

# Oncology Nursing: The Application of Cancer Genetics and Genomics Throughout the Oncology Care Continuum

Advances in the understanding and application of cancer genetics (i.e., single gene hereditary disorders) and cancer genomics (i.e., the identification of multiple genes, DNA sequences, and proteins and their interaction with one another) has dramatically changed the practice and implementation of cancer risk assessment, risk reduction, prevention, screening, diagnosis, therapeutics, and options for personalized health care. High-throughput technologies, such as whole-genome sequencing and exome sequencing, have resulted in a shift in focus from cancer genetics to cancer genomics. Those technologies also have increased the need for oncology nurses to integrate genetic and genomic information into every aspect of oncology nursing care. Oncology nursing practice related to cancer genetics includes two levels, the general oncology nurse (GON) and the advanced practice nurse (APN).

All oncology nurses should demonstrate education and practice that is consistent with the American Nurses Association's (2009) *Essentials of Genetic and Genomic Nursing: Competencies, Curricula Guidelines, and Outcome Indicators* and the Institute of Medicine's (2011) *The Future of Nursing: Leading Change, Advancing Health*, which calls for nurses to practice to the full extent of their education and training. GON practice may include pedigree construction and evaluation, genetic education, cancer prevention (i.e., education on risk reduction through healthy lifestyles and carcinogen avoidance), and collaboration and referral for comprehensive cancer genetic risk assessment. Oncology APNs (typically clinical nurse specialists or nurse practitioners) also provide patient and community education and nursing practice that is consistent with the American Nurses Association and International Society of Nurses in Genetics's *Essential Genetic and Genomic Competencies for Nurses With Graduate Degrees* (Greco, Tinley, & Seibert, 2012) and in accordance with the authority provided by their state boards of nursing. Oncology APN practice may include comprehensive cancer genetic risk assessment, education, facilitation and interpretation of genetic testing, pre- and post-test counseling and follow-up, and provision of personally tailored cancer risk recommendations and management, along with psychosocial counseling and supportive services.

## It Is the Position of ONS That Oncology Nurses

---

- Integrate new evidence-based genetic and genomic information into oncology nursing practice.
- Educate patients and the public about the potential benefits and limitations of genetic and genomic testing.
- Educate patients and the public about the importance of clinical utility and accurate interpretation of genetic and genomic testing reports.
- Promote cancer prevention by educating patients and the public about DNA structure and function, the effect of carcinogens on the structure and function of DNA, avoidance of carcinogenic substances, and healthy lifestyles, as well as by promoting other well-established cancer risk-reduction methods.
- Advocate for the development of culturally sensitive, age-appropriate individualized genetic and genomic educational materials for the public and other healthcare professionals.
- Integrate genetic and genomic competencies into oncology nursing education.
- Maintain continuing education in cancer genetics and genomics to provide up-to-date oncology nursing care.
- Advocate for the ethical and legal use of genetic and genomic information.
- Advocate for patients to receive pretest genetic education, counseling, and informed consent, with post-test disclosure and development of a management plan according to individualized testing results and risk assessments.
- Advocate for reducing barriers to cancer predisposition genetic counseling and testing in diverse populations.
- Advocate for reducing barriers to screening (improving early detection) and risk-reduction practices in diverse populations.
- Advocate for an interprofessional healthcare (e.g., oncology nurses, physicians, genetic counselors) approach to provide comprehensive, individualized genetic and genomic care.
- Join with other professional organizations to define the appropriate use of genetic and genomic technologies, including direct-to-consumer marketing of genetic and genomic tests.
- Access credible resources to evaluate genetic and genomic tests.
- Conduct or contribute to nursing research that contributes to the understanding of nursing-sensitive, patient-specific genetic and genomic outcomes.
- Consistent with the American Nurses Association's (2009) *Essentials of Genetic and Genomic Nursing: Competencies,*

*Curricula Guidelines, and Outcome Indicators* for the GON and the American Nurses Association and International Society of Nurses in Genetics's *Essential Genetic and Genomic Competencies for Nurses With Graduate Degrees* (Greco et al., 2012) for APNs, demonstrate educational preparation in the principles of human genetics and genomics and in the evaluation of ethical, legal, social, and emotional implications of the use of genetic and genomic technology in cancer care.

- Work with other healthcare providers with expertise in cancer genetics (i.e., other nurses, physicians, and genetic counselors) to provide comprehensive, individualized cancer genetic and genomic care.
- Work with other healthcare providers to promote culturally sensitive, evidence-based cancer prevention, early detection education and strategies, and genetic and genomic literacy for individuals, communities, and diverse populations.



## References

- American Nurses Association. (2009). *Essentials of genetic and genomic nursing: Competencies, curricula guidelines, and outcome indicators* (2nd ed.). Silver Spring, MD: Author.
- Greco, K.E., Tinley, S., & Seibert, D. (2012). *Essential genetic and genomic competencies for nurses with graduate degrees*. Silver Spring, MD: American Nurses Association and International Society of Nurses in Genetics.
- Institute of Medicine. (2011). *The future of nursing: Leading change, advancing health*. Washington, DC: National Academies Press.

Digital Object Identifier: 10.1188/13.ONF.10-11