

What Providers Need to Fully Participate in Genomics, Precision Medicine, and Patient Centered Care

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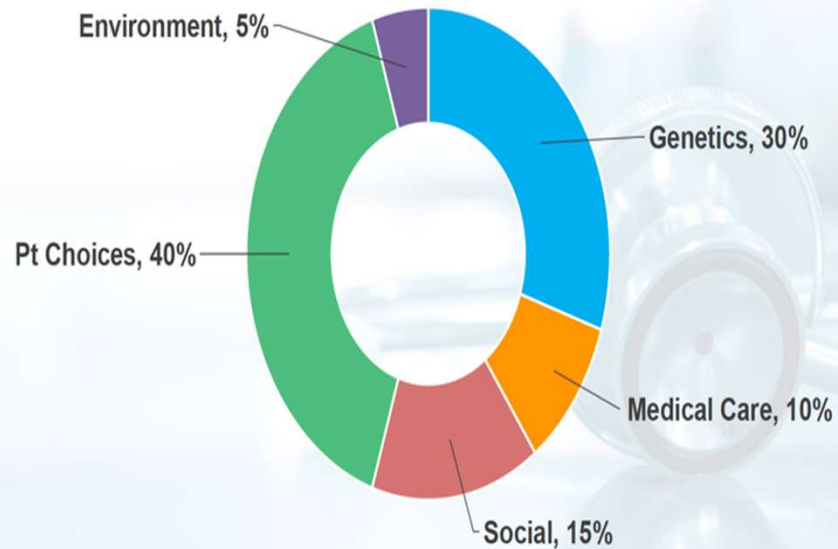
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What Providers Need to Participate in Genomics, Precision Medicine, and Patient Centered Care

Objectives

1. Genetics and SDOH
2. Differentiate Genetics, Genomics, and Biomarkers
3. Precision Medicine and Genetics and Genomics
4. Describe expected competencies
5. Explore learning and education needs for providers
6. Discuss tools for providers as they interact with patients

What Determines Health



Determinants of Health

Several Broad Categories

1. Policy Making
2. Social Factors
3. Health Services
4. Individual Behavior
5. Biology and Genetics

Office of Disease Prevention and Health Promotion:

<https://www.healthypeople.gov/2020/about/foundation-health-measures/Determinants-of-Health-biology-and-genetics>

Precision Medicine and Genomics

Precision Medicine uses information about a person's unique genetics, environment, and lifestyle to offer that person more accurate and effective disease treatment and prevention. (adapted from the [U.S. Precision Medicine Initiative](#)).

What are the benefits?

- Prevention

- Detection of at-risk family members

- Targeted treatment

- Health Systems benefit – reduced costs and use of resources.

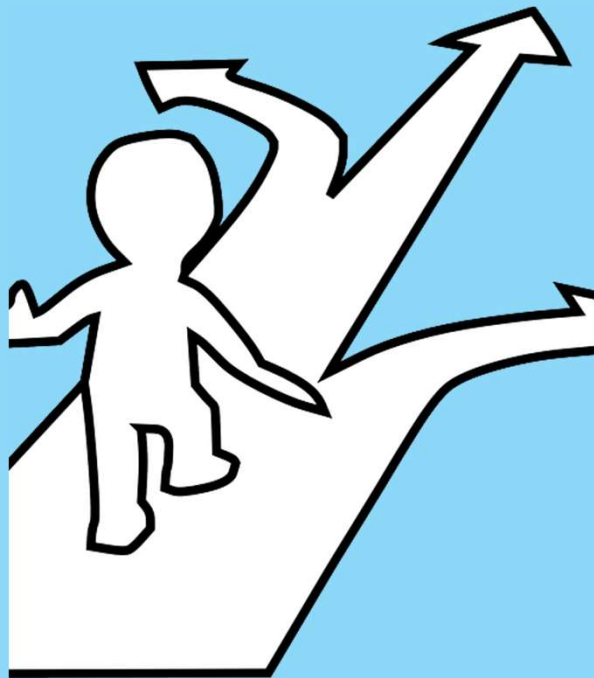
Genetics Genomics Biomarkers



“Precision medicine is a healthcare approach that utilises molecular information (genomic, transcriptomic, proteomic, metabolomic, etc), phenotypic and health data from patients to generate care insights to prevent or treat human disease resulting in improved health outcomes”.

European Federation of Pharmaceutical Industries and Associations

Clearing the Confusion of Terms



Biomarker testing.

Biomarker testing means the analysis of a patient's tissue and/or blood for specific driver mutations, multiple gene alterations, and/or non-genomic biomarkers (such as protein expression), with no relation to anything inherited within a family.

Genetic testing for inherited mutations.

Genetic testing refers to testing for inherited (germline) mutations in patients who have already been diagnosed with a disease that involves genetic or inherited mutations.

Genetic testing for inherited cancer risk.

Genetic testing for disease risk is used for people who have not been diagnosed with a disease but who are at risk of having an inherited (germline) genetic mutation, because one of their family members has been diagnosed with a disease with an inherited element that increases the risk for this disease (such as *BRCA* mutation or the Lynch syndrome).

Genomics.

Genomics describes the study of all of a person's genes (the genome), including interactions of those genes with each other and with the person's environment.



<https://phgkb.cdc.gov/PHGKB/specificPHGKB.action?topic=equity&query=home>

Population, Public Health, and Genomics

The CDC Office of Genomic and Precision Public Health is identifying priorities and actions for genomics and precision medicine.

Goal: ensure everyone has the opportunity to reap the health benefits of advances in genomics and precision medicine.

Disparities exist in the implementation of what is evidence based and available today.

BRCA

Statin treatment

Lynch Syndrome

Chronic kidney disease screening and prevention

The Veterans Affairs Office of Research and Development



Million Veteran Program (MVP)

1. Foster genomic discoveries
2. Bring genomics to the forefront of veteran care
3. As of 2018, more than 690,000 of 1 millions Veterans whose DNA is sampled and health information provided
4. Will serve as a resource for researchers

Some of the genomic research being conducted

Genetic markers for lithium response

Genetic risk for PTSD – SKA2

Chromosomal variants leading to sleep disorders

Response to SSRIs

TBI and PTSD

Biomarkers of suicide risk

Alzheimer's in younger patients

Parkinsons' disease – reduce the production of a brain protein

MHC molecules initiating immune responses triggering MS

Appollo network – Cancer

VA, DoD, and NCI

RNA molecules that suppress tumor growth

National Precision Oncology Program. [NPOP's](#) goal is to double the survival of patients with advanced non-small cell lung cancer.

COPD

Pain

<https://go.joinallofus.org>

All of US

Research program from NIH

1 million volunteers

2. Currently, over 400,000

Data will be collected to study cancer, diabetes, depression, asthma

3. DNA will be studied

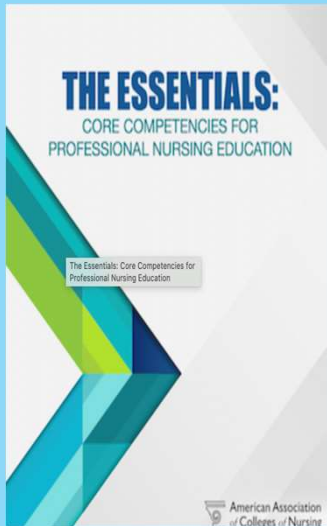
4. There is an app

https://go.joinallofus.org/?utm_source=sensis&utm_medium=paid_search&utm_campaign=tpc-y5&utm_content=health

Patient Recommendations (Korngiebel & West, 2022)

1. Design a simple patient friendly summary cover sheet that contains only key information for the electronic report.
2. Include the electronic summary coversheet to supplement not replace the detailed report.
3. Ensure internet based and Smart Phone functionalities are included in the design.
4. Use clear, accessible jargon free language.
5. Include next steps in the results summary coversheet.
6. Include encouragement and easy to find information for contacting the health care provider for follow up.

Expected Competencies



1. AACN 2021 Essentials:

<https://www.aacnnursing.org/Portals/42/AcademicNursing/pdf/Essentials-2021.pdf>

2.2i Apply individualized information, such as genetic/genomic, pharmacogenetic, and environmental exposure information in the delivery of personalized health care.

2. The Future of Nursing 2020-2030: Charting a Path to Achieve Health Equity

<https://nap.nationalacademies.org/download/25982>

Nurses addressing the determinant of health including the medical determinants of health.

Our Questions

1. Healthcare professional students are to be learning about and integrating information on the social determinants of health but now they must be prepared to integrate precision medicine/health into their education. Precision Medicine is a significant part of patient centered care. How do we best prepare healthcare professional students to incorporate this concept?
2. What do you think faculty and educators need to do to prepare all entry to practice nurses to participate in helping patients and communities to understand this? These nurses have significant interactions with patients and their families and are responsible for discharge education.
3. What do you think needs to be done so that clinically focused advanced nurse can better guide their patients and families?
4. How would you see nurse informaticians supporting the work you do?
5. Do you see emerging roles for advanced practice nurses in the area of genomics, precision medicine, and patient centered care?
6. Do you see emerging roles for BSN prepared nurses who care for patients and communities in this area?
7. HealthyPeople.gov indicates that genomics is to be used to improve health and prevent harm through valid and useful genomic tools in clinical and public health. In this document, there is a recognition of the existence of disparities. What do you see as the root of this issue and how do we begin to tackle it?

Resources and References

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<https://www.cdc.gov/genomics/default.htm>

Korngiebel, DM & West, KM. (2022). Patient Recommendations for the Content and Design of Electronic Returns of Genetic Test Results: Interview Study Among Patients Who Accessed Their Genetic Test Results via the Internet. *JMIRx Med* 2022;3(2):e29706
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MedlinePlus What is Precision Medicine?
<https://medlineplus.gov/genetics/understanding/precisionmedicine/definition/>

National Human Genome Research Institute: <https://www.genome.gov/about-genomics/fact-sheets/A-Brief-Guide-to-Genomics>

Office of Research and Development. VA Research on Genomics. (2019). Accessed at:
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