** Evaluate and validate the most appropriate testing technologies and enhance the capacity for sustainable pharmacogenomic testing across NHS Wales through specialist commissioning in line with the NHSE National Genomics Test Directory (NGTD).

***Principle 3: Enhancing patient awareness and co-production of pharmacogenomic delivery***

**Deliverable:** Incorporate patient input in all facets of pharmacogenomic development to improve patient awareness and ensure a patient-centred pharmacogenomic service.

**Three-year aim:** Engage with patient groups and representatives to increase awareness of pharmacogenomics through all available channels and promote co-production.

***Principle 4: Developing a pharmacogenomic literate workforce to support the delivery of pharmacogenomics across NHS Wales***

**Deliverable:** Provide pharmacogenomic training and educational resources tailored to the professional roles of healthcare providers.

**Three-Year Aim:** Ensure widespread understanding and application of pharmacogenomic principles among healthcare providers.

***Principle 5: Embedding pharmacogenomics within day-to-day clinical practice***

**Deliverable:** Establish and maintain a skilled workforce capable of supporting pharmacogenomic testing and implementation within clinical practice.

**Three-Year Aim:** Ensure the broader healthcare workforce is equipped to integrate pharmacogenomics into their practice as standard.

***Principle 6: Developing and supporting research and innovation***

**Deliverable:** Explore and assess the application of pharmacogenomic testing across various clinical healthcare settings to guide prescribing decisions.

**Three-Year Aim:** Scope and deliver one or more clinical implementation research projects whilst also evaluating pharmacogenomic testing currently commissioned within clinical practice in Wales through the NHSE National Genomics Test Directory (NGTD).

***Principle 7: Horizon scanning for pharmacogenomic testing***

**Deliverable:** – Establish clear channels within NHS Wales for horizon scanning in the delivery of pharmacogenomic testing

**Three-Year Aim:** Ensure a unified approach within NHS Wales for horizon scanning to support the advance planning of a standardised and equitable implementation process.

***Principle 8: Pharmacogenomic testing pathway governance***

**Deliverable:** – Establish robust governance channels within NHS Wales to oversee the delivery of pharmacogenomic testing.

**Three-Year Aim:** Ensure governance structures are in place for various pharmacogenomic testing methods, such as point-of-care testing (POCT), and promote equitable access to these tests. This will help to achieve a more standardised and fair implementation process.

***Principle 9: To establish a reliable digital infrastructure***

**Deliverable:** Develop and integrate digital infrastructure to support pharmacogenomic data.

**Three-Year Aim:** Implement a comprehensive digital solution for managing and utilising pharmacogenomic data.

**Next steps:**

Collaborate with stakeholders and patient representatives to co-produce a Pharmacogenomics Delivery Plan for Wales. The plan will outline the necessary actions, which will be driven forward by an expert reference group, to achieve the ambition of implementing pharmacogenomics services in Wales, with the aim to publish in Autumn 2025.

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