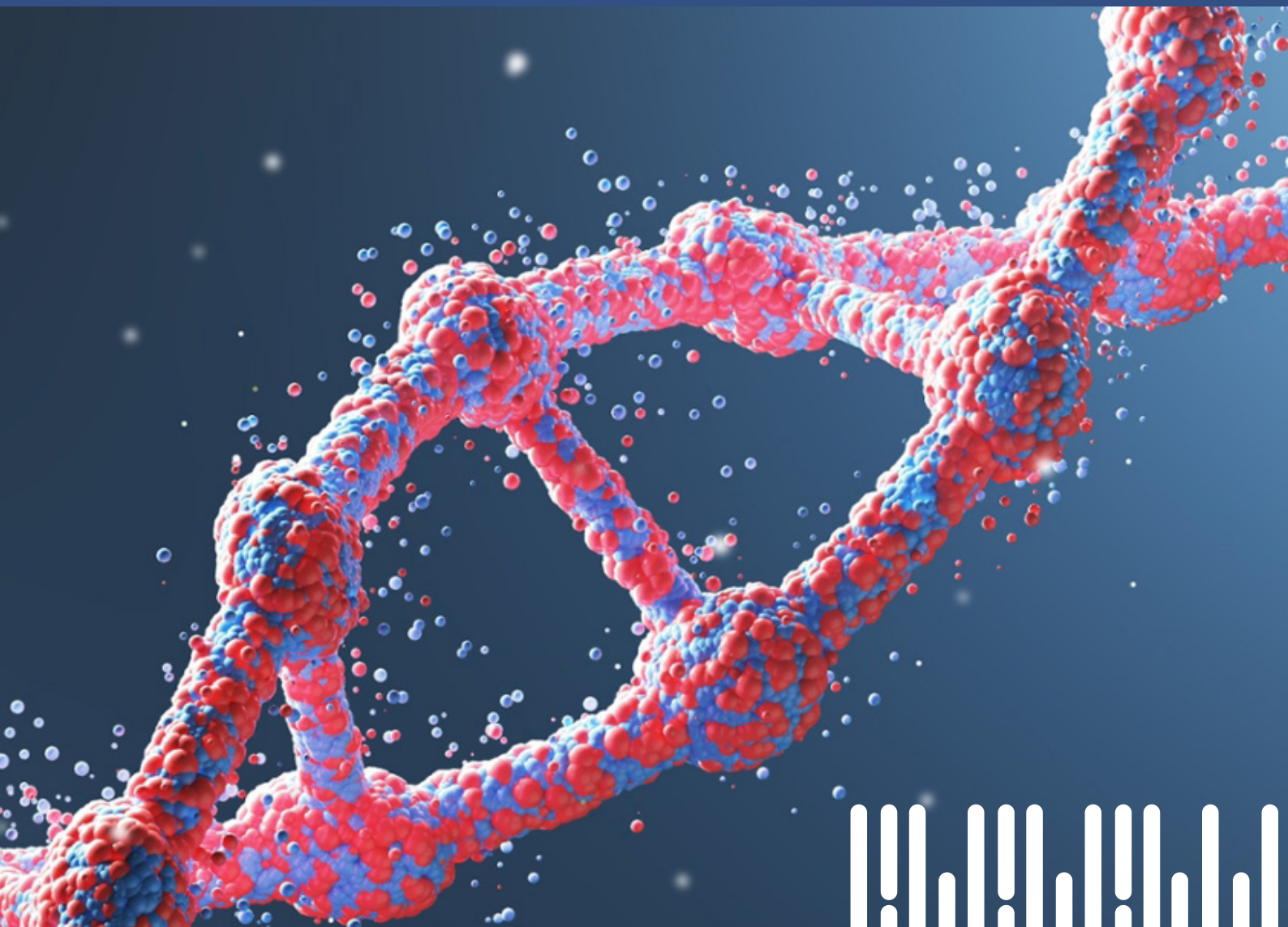
GIG CYMRU NHS WALES

Addysg a Gwella Iechyd Cymru (AaGIC)
Health Education and Improvement Wales (HEIW)

Genomic Capability Framework

Genomics for all: integrating genomics into everyday care across Wales.



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Introduction

Genomics plays an increasingly important role across all areas of healthcare and this influence will continue to grow, including through the development of novel and advanced therapies and a greater focus on prevention. As access to genomic testing increases, more healthcare professionals across all settings are likely to encounter individuals and families who are undergoing, or have undergone, genomic testing.

To support safe, effective and equitable care, there is a clear need to ensure that the healthcare workforce has role-appropriate genomic knowledge, skills and attitudes. The Genomic Capability Framework has been developed as part of the wider approach to upskilling the NHS Wales workforce to deliver genomics across healthcare, as set out within the Strategic Genomics Workforce Plan and the 2025/26 IMTP.

Purpose

The purpose of the Genomic Capability Framework is to support the wider healthcare workforce to understand the relevance of genomics within their specific roles, professions, and areas of practice. The framework applies across secondary, primary and community care settings.

The framework is designed to help individuals:

- Understand what they need to know about genomics for their role.
- Identify their current level of genomic knowledge and capability.
- Access appropriate education, training and development resources to address any gaps.

Ultimately, the framework aims to guide users towards achieving the level of genomic literacy required for their professional responsibilities by signposting them to relevant learning and development opportunities.

In addition to individual use, the framework can be used by organisations, employers and learning providers to:

- Map existing education, training and development provision.
- Identify gaps and commission or develop new learning offers.
- Support workforce development and competence assessment.

How the framework was developed

The Genomic Capability Framework was co-produced by a multidisciplinary task and finish group, drawing on expertise from across the healthcare system. Membership included representatives from genomics, nursing, dental, medical, allied health professions and pharmacy within Health Education and Improvement Wales (HEIW), alongside colleagues from Genomics Partnership Wales, the All-Wales Medical Genomics Service, Public Health Wales Pathogen Genomics Unit, the Rare Disease Implementation Network and Higher Education Institutions. Patient and public representation was included throughout the development process to ensure the framework reflects lived experience and supports person centred, equitable care.

Scoping was undertaken of existing published national and international genomics capability and competency frameworks, alongside a review of previously developed competency and capability frameworks by Health Education and Improvement Wales (HEIW), including the Digital Capability Framework and the Palliative and End of Life Care Capability Framework. This evidence base informed the development of the Genomic Capability Framework, ensuring alignment with established approaches while responding to the rapidly evolving role of genomics in healthcare. The framework recognises the expanding availability of genomic testing and the growing potential for its application across prevention, diagnosis, treatment and care, and has been designed to be future focused and sufficiently flexible to support the workforce as new technologies, testing pathways and clinical applications continue to emerge.

It was agreed that the framework should include:

- A core section describing the relevance of genomics to healthcare practice.
- Optional, application-specific sections reflecting different uses of genomics in clinical care.

The initial applications included diagnostic genomic testing, tumour (somatic) genomic testing and pharmacogenomic testing, with scope for additional applications (such as pathogen genomics, testing during pregnancy and advanced therapies) to be added in future iterations.

Many genomics education, training and development resources are already available, some on Y Ty Dysgu and others provided by other organisations, for example NHS England. These resources were mapped to the capabilities within the framework to enable learners to be directed to appropriate learning, as well as identify any gaps that will need to be filled.

Who are the capabilities for?

The Genomic Capability Framework is intended for the NHS workforce in Wales and is applicable to healthcare professionals across a wide range of roles, professions and settings.

The framework supports:

- Registered professionals in identifying and maintaining role-appropriate genomic capabilities.
- Managers and leaders in identifying workforce development and training needs.
- Educators and learning providers in curriculum design and integration of genomics into education and training.
- Pre-registration and post-registration learners.

While some sections of the framework were initially informed by nursing competency frameworks, the capabilities describe core genomic knowledge, skills and behaviours that are relevant across professions and can also be used as a foundation for the development of more specialist or profession-specific frameworks.

It is not designed for the specialist genomics workforce (including clinical geneticists, genetic counsellors, clinical scientists, bioinformaticians and genetic technologists) who have pre-existing education and training pathways which ensure their capability and competence in genomics.

Anticipated benefits

The Genomic Capability Framework provides a consistent, Wales-wide approach to supporting genomic literacy and confidence across the healthcare workforce.

Key benefits include:

- Improved confidence and capability among healthcare professionals when engaging with genomics.
- More consistent and appropriate use of genomic testing and genomic information in clinical practice.
- Better patient and family experiences through informed communication and shared decision-making.
- Support for workforce planning, education commissioning and service development.

The success of the framework will be evaluated through measures including analysis of:

- The uptake of use of the framework.
- Whether there has been an increase in uptake in completion of the free online genomics resources hosted on Y Ty Dysgu.
- Whether there has been an increase in uptake of the free MSc Genomics modules offered through HEIW.

Education and training offer

The Genomic Capability Framework signposts to existing high quality education, training and development resources which are aligned to the capability standards. It recognises the need for clear guidance and support to prepare and upskill both the current and future healthcare workforce, and forms part of a wider programme of work to build genomic capability across Wales.

Education and training resources aligned to the framework include:

- Free online genomics learning hosted on Y Ty Dysgu.
- HEIW-supported MSc Genomics modules.
- Existing and emerging education and training provision aligned to national policy, regulatory requirements and professional guidance.

It also identifies areas where additional resources are needed, and is intended to be a live document, with education and training offers evolving in response to changes in service delivery, workforce needs and the expanding role of genomics in healthcare.

Levels of Capability: A Tiered Approach

The framework presents genomic capabilities using a structured approach, organised into four progressive levels that reflect increasing depth of knowledge, confidence and application in practice:

Fundamental

Establishes baseline genomic literacy required to practise safely and effectively. This level builds on initial training and supports awareness of when genomics may be relevant in care.

All

Builds on the fundamental level to support the consistent and appropriate use of genomics by everyone within a role or profession where genomics is relevant, within defined scenarios in their specialty.

Some

Represents further development for those whose roles involve more frequent or complex engagement with genomics, enabling confident application of genomics in routine practice across a wider range of scenarios.

Few

Reflects advanced capability for those who progress into specialist, advisory or leadership roles, leading on and supporting the use of genomics within their specialty, service or organisation.

This tiered approach recognises that while genomics is increasingly relevant across healthcare, the level of engagement required varies by role, specialty and setting.

Capability Levels within the Framework

Fundamental

Fundamental capabilities are common across professions and describe the minimum level of genomic understanding required to practise safely and effectively in a healthcare environment where genomics is increasingly embedded. They represent the baseline genomic literacy expected of healthcare professionals within their scope of practice, focusing on awareness, understanding and the appropriate use of genomics in care.

These capabilities are relevant to professionals who may not routinely order or interpret genomic tests but who encounter individuals and families affected by genomic conditions or genomic testing outcomes. At this level, professionals should understand when genomics may be relevant, communicate appropriately, and know when and how to seek advice or refer to specialist services.

- Describe what genomics is and why it is relevant to healthcare.
- Explain why genomics is relevant for my profession.
- Give examples of why genomics is relevant for my specialty.
- Explain how genomics can cause or increase the risk of disease.
- Describe how genomics influences the impact of medications on the patient.
- Seek advice about genomics appropriately.
- Support patients affected by genomic conditions or rare disease appropriately.

All, some and few

These capabilities are relevant to professionals who need to use genomics within their role, and are used in relation to specific uses of genomics, such as offering diagnostic genomic testing or offering pharmacogenomic testing to inform prescribing. Professionals will be able to view the capabilities needed for the uses of genomics required for their role.

All

Aim: To apply genomics appropriately within defined aspects of one's role or specialty.	The 'All' level describes the genomic capabilities required by everyone within a profession or role group, regardless of career stage, grade or care setting, where genomics is used within their practice. These capabilities should typically be achieved at the point of registration, role commencement or introduction of genomics into the role, and maintained throughout professional practice. At this level, professionals are expected to: - Apply genomic knowledge appropriately in routine practice within their role. - Recognise when genomic testing or genomic considerations may be relevant. - Communicate genomic information sensitively and accurately to patients and families. - Follow agreed pathways and protocols. - Know when and how to seek advice or escalate to more specialist services.

Some

Aim: To confidently use genomics in usual practice across a broader range of scenarios.	The 'Some' level applies to professionals whose role, specialty or work context means they have more frequent involvement with genomic testing, results or decision-making, including more complex situations, while not working in a primarily specialist genomics role. These professionals require deeper knowledge, enhanced skills and greater confidence to manage genomic activity more independently. At this level, professionals are expected to: - Use genomics confidently across a range of relevant clinical scenarios. - Apply enhanced assessment, communication and decision-making skills. - Interpret genomic results within the context of their specialty. - Contribute to care planning or treatment decisions informed by genomic information. - Recognise limitations and escalate appropriately to specialist genomic services.

Few

Aim: To demonstrate specialist or leadership level genomic capability.	The 'Few' level applies to the smaller number of professionals whose roles are substantially focused on genomics, or who lead, advise or support others in the use of genomics within their specialty or organisation. These individuals often manage complex, high impact genomic situations and act as a source of expertise for colleagues across services. At this level, professionals are expected to: - Provide expert, evidence informed genomic input. - Lead or contribute to complex decision-making and pathway development. - Support, advise and educate others in genomic practice. - Contribute to service development, quality improvement or workforce capability. - Support the development and maintenance of genomic knowledge at local, regional or national level.

Offering diagnostic genomic testing

For those who are offering diagnostic genomic testing:

	All	Some	Few
Identify when to offer genomic testing.	Assess whether a patient is eligible for specific genomic tests offered within my role, based on the eligibility criteria used within NHS Wales.	Assess whether a patient is eligible for the genomic tests required by my specialty, based on the eligibility criteria used within NHS Wales	Support others in assessing whether a patient is eligible for genomic testing, based on the eligibility criteria used within NHS Wales, and establish patient pathways to implement testing.
Take and interpret a genetic family history.	Take a 3-generation family history relevant to my specialty, and identify when to seek advice about its implications for the patient.	Take a 3-generation family history relevant to my specialty, and use it to inform genomic testing decisions.	Support others to take a 3-generation family history relevant to my specialty, and use it to inform genomic testing decisions.
Identify what type of genomic testing will be offered.	Identify what type of genomic testing will be offered to patients within my role, and describe the benefits and limitations of this testing.	Identify what type of genomic testing will be offered to patients within my specialty, and describe the benefits and limitations of this testing.	Support others to identify what type of genomic testing will be offered to patients within my specialty and describe the benefits and limitations of this testing.
Describe the possible outcomes of genomic testing.	Describe the possible outcomes of the types of genomic testing offered within my role, and know when to seek advice from senior colleagues.	Describe the possible outcomes of the types of genomic testing offered within my specialty, and know when to seek advice from specialist services.	Support others to describe the possible outcomes of genomic testing offered within my specialty and use this to inform the development of pathways for use of genomic testing within my specialty.

Provide the information that needs to be given to patients for them to make an informed decision about genomic testing.	Provide the information that needs to be discussed with patients regarding genomic testing within my role.	Provide the information that needs to be discussed with patients regarding genomic testing within my specialty.	Support others to provide the information that need to be discussed with patients regarding genomic testing.
Demonstrate confidence in discussing genomic testing with patients.	Demonstrate confidence in discussing genomic tests offered within my role.	Demonstrate confidence in discussing genomic tests offered within my specialty.	Support others to discuss genomic testing confidently with patients.
Take informed consent for genomic testing.	Take informed consent for the specific genomic testing offered within my role.	Take informed consent for genomic testing offered within my specialty.	Support others in taking informed consent for genomic testing offered within my specialty.
Record consent and arrange genomic testing, as per local protocols.	Record consent and arrange genomic testing for the specific genomic testing offered within my role.	Record consent and arrange genomic testing for the types of genomic testing offered within my specialty.	Support others to record consent and arrange genomic testing for the types of genomic testing offered within my specialty.

Interpret what the genomic test report means for the patient.	Interpret what the genomic test report means for the patient for the specific genomic testing offered within my role.	Interpret what the genomic test report means for the patient for the types of genomic testing offered within my specialty.	Support others to interpret what the genomic test report means for the patient for the types of genomic testing offered within my specialty.
Interpret what the genomic test report means for the patient's relatives.	Interpret what the genomic test report means for the patient's relatives for the specific genomic testing offered within my role.	Interpret what the genomic test report means for the patient's relatives for the types of genomic testing offered within my specialty.	Support others to interpret what the genomic test report means for the patient's relatives for the types of genomic testing offered within my specialty.
Explain the genomic test result to my patient.	Explain to the patient the result of the specific genomic testing offered within my role.	Explain to the patient the result of the types of genomic testing offered within my specialty.	Support others to explain to the patient the result of the types of genomic testing offered within my specialty.
Identify the next steps to follow based on the genomic test result.	Identify the next steps to follow based on the genomic test result for the specific genomic testing offered within my role.	Identify the next steps to follow based on the genomic test result for the types of genomic testing offered within my specialty.	Develop local protocols for the use of genomic test results and support others to identify the next steps to follow based on the genomic test result for the types of genomic testing offered within my specialty.

Offering tumour (somatic) genomic testing

For those who are offering genomic testing on tumours to inform treatment and track disease progressions:

	All	Some	Few
Identify when to offer genomic testing.	Assess whether a patient is eligible for specific genomic tests offered within my role, based on the eligibility criteria used within NHS Wales.	Assess whether a patient is eligible for the genomic tests required by my specialty, based on the eligibility criteria used within NHS Wales.	Support others in assessing whether a patient is eligible for genomic testing, based on the criteria used within NHS Wales, and establish patient pathways to implement testing.
Explain the difference between tumour genomic testing and diagnostic genomic testing.	Explain the difference between tumour genomic testing and diagnostic genomic testing, and identify which is offered within my role.	Explain the difference between tumour genomic testing and diagnostic genomic testing, and identify which is offered within my specialty.	Support others to explain the difference between tumour genomic testing and diagnostic genomic testing, and identify which is offered within my specialty.
Identify what type of genomic testing will be offered.	Identify what type of genomic testing will be offered to patients within my role, and describe the benefits and limitations of this testing.	Identify what type of genomic testing will be offered to patients within my specialty, and describe the benefits and limitations of this testing.	Support others to identify what type of genomic testing will be offered to patients within my specialty and describe the benefits and limitations of this testing.
Describe the possible outcomes of genomic testing.	Describe the possible outcomes of the types of genomic testing offered within my role, and know when to seek advice from senior colleagues.	Describe the possible outcomes of the types of genomic testing offered within my specialty, and know when to seek advice from specialist services.	Support others to describe the possible outcomes of genomic testing offered within my specialty and use this to inform the development of pathways for use of genomic testing within my specialty.

Provide the information that needs to be given to patients for them to make an informed decision about genomic testing.	Provide the information that needs to be discussed with patients regarding genomic testing within my role.	Provide the information that needs to be discussed with patients regarding genomic testing within my specialty.	Support others to provide the information that need to be discussed with patients regarding genomic testing.
Demonstrate confidence in discussing genomic testing with patients.	Demonstrate confidence in discussing genomic tests offered within my role.	Demonstrate confidence in discussing genomic tests offered within my specialty.	Support others to discuss genomic testing with patients.
Arrange genomic testing, as per local protocols.	Arrange genomic testing for the specific genomic testing offered within my role.	Arrange genomic testing for the types of genomic testing offered within my specialty.	Support others to arrange genomic testing for the types of genomic testing offered within my specialty.
Interpret what the genomic test report means for the patient.	Interpret what the genomic test report means for the patient for the specific genomic testing offered within my role.	Interpret what the genomic test report means for the patient for the types of genomic testing offered within my specialty.	Support others to interpret what the genomic test report means for the patient for the types of genomic testing offered within my specialty.

Identify when a tumour genomic test result may suggest a germline genomic variant (also present in cells outside of the tumour).	Identify when a tumour genomic test result may suggest a germline genomic variant.	Identify when a tumour genomic test result may suggest a germline genomic variant for the types of genomic testing offered within my specialty.	Support others to identify when a tumour genomic test result may suggest a germline genomic variant for the types of genomic testing offered within my specialty.
Explain the genomic test result to my patient.	Explain to the patient the result of the specific genomic testing offered within my role.	Explain to the patient the result of the types of genomic testing offered within my specialty.	Support others to explain to the patient the result of the types of genomic testing offered within my specialty.
Identify the next steps to follow based on the genomic test result.	Identify the next steps to follow based on the genomic test result for the specific genomic testing offered within my role.	Identify the next steps to follow based on the genomic test result for the types of genomic testing offered within my specialty.	Develop local protocols for the use of genomic test results and support others to identify the next steps to follow based on the genomic test result for the types of genomic testing offered within my specialty.

Offering pharmacogenomic testing

For prescribers:

	All	Some	Few
Explain what a pharmacogenomic test is and identify health conditions, symptoms or adverse drug reactions that may be linked to specific pharmacogenomic variants in the patient.	Explain what a pharmacogenomic test is, and identify health conditions, symptoms or adverse drug reactions that may be linked to specific pharmacogenomic variants that may be identified by tests offered within my role.	Explain what a pharmacogenomic test is, and identify health conditions, symptoms or adverse drug reactions that may be linked to specific pharmacogenomic variants that may be identified by tests offered by my specialty.	Support others to explain what a pharmacogenomic test is, and identify health conditions, symptoms or adverse drug reactions that may be linked to specific pharmacogenomic variants that may be identified by tests offered by my specialty.
Take a patient's history including relevant pharmacogenomic considerations such as ethnicity, ancestry and prior testing performed.	Take a patient's history relevant to the pharmacogenomic tests offered within my role, and identify when to seek advice about its implications for the patient.	Take a patient's history relevant to the pharmacogenomic tests offered within my specialty, and use it to inform testing decisions.	Support others to take a patient's history relevant to the pharmacogenomic tests offered within my specialty, and use it to inform testing decisions.
Assess patients' eligibility for pharmacogenomic testing.	Assess whether a patient is eligible for specific pharmacogenomic tests offered within my role, based on the eligibility criteria used within NHS Wales.	Assess whether a patient is eligible for the pharmacogenomic tests required by my specialty, based on the eligibility criteria used within NHS Wales.	Support others in assessing whether a patient is eligible for pharmacogenomic testing, based on the eligibility criteria used within NHS Wales, and establish patient pathways to implement testing.
Provide the information that needs to be given to patients for them to make an informed decision about pharmacogenomic testing.	Provide the information that needs to be discussed with patients regarding pharmacogenomic testing offered within my role.	Provide the information that needs to be discussed with patients regarding pharmacogenomic testing offered within my specialty.	Support others to provide the information that need to be discussed with patients regarding pharmacogenomic testing offered within my specialty.

Demonstrate confidence in discussing pharmacogenomic testing with patients.	Demonstrate confidence in discussing pharmacogenomic tests offered within my role.	Demonstrate confidence in discussing pharmacogenomic tests offered within my specialty.	Support others to discuss pharmacogenomic testing with patients.
Record consent and arrange pharmacogenomic testing, as per local protocols.	Record consent and arrange pharmacogenomic testing for the specific pharmacogenomic testing offered within my role.	Record consent and arrange pharmacogenomic testing for the types of pharmacogenomic testing offered within my specialty.	Support others to record consent and arrange pharmacogenomic testing for the types of pharmacogenomic testing offered within my specialty.
Assess the quality and clinical validity of results in context of the patient's history.	Assess the quality and clinical validity of results in context of the patient's history for the specific pharmacogenomic testing offered within my role.	Assess the quality and clinical validity of results in context of the patient's history for the types of pharmacogenomic testing offered within my specialty.	Support others to assess the quality and clinical validity of results in context of the patient's history for the types of pharmacogenomic testing offered within my specialty.
Make treatment choices based on the patient's pharmacogenomic information available.	Make treatment choices based on the patient's pharmacogenomic information available for the specific pharmacogenomic testing offered within my role.	Make treatment choices based on the patient's pharmacogenomic information available for the types of pharmacogenomic testing offered within my specialty.	Support others to make treatment choices based on the patient's pharmacogenomic information available for the types of pharmacogenomic testing offered within my specialty.

Explain the pharmacogenomic test result to my patient.	Explain to the patient the result of the specific pharmacogenomic testing offered within my role.	Explain to the patient the result of the types of pharmacogenomic testing offered within my specialty.	Support others to explain to the patient the result of the types of pharmacogenomic testing offered within my specialty.
Involve patients in treatment decision-making based on the pharmacogenomic test result.	Involve patients in treatment decision-making based on the pharmacogenomic test result for the specific pharmacogenomic testing offered within my role.	Involve patients in treatment decision-making based on the pharmacogenomic test result for the types of pharmacogenomic testing offered within my specialty.	Support others to involve patients in treatment decision-making based on the pharmacogenomic test result for the types of pharmacogenomic testing offered within my specialty.
Manage pharmacogenomic test results for them to be available for future prescribing decisions.	Manage pharmacogenomic test results for them to be available for future prescribing decisions, for the specific testing offered within my role.	Manage pharmacogenomic test results for them to be available for future prescribing decisions, for the testing offered within my specialty.	Develop local protocols for the management of pharmacogenomic test results for them to be available for future prescribing decisions, for the testing offered within my specialty, and support others to manage these results.

Next steps

The first iteration of the Genomic Capability Framework is planned for completion by May 2026. Further iterations are expected as the role of genomics in healthcare continues to develop.

Future work will include:

- Ongoing review and refinement of capabilities.
- Development of additional application-specific sections.
- Expansion and alignment of education and training resources.
- Continued collaboration with professional groups, educators and service partners.

Any future updates to the framework will be versioned and dated to ensure clarity and consistency.

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