Practice-Based Competencies for Genetic Counselors

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PRACTICE-BASED COMPETENCIES FOR GENETIC COUNSELORS

This document describes the seven practice-based competencies that are necessary for practice as an entry-level genetic counselor. Embedded within the seven competencies are 25 sub-competencies that support the attainment of the practice-based competencies. These competencies, along with the Accreditation Council for Genetic Counselors' Standards of Accreditation, provide guidance for the training of genetic counselors and for evaluating trainees' knowledge and skills. The didactic and experiential components of a genetic counseling training curriculum must support the development of proficiency in the following competencies: 1) Genetics and Genomics Expertise, 2) Risk Assessment, 3) Counseling, 4) Communication, 5) Research, 6) Healthcare Systems, and 7) Professional Identity. These competencies and skills, as defined by the sub-competencies, describe the minimal skill set of a genetic counselor which should be applicable across practice settings. Appendix 1 is Definition of Terminology. Appendix 2 is the rationale and process taken to create this version of the practice-based competencies. Bolded words are defined in the Definition of Terminology.

Genetics and Genomics Expertise

1. Apply knowledge of **genetics** and **genomics** principles, genetic conditions, and testing technologies to the practice of genetic counseling.

    1.a. Demonstrate knowledge of **genetics** and **genomics** principles and concepts.

    1.b. Apply knowledge of **genetic** conditions to the delivery of genetics services.

    1.c. Demonstrate knowledge of **genetic** testing methodologies and **variant interpretation**.

Risk Assessment

2. Evaluate **personalized genetic risk**.

    2.a. Analyze **family history** to estimate genetic risk.

    2.b. Calculate risk using probability methods and risk models.

    2.c. Integrate clinical and laboratory data into **risk assessment**.

    2.d. Order **genetic** tests guided by **client-centered risk assessment**.

Counseling

3. Promote integration of **psychosocial** needs and **client-centered** decision-making into genetic counseling interactions.

    3.a. Use applicable counseling skills and theories.

    3.b. Establish a **working alliance** with **client**.

    3.c. Promote **psychosocial** adaptation.

    3.d. Facilitate **client's** decision-making process.

Communication

4. Communicate genetics and genomics information to **clients**, colleagues, and other community partners.

    4.a. Tailor communication to specific individuals and audiences.

    4.b. Use a variety of approaches to communicate **genetics** and **genomic** information.

    4.c. Convey probabilities based on client's risk perception and **numeracy**.

Research

5. Synthesize the **evidence base** relevant to genetic counseling.

    5.a. Critically interpret data and literature.

    5.b. Apply data and literature considering its strengths, weaknesses, and limitations.

    5.c. Demonstrate knowledge of how genetic counselors engage and contribute to the **research process**.

Healthcare Systems

6. Demonstrate how genetic counselors fit within the larger **healthcare system**.

    6.a. Demonstrate how disparities, inequities, and systemic bias affect access to healthcare for **diverse** populations.

    6.b. Describe the **financial considerations** in the delivery of genetic services.

    6.c. Advocate for **continuity of care**.

    6.d. Collaborate with members of the **Care Team, clients,** and other **Community Partners**.

Professional Identity

7. Embody the values of the genetic counseling profession.

    7.a. Adhere to the genetic counselor **scope of practice**.

    7.b. Follow applicable **professional ethical codes**.

    7.c. Exhibit behaviors that promote an **inclusive, just, equitable**, and safe environment for all individuals and communities.

    7.d. Engage in self-reflective practice to promote ongoing growth and development.

Figure 1

Genetics and Genomics Expertise	Risk Assessment	Counseling	Communication	Research	Healthcare Systems	Professional Identity
1. Apply knowledge of **genetics** and **genomics** principles, genetic conditions, and testing technologies to the practice of genetic counseling.	2. Evaluate **personalized genetic risk**.	3. Promote integration of **psychosocial** needs and **client-centered** decision-making into genetic counseling interactions.	4. Communicate genetics and genomics information to **clients**, colleagues, and other community partners.	5. Synthesize the **evidence base** relevant to genetic counseling.	6. Demonstrate how genetic counselors fit within the larger **healthcare system**.	7. Embody the values of the genetic counseling profession.
1.a. Demonstrate knowledge of **genetics** and **genomics** principles and concepts.	2.a. Analyze **family history** to estimate **genetic** risk.	3.a. Use applicable counseling skills and theories.	4.a. Tailor communication to specific individuals and audiences.	5.a. Critically interpret data and literature.	6.a. Demonstrate how disparities, inequities, and systemic bias affect access to healthcare for **diverse** populations.	7.a. Adhere to the genetic counselor **scope of practice**.
1.b. Apply knowledge of **genetic** conditions to the delivery of **genetics** services.	2.b. Calculate risk using probability methods and risk models.	3.b. Establish a **working alliance** with **client**.	4.b. Use a variety of approaches to communicate **genetics** and **genomic** information.	5.b. Apply data and literature considering its strengths, weaknesses, and limitations.	6.b. Describe the **financial considerations** in the delivery of genetic services.	7.b. Follow applicable **professional ethical codes**.
1.c. Demonstrate knowledge of **genetic** testing methodologies and **variant interpretation.**	2.c. Integrate clinical and laboratory data into **risk assessment.**	3.c. Promote **psychosocial adaptation**.	4.c. Convey probabilities based on **client's** risk perception and **numeracy**.	5.c. Demonstrate knowledge of how genetic counselors engage and contribute to the **research process**.	6.c. Advocate for **continuity of care**.	7.c. Exhibit behaviors that promote an **inclusive**, **just**, **equitable**, and safe environment for all individuals and communities.
	2.d. Order **genetic** tests guided by **client-centered risk assessment**.	3.d. Facilitate **client's** decision-making process.			6.d. Collaborate with members of the **Care Team**, **clients**, and other **Community Partner**.	7.d. Engage in **self-reflective practice** to promote ongoing growth and development.

APPENDIX 1
PRACTICE BASED COMPETENCIES
DEFINITION OF TERMINOLOGY

Adaptation - The process by which a client uses new information and experiences to minimize stress and to increase personal agency.

Care Team - Individuals who work together to address the healthcare needs of clients.

Client - Individuals or groups who utilize or receive genetic counseling services.

Client-centered - To adapt care and service delivery to honor a client's multifaceted personal identity, including but not limited to, ethnocultural background, health beliefs, lifestyles, values, family dynamics, language, communication preferences, decision-making styles, and coping strategies.

Community Partners - The broad set of individuals and groups who have an interest in activities related to genetic counseling.

Continuity of Care - The identification of resources and/or referring to other healthcare specialties and professionals to assist a client's needs.

Diverse - The representation of shared and distinct personal and group characteristics and identities and how they may intersect, including, but not limited to, race, ethnicity, national origin, age, religion, disability, veteran status, sex, sexual orientation, gender identity/expression, pregnancy, genetic information, socioeconomic class, geographic location, and socioeconomic background.

Equitable - To establish fair accessibility to, and opportunities for advancement within, a community or organization, regardless of shared or distinct personal and group characteristics and identities.

Evidence Base - The collective empiric data currently available in literature, databases, and other sources that inform practice.

Family History - The collection of medical information relevant to the case which may include the client's personal history and/or family history, laboratory results and may utilize various tools to collect this information, including drawing of a pedigree.

Financial Considerations - The concepts and processes related to billing, reimbursement, test utilization management, and access to care.

Genetics - The branch of biologic science which investigates and describes the molecular structure and function of genes, how gene function produces effects in the organism (phenotype), how genes are transmitted from parent to offspring, and the distribution of gene variations in populations.

Genomics - The branch of biology which studies the aggregate of genes in an organism. While genetics generally studies the structure, variation, function, and expression of single genes, genomics studies the large number of genes in an organism and their interrelationship.

Healthcare System - The network of people, institutions, and resources that deliver services to meet the health needs of individuals.

Inclusive - To be intentionally inviting, welcoming, and engaging all members of diverse communities, including faculty, staff, volunteers, students, and community members.

Just - The deliberate creation of diverse and equitable opportunities, and the continued reassessment and dismantling of barriers and systems that prevent access to such opportunities.

Numeracy - An individual's ability to use mathematical data to inform decisions regarding their health.

Personalized Genetic Risk - The likelihood of an individual developing a specific condition based on their personal and family medical histories, test results, and other factors that influence phenotype.

Professional Ethical Codes - The written customs and practices of skilled specialists that may be defined by precedent as much as by adherence to principles. Examples include the National Society of Genetic Counselors' Code of Ethics as well as the ethical requirements and expectations of the institutions where training occurs.

Professional Identity - One's sense of self as a member of a professional community that evolves over time and includes developing interpersonal and intrapersonal characteristics that reflect shared values of the field and one's personal assessment of the status quo.

Psychosocial - The interaction of mental, emotional, social, and spiritual effects of a disease and the influence on one's behavior.

Research Process - Activities related to the systematic investigation that builds the evidence base. Examples include assessing eligibility and availability of research studies, facilitating informed consent, conducting research, and sharing findings through publications and presentations.

Risk Assessment - The calculation of the likelihood of disease utilizing Mendelian principles, Bayes' theorem, and empiric probability models and incorporating an individual's personal, genetic, and environmental information.

Scope of Practice - The full range of knowledge and skills that genetic counselors are specially trained to employ in their work as defined by the National Society of Genetic Counselors.

Self-reflective practice - To critically think back on an experience or on a genetic counseling session and to consider what went well, poorly, and/or how to make improvements in the future. The ultimate goal is to consider one's actions and to learn from this self-directed assessment for one's own continual advancement.

Variant Interpretation - A multi-step process involving the analysis of genetic changes. This is performed by reviewing various sources of information and utilizing evidence set forth by the industry and medical literature to determine the pathogenicity of a particular genetic variant.

Working Alliance - The collaborative relationship between a client and their healthcare provider that facilitates achievement of shared goals.

APPENDIX 2
ACCREDITATION COUNCIL FOR GENETIC COUNSELING PRACTICE-BASED COMPETENCIES TASKFORCE, 2020-2023

PRACTICE BASED COMPETENCIES REVISION PROCESS AND RATIONALE

In 2019, The Accreditation Council for Genetic Counseling (ACGC) convened a Practice Based Competencies Task Force (PBCTF) to undertake a comprehensive review, update, and revision to the existing Practice Based Competencies (PBCs). The PBCTF was asked to 1) review the existing PBCs with a focus on ability to adapt to changes in the field, applicability to scope of practice, and measurability for student assessment; 2) survey stakeholders regarding use, utility, and gaps of the current PBCs; and 3) revise the existing PBCs accordingly. In preparation for this review and revision, ACGC engaged with a consultant who had expertise in competency modeling and learning solutions. The consultant presented information about best practices for developing competencies which include having 8-12 PBCs in which complexity is layered; aligning with practice analysis; defining the profession and elevating practice that drives education; and considering the PBCs in the context of entry-level certification examination. These principles guided the review and revision process for the PBCTF.

The PBCTF began its work in February 2020 with 20 members who represented varied aspects and stakeholders of the genetic counseling (GC) profession. In 2021, a consultant who was a past member of the ACGC Board of Directors was added to the PBCTF to facilitate the work of the Task Force. In the same year, seven additional members were added to the PBCTF in order to capture the perspective of more recent, board-certified graduates. These members represented varied work settings and years of experience.

In the first year of work (2020), the PBCTF reviewed the current PBCs, the past processes for revisions of the PBCs, the Canadian Association of Genetic Counsellors (CAGC) core competencies, and other professions' competencies. In the same year, a stakeholder survey was created to assess a range of topics related to the current PBCs, including the importance, measurability, and appropriateness of the existing PBCs for entry-level genetic counselors. The survey also inquired about gaps, redundancy, areas in which evolving roles could be reflected, and how the existing version of the PBCs could better incorporate issues of diversity and health inequities. Lastly, the survey was devised to ask participants to provide two to three key words that described each PBC to be used for possible reorganization. In 2021, the Task Force began with a self-assessment of the PBCs to 1) bracket biases, 2) assess preliminary degree of consensus among PBCTF members after a year of conversations, and 3) to assess whether the PBCTF's responses were similar to the larger stakeholder sample. In March 2021, the survey was distributed to the general genetic counselor community, and the nearly 200 responses were collated and reviewed by the PBCTF throughout the remainder of 2021 by convening several meetings in both small workgroups and meeting as a whole.

The PBCTF discussed possible overall models for the new PBCs. Conversations ensued regarding separating the foundational knowledge and skills from functional tasks and responsibilities, and that the foundation should be embedded in all tasks. The Task Force felt that a customized developmental model was too specific, too prescriptive for programs, and too linear. The consensus was that a universal developmental model was the best fit, as there is a standard endpoint and intentional application. In this approach, it was determined that the competency should demonstrate the highest level of a skill set required for entry-to-practice, and the sub-competencies are the embedded requisite skills Therefore, some of the existing competencies are not explicitly written in this revised version of the PBCs as that skill or knowledge would be inherent to achieving a particular competency.

After two years of work taking into account the information gathered by the PBCTF's research on best practices, results of the stakeholder survey, ACGC's Board of Directors' input and guidance, the revised PBCs were drafted and include a vastly different visual representation of past PBCs. Purposefully, this version of the PBCs is far less granular than past iterations, the sub competencies are written with higher order of thinking terminology, as the competencies cannot be achieved without some foundational knowledge. By only presenting the highest skill and eliminating the subtext that has been present in past iterations of the PBCs, this new visual representation makes the PBCs more accessible in all learning environments, clearer to read, and affords programs more flexibility to integrate the PBCs into their curricular environment. This iteration of the PBCs has seven overarching competencies, each having between three and six embedded sub-competencies. While the first six competencies are meant to stand alone with respect to student assessment, the "Professional Identity " competency is intended to be overarching and integrated across all aspects of the PBCs. All PBCs are intended to be complementary to the ACGC Standards of Accreditation.

OVERVIEW OF DEVELOPMENTAL FRAMEWORKS

As a result of our research, the PBCTF intentionally reconstructed the novel slate of PBCs to be written within the context of a developmental framework. This provides common language and a shared mental model for describing the intended skill(s) needed to achieve competence while not being prescriptive about specific instructional or assessment strategies. This allows graduate programs to use various frameworks that best suit each training program's curriculum design.

Familiar frameworks used by clinical programs to assess competency include Miller's Pyramid, RIME (Reporter-Interpreter-Manager- Educator), Dreyfus and Dreyfus, and the O-SCORE entrustability scale (Miller 1990; Pangaro 1999; Carraccio et al., 2008; Gofton et al., 2012). Frameworks can be analytical (competence is the sum of specific knowledge, skills, and attitudes), synthetic (competence is holistic to complete a clinical activity), or developmental (competence through a series of milestones) or be a hybrid of these (Pangaro and ten Cate, 2008). Pangaro and ten Cate consider Miller's Pyramid and Dreyfus and Dreyfus as pure developmental frameworks; whereas the RIME framework is considered synthetic, because while it has some development aspects, the R, I, M, and E, roles each describe activities important to clinical care, and thus, often more than one role is performed within the same clinical encounter by both junior and senior learners.

WHY USE A DEVELOPMENTAL FRAMEWORK?

There are many benefits to using a developmental framework for assessment:

1. A universal developmental framework can be standardized within the program.
2. Facilitates a culture of goal-setting, so supervisors can provide concrete feedback to help the student make progress.
3. Students will know what they need to do to reach the next milestone.
4. Assessment tends to be more consistent and reliable between supervisors as compared to traditional ratings of performance, such as "meets/below/exceeds expectations."
5. Because the expectations for the "rating" or "level" on a developmental scale change as the student progresses, students may be more receptive to receive a lower rating in the earlier stages of their program, and supervisors may be more willing to provide a more honest assessment of the student's competency-attainment.
6. The framework sets the stage for lifelong learning, continuing to develop skills and mastery in the practice of genetic counseling.

WHAT TO CONSIDER WHEN IMPLEMENTING A DEVELOPMENTAL FRAMEWORK:

For programs considering applying the developmental framework to create a rubric for student assessment, the University of Manitoba shared the following suggestions, based on their experience (Jessica Hartley, personal communication 2023).

1. Start with consulting and engaging with experts in educational design and assessment at your institution, such as those in medical education offices.
2. Review relevant literature. Pangaro and ten Cate (2013) provide a good review of different approaches and Guy (2016) provides an application in the genetic counseling context.
3. Consider the practice or educational settings where you will be using this framework. Some developmental scales are best applied in a single setting (for example in a clinical encounter), whereas others may be applicable across practice settings (clinical, laboratory, research, etc.).
4. Define your "overarching scale" and the end point of the program. Guided by Dreyfus and Dreyfus (Carraccio et al., 2008 and Peña 2010) and informed by the O-SCORE entrustability scale (Gofton et al., 2012), we wrote overarching definitions for Novice, Advanced Beginner, Competent, Proficient, and Expert/Master stages.
5. Collaborate with educational design experts to facilitate a workshop with genetic counseling supervision experts. The following objects may be helpful to consider:
   a. Describe the key stages or "general milestones" a student achieves at different time stages in the program (for example "works though a routine session with guidance" or "requires guidance for complex scenarios").
   b. Apply both the "overarching scale" and the "general milestones" to create a rubric for each PBC. For this model, we placed each PBC at the "Proficient Level" and then developed the scale, starting at "Novice," where the learner is directly "recalling knowledge from the classroom" to "Expert" which is the level of advancing practice (postgraduate).
6. Circulate the scales for iterative feedback.

SAMPLE APPLICATIONS OF THE DEVELOPMENTAL FRAMEWORK TO A SUB-COMPETENCY

To assist programs in selecting and implementing a developmental framework and building their own rubrics, **as an example**, we have applied four different frameworks for sub competency 3a, "Use applicable counseling skills and theories," in the table below, with the end point denoted by a *. **Programs are not required to adopt the approach provided below**.

MODEL: Dreyfus and Dreyfus				
Novice	**Advanced Beginner**	**Competent**	**Proficient***	**Expert/Master**
Can define and attempt to use basic counseling skills and theories but needs substantial guidance to prioritize and respond to psychosocial needs.	Utilizes a range of basic counseling skills and theories to elicit and respond to common concerns but needs some guidance to prioritize issues to explore.	In <u>routine</u> scenarios, uses a range of basic skills and theories to respond to and explore common psychosocial needs with minimal guidance.	In <u>complicated or evolving</u> scenarios, uses a range of basic and advanced skills and theories to explore psychosocial needs and initiate an intervention.	Intuitively uses high level counseling skills in many settings. Evaluates and appropriately applies theory and intervenes according to psychosocial needs.

MODEL: Miller's Pyramid			
Knows	**Knows How**	**Shows How***	**Does**
The learner is able to demonstrate knowledge of foundational counseling skills and theories relevant to both routine and complex client encounters.	The learner is able to communicate (written or verbal) how to apply the appropriate counseling skills and theories in both routine and complex client encounters.	Under supervision, the learner correctly uses a range of counseling skills and theories in both routine and complex client encounters.	With entrustment, the learner correctly uses a range of counseling skills and theories in both routine and complex client encounters.

MODEL: O-SCORE Entrustability Scale				
"I had to do."	**"I had to talk them through."**	**"I had to prompt them from time to time."**	**"I needed to be there just in case."**	**"I did not need to be there."***
The supervisor applied counseling skills and theories.	Student needs substantial guidance to use counseling skills and theories.	Student used counseling skills and theories independently but needed some guidance to prioritize or investigate certain issues.	Student used counseling skills and theories independently, but the supervisor was there in case of complicated evolving scenarios.	Student entrusted to use counseling skills and theories independently in routine and complicated/ evolving scenarios.

MODEL: RIME Framework				
Reporter	**Interpreter**	**Manager***	**Educator**	
The learner is consistently (80%<) able to demonstrate knowledge (either verbally or written) of foundational counseling skills and theories applicable to both routine and complex client encounters.	The learner is consistently (80%<) able to interpret the relevant counseling skills and theories in context of both routine and complex client encounters.	The learner is consistently (80%<) able to use applicable counseling skills and theories in both routine and complex client encounters.	The learner is consistently (80%<) able to incorporate new information or research of counseling skills and theories into their genetic counseling practice.	
Reporter/ Interpreter	The learner is consistently (80%<) able to perform the reporter role and sometimes (50%<) able to perform the Interpreter role.			
Interpreter/ Manager	The learner is consistently (80%<) able to perform the interpreter role and sometimes (50%<) able to perform the manager role.			
Manager/ Educator	The learner is consistently (80%<) able to perform the manager role and sometimes (50%<) able to perform the educator role.			

RESOURCES:

The following references are useful to provide a background on Developmental Frameworks:

- Pangaro L, & ten Cate O. (2013). Frameworks for learner assessment in medicine: AMEE Guide No. 78. *Med Teach*. 35(6), e1197-210. doi: 10.3109/0142159X.2013.788789. Epub 2013 May 16.
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Dreyfus and Dreyfus

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- Gofton WT, Dudek NL, Wood TJ, Balaa F, Hamstra SJ. (2012). The Ottawa surgical competency operating room evaluation (O-SCORE): a tool to assess surgical competence. Acad Med. 87(10), 1401-7. doi: 10.1097/ACM.0b013e3182677805.

RIME

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