

Essential Nursing Competencies and Curricula Guidelines for Genetics and Genomics: Outcome Indicators

Introduction

The Outcome Indicators are an adjunct to the Essential Nursing Competencies and Curricula Guidelines for Genetics and Genomics and are intended to define for each competency the knowledge and practice indicators. The knowledge and practice indicators are not intended to be prescriptive but provide a guide to the user of essential knowledge elements and suggested practice indicators. To be consistent with the Competencies, definitions will be identical between the two documents. Genetic and genomic information will be used as the context for defining knowledge and practice indicators for each competency.

Definitions

Genetics – Study of individual genes and their impact on relatively rare single gene disorders

Genomics – Study of all the genes in the human genome together, including their interactions with each other, the environment, and the influence of other psychosocial and cultural factors.

Clients/Clients – Recipients of health care may include persons, families, communities, and/or populations from any race, ethnicity/ancestry, culture, or religious background. The term **clients** will be used throughout the document to reflect the focus of nursing care.

Pedigree – A graphic illustration of a family health history using standardized symbols.

Resources – A collection of genetic and genomic tools and sites for healthcare referrals for delivery of nursing care.

Services – The delivery of genetic and genomic health care.

Technology – The use of tools and/or machines to perform tasks; in this case, the identification and assessment of genetic and genomic information (e.g., the use of microarray technology to assess the genetic features of a specific tumor).

Outcome Indicators

Domain: Professional Responsibilities	
Recognize when one’s own attitudes and values related to genetic and genomic science may affect care provided to clients.	
Specific Areas of Knowledge	Clinical Performance Indicators
Values, attitudes and beliefs that influence genetic and genomic services e.g. views on pregnancy termination. Impact of personal values, attitudes and beliefs on genetic and genomic health care.	Engage in reflective practice about one’s own beliefs and values related to client care that integrates genetics and genomics. Articulate one’s attitudes, values and beliefs that influence one’s perspective about difficult genetic or genomic health care decisions.

Advocate for clients' access to desired genetic/genomic-services and/or resources including support groups.	
Specific Areas of Knowledge	Clinical Performance Indicators
<p>Resources for healthcare professionals and lay public about: disease susceptibility; genetic/genomic conditions, treatment, and prognosis e.g. nursing literature, evidence-based websites sites such as the National Human Genome Research Institute http://www.genome.gov/ and the Centers for Disease Control National Office of Public Health Genomics http://www.cdc.gov/genomics/default.htm .</p> <p>Resources for genetic and/or genomic referrals within one's community.</p>	<p>Demonstrate appropriate care and concern for all clients throughout their referral, provision of direct care and follow-up to genetic services.</p> <p>Demonstrate knowledge about accessing local/regional genetic and/or genomic resources.</p> <p>Include genetic healthcare professionals in team building and collaborative strategies to optimize client outcomes.</p> <p>Help client negotiate system barriers that limit access to genetic/genomic services including access to clinical trials.</p> <p>Identify strategies that could be used to facilitate reimbursement for access to genetic/genomic services and/or tests.</p>

Examine competency of practice on a regular basis, identifying areas of strength, as well as areas in which professional development related to genetics and genomics would be beneficial.	
Specific Areas of Knowledge	Clinical Performance Indicators
<p>Scope of nursing practice in relation to genetics/genomics.</p> <p>Role of specialist genetic/genomic services and other agencies in providing competent client care.</p> <p>Interprofessional resources that contribute to evidence based care of clients needing genetic/genomic resources or services.</p>	<p>Identify relevance of genetics/genomics to nursing practice.</p> <p>Demonstrate awareness of the boundaries of one's own professional practice in relation to genetics/genomics.</p> <p>Perform regular self assessments to identify knowledge and skills deficits that could impact the quality of nursing care one provides to clients in need of genetic/genomic guidance, referral and resources.</p> <p>Take action to meet identified knowledge and skills deficits related to genetics and genomics.</p>

Incorporate genetic and genomic technologies and information into registered nurse practice.	
Specific Areas of Knowledge	Clinical Performance Indicators
Technology and information systems for clinical care and clinical decision-making including: <ul style="list-style-type: none"> • Electronic health and medical records, • Client monitoring systems, medication administration • Genetic and genomic testing technologies • Other technologies that support genetic and genomic based client care. 	Evaluate genetic and genomic technologies used in client care. Demonstrate use of genetic and genomic technology and client data for clinical decision-making in providing safe client care. Identify the credibility, reliability and limitations of genetic and genomic information. Identify ethical, legal, and social issues associated with genetic/genomic information.

Demonstrate in practice the importance of tailoring genetic and genomic information and services to clients based on their culture, religion, knowledge level, literacy, and preferred language.	
Specific Areas of Knowledge	Clinical Performance Indicators
Cultural, social, ethnic and religious perspectives and literacy that may influence client's access and/or ability to use genetic and genomic information and services. Economic and health disparities related to genetics and genomics.	Incorporate client's cultural, social, ethnic and religious perspective and literacy level when delivering genetic and genomic care. Integrate knowledge from psychology, history, politics, sociology and culture when delivering genetic and genomic care.

Advocate for the rights of all clients for autonomous, informed genetic- and genomic- related decision-making and voluntary action.

Specific Areas of Knowledge	Clinical Performance Indicators
<p>Potential benefits, risks and limitations of genetic/genomic testing and accessing genetic/genomic information.</p> <p>Ethical, legal and social issues surrounding access to and use of genetic and genomic information.</p> <p>Impact of genetic and genomic information on individuals, family members, communities and/or populations.</p> <p>Components of informed decision-making including:</p> <ul style="list-style-type: none"> • types of information needed • barriers to making an informed decision. • autonomous decision-making as appropriate. 	<p>Ensure privacy when discussing genetic and genomic information.</p> <p>Maintain confidentiality when recording genetic and genomic information.</p> <p>Demonstrate awareness of the potential impact of genetic/genomic information on the individual and other family members.</p> <p>Respond appropriately to inquiries about genetic and genomic healthcare concerns.</p>

Domain: Professional Practice	
Essential Competency: Nursing Assessment: Applying/Integrating Genetic and Genomic Knowledge	
Demonstrates an understanding of the relationship of genetics and genomics to health, prevention, screening, diagnostics, prognostics, selection of treatment, and monitoring of treatment effectiveness.	
Specific Areas of Knowledge	Clinical Performance Indicators
<p>Relationship of genetics and genomics to health, prevention, screening, diagnostics, prognostics, selection of treatment, and monitoring of treatment effectiveness.</p> <p>Relationship of genetics and genomics to normal physiology and pathophysiology including:</p> <ul style="list-style-type: none"> Basics of gene function and genetic mutations in individual and populations ⇒ Germline mutations, somatic mutations, polymorphisms ⇒ Selected mutations associated with single gene disorders, chronic disease ⇒ Concept of genotype/phenotype ⇒ Selected genotype predictors for disease prognosis and treatment <p>Basic principles of pharmacogenetics and pharmacogenomics</p> <ul style="list-style-type: none"> • Polymorphisms and drug metabolism • Selected examples e.g. Warfarin and CYP polymorphisms <p>Patterns of disease associated with single gene and multifactorial inheritance.</p>	<p>Collect a client’s personal and three generation family health history to assess for genomic factors that impact the client’s health.</p> <p>Identify potentially significant information from a family history.</p> <p>Identify clients who might benefit from referral to genetic specialists and/or information resources.</p> <p>Facilitate appropriate referral to genetic specialists, accurately documenting and communicating relevant history and clinical data.</p> <p>Describe a typical client journey that might be experienced in the process of genetic counseling.</p> <p>Describe genetic/genomic factors that contribute to variability of response to pharmacologic agents.</p> <p>Incorporates genetic and genomic health assessment data into routinely collected biopsychosocial and environmental assessments of health and illness parameters in client, using culturally sensitive approaches.</p> <p>Identify resources available to assist clients seeking genetic and genomic information or services including the types of services available.</p>

Demonstrates ability to elicit a minimum of three-generation family health history information.	
Specific Areas of Knowledge	Clinical Performance Indicators
Components of family history needed to identify disease susceptibility or genetic/genomic condition <ul style="list-style-type: none"> • Standard pedigree nomenclature • Type of information that needs to be collected and recorded such as: <ul style="list-style-type: none"> ⇒ Disease and age of onset, ethnicity, both maternal and paternal lineages ⇒ Three generations ⇒ Existing family history tools 	Demonstrate ability to elicit a complete three-generation family health history. Identify available family history tools to facilitate collection of family health history information.

Constructs a pedigree from collected family history information using standardized symbols and terminology.	
Specific Areas of Knowledge	Clinical Performance Indicators
Components of family history needed to identify disease susceptibility or genetic/genomic condition <ul style="list-style-type: none"> • Standard pedigree nomenclature • Type of information that needs to be collected and recorded such as: <ul style="list-style-type: none"> ⇒ Disease and age of onset, ethnicity, both maternal and paternal lineages ⇒ Three generations ⇒ Existing family history tools 	Demonstrate ability to elicit a complete three-generation family health history. Construct a pedigree from collected family history information using standardized symbols and terminology. Identify available family history tools to generate and document a pedigree, e.g. Surgeon General's Family Health Portrait.

Collects personal, health, and developmental histories that consider genetic, environmental, and genomic influences and risks.

Specific Areas of Knowledge	Clinical Performance Indicators
<p>Fundamentals of genetic and genomic focused health assessment</p> <p>Basics of risk factors</p> <ul style="list-style-type: none">• Indicators of disease susceptibility or a genetic condition• family history<ul style="list-style-type: none">⇒ red flags of genetic/genomic conditions such as:<ul style="list-style-type: none">○ disease found primarily in males○ early age of onset for chronic adult onset disease,○ multiple cases of rare disease⇒ confounders<ul style="list-style-type: none">○ race and ethnicity⇒ physical findings⇒ health history<ul style="list-style-type: none">○ environmental and lifestyle factors○ social and emotional status	<p>Demonstrate ability to collect personal, medical and family history that includes genetic/genomic as well as environmental risks.</p>

Conducts comprehensive health and physical assessments which incorporate knowledge about genetic, environmental, and genomic influences and risk factors.

Specific Areas of Knowledge	Clinical Performance Indicators
<p>Fundamentals of genetic and genomic focused health and physical assessment</p> <p>Basics of risk factors</p> <ul style="list-style-type: none"> • Indicators of disease susceptibility or a genetic condition • family history <ul style="list-style-type: none"> ⇒ red flags of genetic/genomic conditions such as: <ul style="list-style-type: none"> ○ disease found primarily in males ○ early age of onset for chronic adult onset disease, ○ multiple cases of rare disease ⇒ confounders <ul style="list-style-type: none"> ○ race and ethnicity • physical findings • health history <ul style="list-style-type: none"> ⇒ environmental and lifestyle factors ⇒ multifactorial influence 	<p>Incorporate genetic and genomic health assessment data into routinely collected biopsychosocial and environmental assessments of health and illness parameters in client, using culturally sensitive approaches.</p>

Critically analyzes the history and physical assessment findings for genetic, environmental, and genomic influences and risk factors.	
Specific Areas of Knowledge	Clinical Performance Indicators
<p>Pathophysiological, medical and nursing evaluation of common acute and chronic disease</p> <ul style="list-style-type: none"> • Indicators of disease susceptibility or a genetic condition • family history <ul style="list-style-type: none"> ⇒ red flags of genetic/genomic conditions such as: <ul style="list-style-type: none"> ○ disease found primarily in males, ○ early age of onset for chronic adult onset disease, ○ multiple cases of rare disease ⇒ confounders <ul style="list-style-type: none"> ○ race and ethnicity • physical findings • health history <ul style="list-style-type: none"> ⇒ environmental and lifestyle factors ⇒ multifactorial influence <p>Assessment and diagnosis of acute and chronic disease including predisposition to disease based on genetic and genomic risk factors</p>	<p>Identify genetic and genomic factors within collected history and physical assessment data that contribute to disease and/or health risks.</p> <p>Demonstrate ability to incorporate family history as part of the nursing assessment.</p> <ul style="list-style-type: none"> • Documents family history information on three-generations on both maternal and paternal side, when available. • Documents key genetic and genomic assessment information <p>Identify components of assessment data that contribute to disease and/or health risks to establish a plan of care.</p>

Assesses clients' knowledge, perceptions, and responses to genetic and genomic information.	
Specific Areas of Knowledge	Clinical Performance Indicators
<p>Cultural, social, ethnic and religious perspectives may influence client's ability to use genetic and genomic information and services.</p> <p>Social and psychological implications of accessing genetic services and information.</p> <p>Ethical and legal issues surrounding genetic and genomic information and services.</p> <p>Principles of autonomous decision-making in genetic counseling.</p> <p>Principles of client genetic/genomic education and counseling</p>	<p>Demonstrate the ability to assess clients cultural, religious and ethnic perspectives with regards to genetics and genomics.</p> <p>Demonstrate an awareness of the client's background in facilitating communication about genetic and genomic issues.</p> <p>Demonstrate the ability to use resources to facilitate effective communication and access to genetic services.</p> <p>Use communication skills to promote and check the clients' understanding of genetic and genomic information.</p> <p>Demonstrate an awareness of client's needs, showing fairness and sensitivity when exploring the rationale for seeking specialist genetic advice/referral.</p> <p>Identify situations when the nurse's own beliefs and values may have potential to influence the genetic and genomic care given to clients.</p> <p>Identify situations where clients' own beliefs and/or values influence genetic and genomic care choices.</p> <p>Use communication skills to enable the client to express his or her own wishes, or to pursue a chosen course of action for genetic and genomic services.</p> <p>Display a non-judgmental attitude at all times.</p> <p>Demonstrate use of language appropriate to the client's level of understanding and developmental age when explaining genetic and genomic information.</p> <p>Demonstrate assessment of the clients' understanding of genetic and genomic information.</p> <p>Demonstrate assessment of social and psychological responses to genetic/genomic information.</p>

Develops a plan of care that incorporates genetic and genomic assessment information.	
Specific Areas of Knowledge	Clinical Performance Indicators
<p>Interprofessional plan of care</p> <ul style="list-style-type: none"> • Assessment, diagnosis and care planning from a genetic and genomic perspective • Client goals • Expected outcomes • Genetic and genomic resources • Implications for both the individual and their family 	<p>Develop, in partnership with the client, a healthcare plan that takes into account genetic and genomic determinants of health, available resources, and range of activities that contribute to health and prevention of illness, injury, disability and premature death.</p> <p>Integrate best evidence, clinical judgment, client preferences, and family implications in planning genetic and genomic focused individualized care.</p>

Domain: Professional Practice	
Essential Competency: Identification	
Identifies clients who may benefit from specific genetic and genomic information and/or services based on assessment data.	
Specific Areas of Knowledge	Clinical Performance Indicators
<p>Components of family history needed to identify disease susceptibility or genetic/genomic condition</p> <ul style="list-style-type: none"> • Standard pedigree nomenclature • Type of information that needs to be collected and recorded such as: <ul style="list-style-type: none"> ⇒ Disease and age of onset, ethnicity, both maternal and paternal lineages ⇒ Three generations ⇒ Existing family history tools <p>Inheritance patterns</p> <ul style="list-style-type: none"> • single gene • multifactorial <p>Indicators of disease susceptibility or a genetic condition</p> <ul style="list-style-type: none"> • family history <ul style="list-style-type: none"> ⇒ red flags of genetic/genomic conditions such as: <ul style="list-style-type: none"> ○ disease found primarily in males, ○ early age of onset for chronic adult onset disease, ○ multiple cases of rare disease ⇒ confounders <ul style="list-style-type: none"> ○ race and ethnicity • physical findings • health history <ul style="list-style-type: none"> ⇒ environmental and lifestyle factors ⇒ multifactorial influence <p>Common health conditions with a genetic/genomic component to disease susceptibility, screening and detection, diagnosis, treatment, and prognosis.</p>	<p>Demonstrate ability to elicit a complete three-generation family health history.</p> <p>Construct a pedigree from collected family history information using standardized symbols and terminology.</p> <p>Identify factors in a family and health history that contribute to: disease susceptibility; disease characteristics, treatment, prognosis; or genetic/genomic condition.</p> <p>Identify clients who may benefit from further evaluation of the identified disease susceptibility or genetic/genomic condition.</p> <p>Demonstrate assessment of client concerns or understanding about information received from specialty genetic services (i.e., on-line genetic testing results).</p> <p>Demonstrate ability to incorporate family history as part of the nursing assessment.</p> <ul style="list-style-type: none"> • Documents family history information on three-generations on both maternal and paternal side, when available. • Documents key genetic and genomic assessment information • Uses genetic and genomic indicators as rationale for clients who may benefit from further evaluation or other risk management interventions. • Incorporate into the interprofessional plan of care the need for further genetic/genomic evaluation or other risk management interventions in collaboration with the client.

Indicators of need for targeted treatment selection

- ⇒ known targeted interventions available
- ⇒ genetic tests available
- ⇒ adverse drug reaction
- ⇒ altered response to intervention

Identifies credible, accurate, appropriate, and current genetic and genomic information, resources, services, and/or technologies specific to given clients.	
Specific Areas of Knowledge	Clinical Performance Indicators
<p>Resources for healthcare professionals and lay public about: disease susceptibility; genetic/genomic conditions, treatment, and prognosis e.g. nursing literature, evidence-based websites sites such as the National Human Genome Research Institute http://www.genome.gov/ and the Centers for Disease Control National Office of Public Health Genomics http://www.cdc.gov/genomics/default.htm .</p> <p>Resources for referral within one’s community.</p> <p>Roles of genetic/genomic healthcare professionals.</p> <p>Interprofessional resources that contribute to evidence based care of clients needing genetic/genomic resources or services (i.e., EGAPP; AHRQ).</p>	<p>Evaluate strengths, limitations, and best use of genetic and/or genomic resource for a client or group of clients.</p> <p>Discuss the ways in which nurses can meet the educational, psychosocial and resource needs of clients and families affected by a genetic or genomic condition.</p> <p>Discuss the ways in which nurses can meet the knowledge, psychosocial and resource needs of clients and families affected by genetic/genomic technology.</p> <p>Identify resources available to assist clients seeking genetic and genomic information or services including the types of services available.</p> <p>Develop a list of contacts for a genetic/genomic referral resource in one’s community or within one’s respective healthcare setting.</p> <p>Evaluate sources of evidence and clinical practice guidelines for a client whose care involves genetic and/or genomic healthcare. Use continuous quality improvement initiatives to update practice guidelines as necessary.</p>

Identifies ethical, ethnic/ancestral, cultural, religious, legal, fiscal, and societal issues related to genetic and genomic information and technologies.	
Specific Areas of Knowledge	Clinical Performance Indicators
<p>Cultural, ethnic, family values, traditions, health beliefs and religious perspectives that influence access and use of genetic/genomic information and services.</p> <p>The components of informed decision-making including:</p> <ul style="list-style-type: none"> • types of information needed • barriers to making an informed decision. <p>Sources of genetic information.</p> <p>Capabilities and limitations of current genetic/genomic technologies.</p> <p>Ethical issues related to genetic/genomic information and technology (such as confidentiality, privacy, disclosure, duty to warn).</p> <p>Psychosocial issues and impact of genetic/genomic information on individual and the family (such as emotional distress, discrimination).</p> <p>Current state, federal, and military policies that impact genetic/genomic privacy, health, life, long term care and disability insurance, employment and other forms of genetic discrimination.</p>	<p>Demonstrate the ability to assess cultural, language, family values, traditions, health beliefs and religious perspectives that influence access to and use of genetic/genomic information, technology, and services.</p> <p>Identify cultural, language, family values, traditions, health beliefs and religious perspectives that impact access and use of genetic/genomic information, technology and services.</p> <p>Identify psychosocial issues and impact of genetic/genomic information, technology and services on individual and the family.</p> <p>Use ethical principles when deliberating genetic/genomic issues of decision-making, privacy, confidentiality, informed consent, disclosure, access, and personal impact.</p> <p>List action steps to address genetic/genomic ethical issues in practice, e.g. discuss with nursing team or supervisor, present to ethics committee.</p> <p>Describes the influence of insurance or other methods of reimbursement for services on access to genetic and genomic information and technologies.</p>

Defines issues that undermine the rights of all clients for autonomous, informed genetic- and genomic-related decision-making and voluntary action.	
Specific Areas of Knowledge	Clinical Performance Indicators
<p>Current state, federal, and military policies that impact genetic/genomic privacy, health, life, long term care and disability insurance, employment and other forms of genetic discrimination.</p> <p>The components of informed decision-making including types of information needed and barriers to make an informed decision.</p> <p>Past and potential for misuse of genetic/genomic information and technology.</p> <p>Guidelines or policies regarding access to genetic/genomic information and technology (i.e. children, vulnerable populations, economics).</p>	<p>Identify respective genetic state legislation.</p> <p>Identify examples of misuse of genetic/genomic information and technology.</p> <p>Describe legal and social issues related to access and use of genetic information and technology.</p> <p>Access interprofessional ethical resources when trying to resolve ethical dilemmas.</p>

Domain: Professional Practice	
Essential Competency: Referral Activities	
Facilitates referrals for specialized genetic and genomic services for clients as needed.	
Specific Areas of Knowledge	Clinical Performance Indicators
<p>Professional roles of providers delivering genetic and genomic services.</p> <p>Resources for healthcare professionals and lay public about: disease susceptibility; genetic/genomic conditions, treatment, and prognosis e.g. nursing literature, evidence-based websites sites such as the National Human Genome Research Institute http://www.genome.gov/ and the Centers for Disease Control National Office of Public Health Genomics http://www.cdc.gov/genomics/default.htm .</p> <p>Resources for genetic and genomic referrals within the community.</p>	<p>Develop an interprofessional plan of care in collaboration with the client that incorporates genetics and genomics.</p> <p>Uses genetic and genomic indicators as rationale for clients who may benefit from further evaluation or other risk management interventions.</p> <p>Develop a list of contacts for a genetic/genomic referral resource in one's community or within one's respective healthcare setting.</p> <p>Develop a plan for follow-up of a client post genetics/genomic referral.</p>

Domain: Professional Practice	
Essential Competency: Provision of Education, Care and Support	
Provides clients with interpretation of selective genetic and genomic information or services.	
Specific Areas of Knowledge	Clinical Performance Indicators
<p>Components of family history needed to identify disease susceptibility or genetic/genomic condition</p> <ul style="list-style-type: none"> • Standard pedigree nomenclature • Type of information that needs to be collected and recorded such as: <ul style="list-style-type: none"> ⇒ Disease and age of onset, ethnicity, both maternal and paternal lineages ⇒ Three generations ⇒ Existing family history tools <p>Inheritance Patterns</p> <ul style="list-style-type: none"> • Single gene • Multifactorial <p>Role of environmental and psychosocial factors involved in penetrance of predisposition gene variants.</p> <p>Informed consent procedures and essential elements.</p>	<p>Discuss factors in a family and health history that contribute to: disease susceptibility; disease characteristics, treatment, prognosis; or a genetic/genomic condition.</p> <p>Use family history information to inform health education.</p> <p>Discuss the role of genetic, genomic, environmental and psychosocial factors in maintaining health and preventing disease.</p> <p>Discuss the role of genetic, genomic, environmental and psychosocial factors in the manifestation of disease.</p> <p>Reinforce/clarify information provided by genetic professional to client (i.e., genetic test interpretation; informed consent).</p>

Provides clients with credible, accurate, appropriate, and current genetic and genomic information, resources, services, and/or technologies that facilitate decision-making.	
Specific Areas of Knowledge	Clinical Performance Indicators
<p>Resources for healthcare professionals and lay public about: disease susceptibility; genetic/genomic conditions, treatment, and prognosis e.g. nursing literature, evidence-based websites sites such as the National Human Genome Research Institute http://www.genome.gov/ and the Centers for Disease Control National Office of Public Health Genomics http://www.cdc.gov/genomics/default.htm .</p> <p>Referral resources for genetic and genomic services within one's community.</p> <p>Roles of genetic/genomic healthcare professionals.</p>	<p>Evaluate strengths, limitations, and best use of one genetic and/or genomic resource for a client or group of clients.</p> <p>Help clients interpret and understand genetic and genomic information.</p> <p>Develop a list of contacts for a genetic/genomic referral resource in one's community or within one's respective healthcare setting.</p>

<p>Uses health promotion/disease prevention practices that:</p> <ul style="list-style-type: none"> • Consider genetic and genomic influences on personal and environmental risk factors. • Incorporate knowledge of genetic and/or genomic risk factors (e.g., a client with a genetic predisposition for high cholesterol who can benefit from a change in lifestyle that will decrease the likelihood that the genetic risk will be expressed) 	
Specific Areas of Knowledge	Clinical Performance Indicators
<p>Role of environmental and psychosocial factors involved in penetrance of predisposition gene variants.</p> <p>Fundamentals of epidemiology, biostatistics, (distribution, incidence, prevalence rates, risk factors, health status indicators, and control of disease in populations).</p> <p>Ongoing research contributing to improved understanding of the genetic/genomic influences on health.</p>	<p>Incorporate genetic and genomic health assessment data into routinely collected biopsychosocial and environmental assessments of health and illness parameters in client, using culturally sensitive approaches.</p> <p>Use evaluation results to influence delivery of care and deployment of resources to promote health and prevent disease.</p>

Uses genetic- and genomic-based interventions and information to improve clients' outcomes.	
Specific Areas of Knowledge	Clinical Performance Indicators
Pharmacogenetics, pharmacogenomics. Gene or gene product targeted therapy e.g. HER2 and Herceptin BCR/ABL and imatinib Protein replacement therapy e.g. enzyme therapy for lysosomal diseases Chaperone therapy.	Demonstrate ability to incorporate family history as part of the nursing assessment. <ul style="list-style-type: none"> • Document family history information on three-generations on both maternal and paternal side, when available. • Documents key genetic and genomic assessment information • Uses genetic and genomic indicators as rationale for clients who may benefit from further evaluation or other risk management interventions. • Incorporate into the interprofessional plan of care the need for further genetic/genomic evaluation or other risk management interventions in collaboration with the client. Monitor client response to genetic/genomic based interventions. Intervene when client has an unintended response to genetic/genomic based interventions to ensure client safety.

Collaborates with healthcare providers in providing genetic and genomic health care.	
Specific Areas of Knowledge	Clinical Performance Indicators
Roles of genetic/genomic healthcare professionals. Roles of other specialists in which genetic/genomic information and technology are integral to their care delivery	Use interprofessional communication and collaboration skills to deliver safe, evidence-based, client-centered care. Demonstrate team building and collaborative strategies when working with interprofessional teams. Adopt a range of interpersonal skills whilst communicating with clients and colleagues about genetic/genomic issues.

Collaborates with insurance providers/payers to facilitate reimbursement for genetic and genomic healthcare services.	
Specific Areas of Knowledge	Clinical Performance Indicators
Determinants of clinical utility of genetic/genomic tests e.g. Test specificity, sensitivity, positive predictive value Test cost – benefit information Economic impact of new genetic / genomic based therapies <ul style="list-style-type: none"> • Can be life long therapy once started • Consideration of individual / family maximum lifetime benefit 	Identify strategies that could be used to facilitate reimbursement for genetic/genomic services and/or tests. Describe other methods of payment for genetic/genomic healthcare services (i.e., laboratory indigent assistance programs).

Influence of predisposition gene variants, genetic disease/disorder on access to health, life, disability, long term care insurances and military benefits.	
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Performs interventions/treatments appropriate to clients' genetic and genomic healthcare needs.	
Specific Areas of Knowledge	Clinical Performance Indicators
<p>Pharmacogenetics, pharmacogenomics</p> <p>Gene or gene product targeted therapy e.g. HER2 and Herceptin BCR/ABL and imatinib</p> <p>Protein replacement therapy e.g. enzyme therapy for lysosomal diseases</p> <p>Chaperone therapy (small molecules that specifically bind to and stabilize a misfolded protein in the endoplasmic reticulum of a cell).</p>	<p>Administer medications safely with consideration of pharmacogenetic test results if available.</p> <p>Administer prescribed genetic / genomic based therapies safely as allowed per State Practice Act.</p> <p>Monitor client response to genetic / genomic based interventions.</p> <p>Intervene when client has an unintended response to genetic/genomic based interventions to assure client safety.</p> <p>Teach client about purpose, expected benefits, limitations and potential risks of genetic/genomic based interventions.</p>

Evaluates impact and effectiveness of genetic and genomic technology, information, interventions, and treatments on clients' outcome.	
Specific Areas of Knowledge	Clinical Performance Indicators
<p>Range of psychosocial responses to genetic and/or genomic test results, genetic diagnosis and prognosis.</p> <p>Expected outcomes of various genetic/genomic based interventions.</p>	<p>Assess client response to genetic/genomic information.</p> <p>Assess client response to genetic/genomic based interventions.</p> <p>Assess client response to genetic/genomic services.</p> <p>Use evaluation of genetic/genomic technology, information and interventions to modify client's plan of care.</p>