

# Cancer Genomics: Advocating for Competent Care for Families

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Modest gains have been made in the prevention and early detection of cancer in the past decade. Pharmacologic agents, lifestyle modifications, and diet and physical activity changes have been linked to preventing cancer. Breast cancer detection now includes digital mammography, computer-assisted diagnosis, and, most recently, breast magnetic resonance imaging. Research of cancer prevention and early detection will no doubt continue to result in improved strategies and outcomes. The premise of cancer prevention and early detection is that cancer will either be prevented or detected when cancer therapy is most likely to be effective, cost efficient, and associated with decreased morbidity and mortality. Clearly, nurses need to be engaged in cancer prevention and early detection and explore creative ways to implement both into the daily practice of all individuals, regardless of cancer diagnosis.

A decade ago, cancer prevention practice largely centered on engaging patients in cancer prevention and early detection practices. More recently, the explosion of genetics awareness rapidly is changing oncology practice. Selecting an appropriate prevention or detection strategy requires an accurate risk assessment. Genomics has added an entirely new dimension to cancer risk assessment, and nurses need to be prepared to competently integrate the knowledge into daily practice.

## Genomics in Oncology

Genomics is receiving more focus as evidence shows that most diseases and conditions have a disruption in the genetic component. Genomics differs from genetics in that genetics scrutinizes

the functioning and composition of the single gene, whereas genomics addresses all genes and their interrelationships to identify their combined influence on the growth and development of the organism (World Health Organization, 2002). Nurses must understand genomics and the role it plays in oncology. Oncology is one of the first subspecialties to experience the full impact of the genomics revolution in prevention, screening, diagnosis, prognosis, selection of treatment, and monitoring of treatment effectiveness. Oncology nurses will be faced with many ethical and professional challenges because of this knowledge (Lea, 2008).

The public increasingly expects that nurses will use and understand genomic information and technology when providing care (Consensus Panel on Genetic and Genomic Nursing Competencies [CPGGNC], 2006). The expectations have direct implications for students currently pursuing an entry-level degree in nursing as well as the 2.9 million practicing nurses (CPGGNC). CPGGNC has developed proficiencies that state the minimal amount of genetic and genomic competency expected of every nurse. They include the following.

- Elicit, verify, and construct a minimum of three-generation family health history information using standard nomenclature.
- Consider genomic and environmental influences on risk-factor disease development.

- Identify patients who may benefit from specific genetic and genomic information or services based on assessment data.
- Identify credible, accurate, appropriate, and current genomic information, resources, services, or technologies specific to patients' needs and refer patients as appropriate.
- Provide patients with interpretation of selective genetic information or services.
- Collaborate with insurance providers or payers to facilitate reimbursement for genetic and genomic healthcare services.
- Perform interventions appropriate to patients' genetic healthcare needs.
- Evaluate the impact and effectiveness of genetic technology, information, interventions, and treatments on patients' outcomes (CPGGNC).

Although most would not dispute that those proficiencies are reasonable and appropriate, the professional challenge surfaces in their application. This article uses the implementation of genetic predisposition testing for breast cancer as an example of the potential problems that can arise in clinical practice.

The potential for genetic predispositions for breast cancer has received a tremendous amount of public attention in the lay press and media since the late 1990s. The media coverage and increased knowledge has led to more women requesting breast cancer screening. Many women

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