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Continuing education and professional development: Unifying opportunities for genetic counselors globally

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Introduction

Genetic counseling practice is expanding globally, affecting clinical care across specialties, quantitative and qualitative research areas, academic and industry laboratories, advocacy, policy, diversity, equity, and inclusion initiatives, and education. Genetic counselors (GCs) practice at the forefront of genomic medicine, interpreting genomic data and explaining their implications to individuals and families. In recognition of GCs role in genomic medicine, some have transitioned to using the term "genomic counselors."[1] Rapid advancements in genomic testing technology and scope require a highly specialized workforce. A recent survey of European Genetic Counseling Masters programs identified enhancing the genomics technology curriculum as challenging and necessary to maintain professional standards for individuals seen for genetic counseling.[2] A good working

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knowledge of genomics was identified as necessary for GCs to perform their job well.[3] In a 2016 National Society of GCs professional status survey of practicing GCs in the United States, only 28% of respondents felt their education in genomic technologies was adequate. Those who graduated more recently felt that their training was more complete than those who graduated in more distant years, and 55% of those responding reported that additional on-the-job training was required to meet the needs of the job.[3]

Genetic counseling continuing education/ continuing professional development

Frequently taught as current practice in genetic counseling educational programs, genomic testing technologies can become obsolete within a few years of graduation. This dynamic nature of the field necessitates that GCs globally rely on continuing education (CE) or continuing professional development (CPD) to stay updated with the ever-changing genetics and genomics landscape. In countries and regions with genetic counseling regulation, CE/CPD is not just a requirement for maintaining credentialing but a crucial tool for ensuring competency and expertise in practice. CE/CPD has become integral to professional development and career advancement in many practice areas. The Transnational Alliance for Genetic Counseling (TAGC) is a partnership of GC educators from more than 20 countries. The TAGC connects the global genetic counseling community and enhances international communication and collaboration. The TAGC website identifies 7 regions/countries that have established accreditation processes for GCs and has links to all international genetic societies and regulatory agencies, which can be accessed for specific policies and guidelines (Transnational Alliance for Genetic Counseling - School of Medicine Columbia | University of South Carolina).[4]

In some regions, genetic counseling organizations oversee genetic counseling practice, whereas in others, regulation falls under the umbrella of an overarching genetics society. Each credentialing agency has established specific requirements for CE/CPD, including hours, types of professional activities, and approval processes that must be completed for recertification or to maintain registration. The associated CE/CPD programs must meet a minimum standard to promote high-level content. Not all countries with practicing GCs have regulated education programs or CE/CPD recommendations. For example, in South Korea, where genetic counseling is unregulated, a national survey reported an increase in the number of institutions providing genetic counseling from 25% in 2018 to 81% in 2020.[5] Without practice guidelines and standards, there is concern that some individuals in these regions may be practicing without proper training.[5] Nations or regions with more recently established genetic counseling programs may grapple with developing regulations and standards for genetic counseling education and practice. Regulations and CE/CPD ensure that those providing genetic counseling meet minimum competency standards to protect the public and individuals receiving these services.

Because of the rapidly changing and expanding advances in this field, formalized advanced training that includes current topics relevant to practice, such as genomic technologies, is of the utmost importance. Access to up-to-date comprehensive CE/CPD may be hampered by high expenses, inability to travel to national conferences, nonflexible work schedules, and language barriers. CE/CPD initiatives may not be readily available in communities in which training programs do not exist or are under development because of limited resources for creating and dispensing high-quality CE/CPD options.

CE/CPD generally involves attending conferences either in person or remotely. However, other forms of learning may be similarly effective, which can ultimately lead to improved patient care.[6] Because of the COVID-19 pandemic, professional conferences were converted to virtual modalities, allowing broad access to individuals unable to travel to attend in person. Post-pandemic, online training has become more widely available and accepted. Exposure to remote learning has improved access to CE/CPD across different modalities.

Massive open online courses (MOOCs) are asynchronous courses offering e-learning that can be used in the health care setting for CE.[7,8] MOOCs have been used effectively in educating health care professionals, including GCs. St George's Hospital in London developed 2 MOOC courses in genomic variant interpretation (interpreting genomic variation fundamental principles and interpreting cancer susceptibility) intended for health care workers, including GCs.[8] GCs provided positive feedback about the content and concluded that MOOCs could be helpful in teaching variant interpretation to a broad audience. MOOC courses are an ideal strategy to assist international CE for the emerging genetic counseling workforce.

The University of Pennsylvania's Master of Science in Genetic Counseling Program was awarded a grant from the Warren Alpert Foundation to fund the Career Ladder Educational Program for GCs (CLEP-GC). The CLEP-GC is a consortium between 5 genetic counseling master's programs in the United States, based at Baylor College of Medicine, Northwestern University, Vanderbilt University, the University of Pennsylvania, and the University of Washington. The grant supports the development of 5 CE/CPD courses for GCs. Each will contain 10 hours of instruction, lectures, activities, and assessments. This short course format will provide attendees with an up-to-date and more comprehensive review of the topic than is currently available outside genetic counseling graduate programs. The first newly designed online CE/CPD course, "Bridging the Gap: A Clinical Genetic Counselor's Guide to Molecular Diagnostics and Variant Interpretation," is accessible and affordable to GCs and other genomic clinicians globally (https://upenn.cloud-cme.com/BridgingtheGap). This course is highly specialized, with a focus on molecular

diagnostics and variant interpretation for GCs. It is available as an asynchronous online course, which allows access to the content for CE/CPD for GCs worldwide. Although the course is recorded in English, inexpensive artificial intelligence translation services may be used to increase the reach for multiple GCs at an institution for less cost compared with a single individual attending a professional meeting.

Global development of CE/CPD courses for GCs

The development of future courses by the CLEP-GC consortia will focus on the global educational needs of GCs while implementing best practices in genomics education recommendations compiled by international experts.[9] The availability of affordable and accessible online CE/CPD courses will broaden the reach of educational opportunities for GCs globally. The asynchronous format allows participants to access the content at their convenience without having to travel to an in-person conference or attend a hybrid course at a designated time. Online, prerecorded courses allow the learner to return to previous sections to review the content. This allows the learner time to pause to contemplate the information presented, thereby allowing for better retention and reflection.[6] This can make online learning more effective for some. Case-based practical learning appeals to GCs, allowing course content to benefit clinical practice immediately.

For nations with standards and regulations for genetic counseling CE/CPD, creating a list of approved courses, including courses created in other countries, which could satisfy recertification or annual registration requirements would benefit all GCs worldwide. To address this gap, we propose the creation of an international working group with members representing genetic counseling regulations bodies worldwide tasked with developing a reciprocity agreement through which CE/CPD courses approved in one country would be evaluated, cataloged, and available for credit for GCs worldwide. This group would provide standards for CE/CPD resources accepted by accrediting bodies worldwide and house a central repository for professional development training options regardless of accreditation needs. The working group could survey credentialed GCs to solicit course topics. These suggestions could provide the basis for developing courses with international instructors. Feedback from the working group evaluating courses and individual learners would be utilized while updating existing courses and providing the basis for future courses.

The Warren Alpert Foundation support enabled the development and deployment of the variant interpretation course described above. In the future, leveraging support from funding agencies for training and CE/CPD of GCs and other professionals engaged in genomic medicine could facilitate the development of additional CE/CPD courses to ensure that GCs stay current with evolving practices.

Genomic testing service delivery has evolved uniquely in different countries because of differing health systems, laws, and cultures. A common thread is the need for highly educated professionals to counsel and support those undergoing molecular testing. There is a shortage of trained health care professionals worldwide to provide genetic counseling. GCs can learn from one another in an online short course format to provide enhanced care, raise the profession's visibility, and stay up to date in a rapidly evolving field. Developing a repository of approved courses for CE/CPD as genetic counseling expands internationally will help keep GCs current in their practice.

Data Availability

No data utilized in this commentary.

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Ethics Declaration

No human subjects or institutional review board approval was needed for this commentary.

Conflict of Interest

Daniel J. Rader is a member of the scientific advisory boards of Alnylam Pharmaceuticals, Novartis, and Verve Therapeutics. Elizabeth M. McNally is or was a consultant for Amgen, Cytokinetics, PepGen, and Tenaya Therapeutics, and she is a founder of Ikaika Therapeutics. Debra Duquette is a member of the genetic testing/laboratory panel advisory group for Carelon. These activities are unrelated to the content of this work. All other authors declare no conflicts of interest.

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