

## **Precision Health Competencies and Sub-competencies in Six Domains From the American Nurses Association Precision Health Competencies Work Group**

### **About This Resource**

This document presents the Precision Health Competencies and Sub-competencies for Nursing Practice, designed to guide nurses in applying precision health across roles and settings. Precision health integrates genomics, data analytics, digital technologies, and social determinants of health to support more personalized, predictive, and equitable care. These competencies are organized into six domains that reflect the full scope of nursing practice—from foundational knowledge to leadership and implementation.

This resource supports:

- Integration of precision health into nursing practice
- Workforce development and competency assessment
- Data-informed, person-centered care delivery
- Organizational and system-level implementation

**It is designed as a practical reference and implementation tool for clinicians, educators, and leaders.**

### **How to Use This Document**

This document can be used across clinical, educational, and organizational settings.

#### Individual nurses

- Review relevant domains based on your role
- Identify learning needs and guide professional development
- Apply competencies to patient care, education, and decision-making

### Educators

- Integrate competencies into curricula, learning objectives, and assessments
- Use sub-competencies to develop cases, simulations, and evaluations

### Leaders and organizations

- Inform workforce development and competency expectations
- Align with priorities such as digital health, health equity, and care transformation
- Support integration into workflows and practice models

## **DOMAIN I: Knowledge of Precision Health for Nursing Practice**

**Competency: Demonstrate a comprehensive understanding of Precision Health, Precision Medicine, and multi-omics as they relate to prevention, diagnosis, and treatment of illness and overall wellness**

**Sub-competency 1.1:** Integrate the concepts of Precision Health (PH), Precision Medicine (PM), and multi-omics as they relate to the identification, prevention/risk reduction, diagnosis, and treatment of illness and overall wellness.

**Sub-competency 1.2:** Demonstrate understanding of the role of the nurse in conducting a risk assessment for structural and Social Determinants of Health (SDoH) and common genetic conditions to educate and refer individuals/families appropriately based on findings.

**Sub-competency 1.3:** Differentiate the administration and interpretation of various types of genomic testing, including germline, genomic, and biomarker testing, with an emphasis on their inclusion in the plan of care and timely reporting of results.

**Sub-competency 1.4:** Exhibit a basic understanding of Direct-to-Consumer (DTC) testing and identify results consumers can obtain independently.

**Sub-competency 1.5:** Understand the importance of the patient or consumer’s engagement in their lifelong connected healthcare journey.

**Sub-competency 1.6:** Demonstrate a basic understanding of the collection and integration of multi-sourced data into a plan of care.

**Sub-competency 1.7:** Describe the benefits and use of Personally Generated Health Data (PGHD) (from wearables, implantables & other remote monitoring devices) in providing individualized care to achieve improved health outcomes.

**Sub-competency 1.8:** Demonstrate an understanding of the ethical and legal considerations surrounding PH, such as privacy and confidentiality, informed consent, and the potential for unconscious bias and/or discrimination based on genomic information.

## **DOMAIN II: Person-Centered Care**

### **Competency: Provide person-centered care by integrating PH/PM concepts and skills into nursing practice**

**Sub-competency 2.1:** Demonstrate an understanding of the mechanism of action, safety, and efficacy issues associated with pharmacogenomics and targeted therapies.

**Sub-competency 2.2:** Collaborate with healthcare providers in the integration of PGHD, such as DTC testing results and data from wearables, into the plan of care.

**Sub-competency 2.3:** Use culturally congruent information derived from consumers’ structural and social determinants of health to provide them and/or their caregivers to relevant services across systems of care.

**Sub-competency 2.4:** Educate the patient regarding PH/PM strategies that promote better lifestyle, health, and/or outcomes through remote monitoring (e.g., wearables) or other emergent technologies.

**Sub-competency 2.5:** Formulate a plan of care that is inclusive of patients’ rights for autonomous, cultural, religious, and ethnic perspectives when receiving informed precision health-related results/diagnoses.

**Sub-competency 2.6:** Identify and use preferred engagement methods and health literacy to maximize the consumer’s participation as an equal member of the team in connected health.

**Sub-competency 2.7:** Use multi-sourced data as the basis for referral to PM/PH resources/innovations.

**Sub-competency 2.8:** Follow established guidelines on ethical governance and provenance of data from multi-modal technologies.

**Sub-competency 2.9:** Demonstrate understanding of potential social, psychological, and economic impact on the individual and other family members brought about by abnormal genomic test results.

## DOMAIN III: Precision Public Health

**Competency: Utilize PH/PM principles at the individual, family, group, population, and community levels to achieve equitable care, optimize health outcomes, and decrease healthcare disparities**

**Sub-competency 3.1:** Employ geographic and SDoH data for informed, equitable care planning and resource distribution, to optimize health outcomes across diverse populations.

**Sub-competency 3.2:** Establish community partnerships to develop and execute PH interventions that address specific public health needs and disparities.

**Sub-competency 3.3:** Design and implement community health programs using PH analytics, focusing on reducing health disparities, preventing disease, and promoting wellness for all community members.

**Sub-competency 3.4:** Consider the health literacy of individuals, families, groups, populations, and communities in planning and evaluating programs and services.

**Sub-competency 3.5:** Propose digital innovations in public health practice that integrate organizational systems and design thinking in quality and safety.

**Sub-competency 3.6:** Recommend and use conventional and evolving technologies for the identification of risk and remote monitoring of health and illness indicators in an individual, family, group, communities, and/or population.

**Sub-competency 3.7:** Use multi-sourced data (e.g., geographic information systems or GIS, census data, multi-omics data, population databases, state and federal aggregate sources) to plan and evaluate public health interventions for routine services, preparedness in disaster and other emergencies, and surveillance of impending threats.

**Sub-competency 3.8:** Describe interventions used to prevent disease, reduce risk, and improve health within the human-animal-environment interface, for the individual, family, group, communities, and populations.

## DOMAIN IV: Interprofessional Partnerships for Precision Health

**Competency: Collaborate effectively within interprofessional teams and across systems to deliver PH/PM**

**Sub-competency 4.1:** Collaborate with and refer patients to members of the interprofessional team who are experts in PH or PM (e.g., geneticists, genetic counselors, social workers, Advanced Practice Providers, & pharmacists).

**Sub-competency 4.2:** Coordinate with health professionals, the patient, and their caregivers/advocates to develop a comprehensive plan of care (e.g., an organized assessment, diagnosis, implementation of the care plan, & application of support services) to address SDoH.

**Sub-competency 4.3:** Promote the significance of PH relative to patient and population outcomes.

**Sub-competency 4.4:** Create partnerships within the local interprofessional team and at the state, national, and tribal levels to advocate for the advancement of PH.

**Sub-competency 4.5:** Expand one's own awareness of other health care providers' scopes of practice within PH in order to have meaningful collaboration and referral.

**Sub-competency 4.6:** Analyze the advantages and disadvantages of integrating self-reported data from multiple sources into a plan of care.

## **DOMAIN V: Informatics, Information Technology**

**Competency: Utilize informatics and information technology solutions to enhance PH/PM practices and patient care**

**Sub-competency 5.1:** Use multi-sourced data from longitudinal Electronic Health Records (EHRs) to describe an individual's health status and to inform personalized care decisions and practices.

**Sub-competency 5.2:** Evaluate the quality of data and use of generative technologies (e.g., Large Language Models or LLMs) in informing clinical decision-making and the evaluation of patient outcomes.

**Sub-competency 5.3:** Educate individuals and collaborators about the importance of consistent, active engagement with a health system's Personal Health Record (PHR) and/or Patient Portal.

**Sub-competency 5.4:** Educate individuals about the importance of health information shared via wearables to inform holistic well-being, disease prevention, and lifestyle optimization.

**Sub-competency 5.5:** Analyze the risks and benefits of social media and the influential role it plays surrounding informed decisions about personal health and well-being.

**Sub-competency 5.6:** Apply ethical and legal guidelines in all aspects of patient data management to maintain data privacy, security, and confidentiality, especially when PGHD is considered.

**Sub-competency 5.7:** Evaluate and use secure interoperable mechanisms for sharing and exchanging patient information within Health Information Exchanges (HIEs) or other system integration processes and functions.

## **DOMAIN VI: Personal, Professional Practice, & Leadership Development**

**Competency: Develop leadership skills and engage in lifelong learning and scholarship to advance PH/PM practices**

**Sub-competency 6.1:** Engage in self-assessment of one's own personal beliefs, values, and traditions, which could lead to bias, when providing precise care.

**Sub-competency 6.2:** Advocate for the advancement of PH/PM through research and innovations and encourage discourse with all nursing and interprofessional audiences in pursuit of equitable care provision.

**Sub-competency 6.3:** Develop implementation strategies for integrating PH/PM into nursing practice across settings.

**Sub-competency 6.4:** Engage in scholarship activities to promote PH/PM best practices.

**Sub-competency 6.5:** Facilitate a culture of continuous learning and growth that encourages professional development in PH and PM.

**Sub-competency 6.6:** Continuously update and enhance one's own knowledge, skills, and attitudes in PH.

## **Definitions, Precision Health Competencies**

**Advanced Practice Provider:** A medical professional who is not a doctor but has special training and is licensed to diagnose, treat, and manage many common medical conditions. Examples of Advanced Practice Providers (APPs) are nurse practitioners and physician assistants. (National Institute of Health [NIH]/National Cancer Institute, n.d.). <https://www.cancer.gov/publications/dictionaries/cancer-terms/def/advanced-practice-provider>

**Connected Health:** Connected Health refers to using technology to link patients, healthcare providers, and systems so that care is more efficient, proactive, and centered around the patient's needs. It includes tools like telehealth, mobile apps, and remote monitoring devices that collect and share health data to support better decision-making and continuous care. The goal is to keep everyone involved—patients, clinicians, and caregivers—better informed and connected through smart use of data and communication tools. (Pattichis & Panayides, 2019). <https://doi.org/10.3389/fdgth.2019.00001>

**Design Thinking in Quality and Safety:** A user-centered approach that focuses on understanding the needs of patients and healthcare providers to design better solutions that enhance safety and quality. (Altman et al., 2018). [https://www.cdc.gov/pcd/issues/2018/18\\_0128.htm](https://www.cdc.gov/pcd/issues/2018/18_0128.htm)

**General Nursing Practice:** A field of nursing that involves working in a primary healthcare setting to provide care for patients. General practice nurses (GPNs) work in such areas as hospital staff nursing, general practice (GP) surgeries and outpatient care, and home health in collaboration with physicians and other healthcare professionals. (American Nurses Credentialing Center [ANCC], n.d.) <https://www.nursingworld.org/our-certifications/general-nursing-practice-renewal>

**Geographic Information System (GIS):** A framework for gathering, managing, and analyzing spatial and geographic data. In healthcare, it supports mapping disease trends, identifying underserved populations, and improving resource allocation. (World Health Organization [WHO], 2025).

<https://www.who.int/data/GIS>

**Health Information Exchange (HIE):** The electronic movement of health information across organizations within a region, community, or hospital system to improve care coordination, safety, and efficiency. (Assistant Secretary for Technology Policy/Office of the National Coordinator [ASTP/ONC], 2025a).

<https://www.healthit.gov/topic/health-it-and-health-information-exchange-basics/what-hie>

**Health Professional:** A provider of health care treatment and advice based on formal training and experience. They study, advise on, or provide preventive, curative, rehabilitative, and promotional health services based on an extensive body of theoretical and factual knowledge in diagnosis and treatment of disease and other health problems. (WHO, 2019). <https://cdn.who.int/media/docs/default-source/health-workforce/dek/classifying-health-workers.pdf>

**Human-animal-environment interface:** An integrated unified approach that aims to sustainably balance and optimize the health of people, animals and ecosystems. (WHO, 2023). This is foundational to the WHO's One Health framework for the universal value of all living things in the environment—people, animals, plants and the environment within which they exist. [https://cdn.who.int/media/docs/default-source/one-health/ohhlep/one-health-definition-and-principles-translations.pdf?sfvrsn=d85839dd\\_6&download=true](https://cdn.who.int/media/docs/default-source/one-health/ohhlep/one-health-definition-and-principles-translations.pdf?sfvrsn=d85839dd_6&download=true)

**Multimodal Technologies:** The combination of different types of data—like text, images, signals, and lab results—to give a fuller picture of a patient's health. By bringing together this information and analyzing it with artificial intelligence (AI), clinicians and systems can make better decisions about diagnosis and treatment. This approach helps personalize care by using the strengths of each data source, such as

medical images, clinical notes, and sensor data from wearables. (Artsi et al., 2024).

<https://doi.org/10.3390/jcm13206246>

**Multi-omics:** A term which usually refers to the crossover application of multiple high-throughput screening technologies represented by genomics, transcriptomics, single-cell transcriptomics, proteomics, metabolomics, and spatial transcriptomics which play a role in the study of human disease (Chen et al., 2023). 10.1002/mco2.315

**Multi-Sourced Data** (in healthcare): refers to health information collected from a variety of sources, such as electronic health records, genomics, mobile health apps, wearable devices, and other digital tools. This kind of data is used to improve clinical decision-making by giving a more complete picture of a patient's health. However, managing and sharing this data comes with challenges related to privacy, standardization, and integration across different systems and organizations. (Shankar & Anderson, 2018).

<https://doi.org/10.1055/s-0038-1641215>

**Omics** High-throughput experimental technologies providing the tools for widely monitoring disease development at a molecular level that focuses on big data (Hasanzad et al., 2021). [10.1007/s40200-021-00913-0](https://doi.org/10.1007/s40200-021-00913-0) Many governmental sources use "omics" to refer to various large-scale biological data disciplines critical for advancing Precision Medicine and understanding complex disease.

**Person or Patient-Centered Care (PCC):** A model of healthcare that focuses on the needs and preferences of the patient (or person) (Centers for Medicare & Medicaid Services, 2023)

<https://www.cms.gov/priorities/innovation/key-concepts/person-centered-care#:~:text=Person%2dCentered%20care%20allows%20patients,and%20is%20diagnosed%20with%20asthma>. It is understood that the patient or person can have a surrogate or legally authorized decision-maker.

**Personal Health Record (PHR):** A digital tool that allows individuals to track and manage their health information (& that of others for whom they are authorized) privately (ASTP/ONC), 2025b).

<https://www.healthit.gov/faq/what-personal-health-record>

**Personal Identifier:** A personal identifier (PID) is a piece of data that can be used to identify a person, when used alone and/or with a specific degree of certainty. PIDs are a subset of personally identifiable information (PII), which is any data that can be used to identify someone, especially when combined. PIDs can be direct or indirect and can be sensitive or non-sensitive (Center for Disease Control [CDC], n.d.).

<https://www.cdc.gov/nchs/training/confidentiality/training/page581.html>

**Pharmacogenomics:** Pharmacogenomics is a growing area of genomic medicine that uses a patient's genomic information to help health care providers select the medications and dosages that are predicted to work best in each patient (NHGRI, 2024). <https://www.genome.gov/about-genomics/educational-resources/fact-sheets/pharmacogenomics>

**Precision Health Analytics:** The use of predictive and data-driven tools to deliver the right health intervention to the right person or population at the right time. It combines individual-level and population-level data—such as genetics, behaviors, environmental exposures, and social factors—to improve prevention, diagnosis, and treatment. This approach bridges precision medicine and precision public health, aiming to enhance health outcomes through targeted, context-aware strategies informed by robust data analysis. (Pearson et al., 2020). <https://doi.org/10.1016/j.jacc.2020.05.043>

**Precision Public Health:** Refers to improving the ability to prevent disease, promote health and reduce health disparities in populations by: 1) applying emerging methods and technologies for measuring disease, pathogens, exposures, behaviors, and susceptibility in populations; and 2) developing policies and targeted

public health programs to improve health (Khoury, 2015).

<https://blogs.cdc.gov/genomics/2015/03/02/precision-public/>

**Social Determinants of Health:** The conditions in which people are born, grow, live, work, and age (Creary-Perry et al., 2021). <https://doi.org/10.1089/jwh.2020.8882>

**Structural Determinants of Health:** The cultural norms, policies, institutions, and practices that define the distribution (or maldistribution) of SDoH. These forces form the distribution of power and resources across the population, fostering health inequities coinciding with race, class, and gender lines and intersections thereof (Creary-Perry et al., 2021). <https://doi.org/10.1089/jwh.2020.8882>

**Targeted Therapies:** Treatments that block the growth of cancer by interfering with specific molecules involved in tumor growth and progression. Unlike chemotherapy, they are designed to affect only cancer cells with certain markers. (National Cancer Institute [NCI], 2022). <https://www.cancer.gov/about-cancer/treatment/types/targeted-therapies>

**Tribal:** A descriptor for a level of community organization in which tribal nations or indigenous communities have distinct legal, cultural and governmental status. (Indian Health Service, n.d.). <https://www.ihs.gov/selfgovernance/faq/>