Cancer Prevention and Detection

Application across the cancer trajectory

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Principles of cancer prevention, early detection, and epidemiology permeate all aspects of oncology nursing. Many terms are often used in cancer prevention and early detection. An understanding of commonly used terms and their clinical application is fundamental to providing comprehensive oncology care (see Figure 1). Throughout the trajectory of cancer care, there are many opportunities for patient and family education. This article will review the principles and application of cancer prevention to clinical care.

Risk Assessment
The cancer risk assessment is based on past medical history, personal lifestyle factors, family history, and, in some cases, genetic testing.

AT A GLANCE
- Cancer risk assessment occurs regularly in oncology nursing practice.
- Oncology nurses have opportunities to provide patients and their families with education about cancer prevention, early detection, and screening for second malignancies.
- Nurses can use many readily available resources to facilitate cancer prevention education.

Oncology nurses have many opportunities to implement cancer prevention and early detection recommendations across the cancer trajectory. Understanding the principles that guide the recommendations is important to providing comprehensive oncology care; many readily available resources can assist oncology nurses with this education. Guidelines for the prevention and early detection of malignancy are based on a comprehensive cancer risk assessment that includes past medical history, lifestyle factors, family history, and, in some cases, genetic testing.

Risk models for some cancers combine risk factors in a mathematical fashion, and many are available as online tools (National Cancer Institute, 2016). Oncology nurses routinely make assessments that include these risk factors. The challenge is in educating patients and families of the meaning of these risk factors and using this information to guide recommendations for cancer prevention and early detection.

Primary Cancer Prevention
Risk factors can be modifiable (e.g., diet, exercise) or nonmodifiable (e.g., age, family history). Many aspects of primary prevention focus on modifiable risk factors. The American Cancer Society ([ACS], 2017b) estimated that, in 2017, 190,500 cancer deaths were caused by tobacco use and 20% of all new cancers diagnosed were related to excess body weight, physical inactivity, alcohol consumption, and poor nutrition. These risk factors are clearly modifiable.

Oncology nurses need to consider all potential opportunities to implement primary prevention into clinical practice. It begins with personally developing a healthy lifestyle, including exercising, eating a healthy diet, reducing ultraviolet light exposure, wearing sunscreen and protective clothing, and avoiding tobacco use and excess alcohol consumption. Patients may be less likely to value the education and advice of nurses who do not model a healthy lifestyle, particularly when nurses are overweight or use tobacco products (While, 2014).

Patients who present for cancer screening examinations should be reminded of primary prevention measures. For example, a woman having a mammogram might benefit from information...
that regular exercise, a low-fat diet, and a healthy weight is associated with a decreased risk for developing breast and other cancers. In addition, if a woman is 50 years or older, it would be appropriate to assess when she last had a colonoscopy, to recommend one if needed, and to explain that, if polyps are removed during a colonoscopy, it is preventive. If a woman has a teenager, there is an opportunity to educate on how the human papillomavirus vaccine helps prevent cervical and other cancers (ACS, 2017b).

For those diagnosed with cancer who use tobacco, education about the benefits, both short- and long-term, for tobacco cessation is appropriate. This includes information about prescription aids and smoking cessation programs. This would be important not only for the patient, but also for other family members who use tobacco. At the time of diagnosis, patients and families are often very receptive to information about primary prevention strategies (Howell et al., 2013).

People with suspected hereditary risk should be referred for genetic evaluation. Those in which a known mutation is detected may be referred for risk-reducing surgery (e.g., mastectomy, oophorectomy), which is also primary prevention. Second primary cancers, such as tamoxifen to prevent breast cancer or aspirin to reduce the risk of polyp formation (ACS, 2017a).

**Secondary Cancer Prevention**
Confusion regarding secondary cancer prevention or screening often occurs because...
guidelines change over time and are available from multiple agencies with some variation in recommendations. The ACS, for example, has been publishing guidelines for the early detection of cancer since 1980 (Smith et al., 2017). Guidelines have been revised, added, and eliminated during this time. Although specific guidelines have changed over the years, the focus of the guidelines has changed very little. Oncology nurses need to be familiar with the various guidelines and the science and rationale behind guidelines, including the accuracy of recommended screening tests (Smith et al., 2017). Healthcare providers are still expected to use the guidelines to select the best screening tests for an individual and to modify the guidelines in certain cases, such as if an individual has a particularly high risk for developing a specific malignancy.

When making screening recommendations to individuals, it is important to include the rationale regarding the strengths and limitations of each test and present this information in light of the individual’s risk for developing cancer (Loud & Murphy, 2017). For example, people with a personal history of premalignant changes, such as atypia on a breast biopsy or multiple colon adenomas, or those with genetic susceptibility, need more rigorous recommendations than those with average risk.

Clearly, disparities and other barriers exist in cancer prevention and early detection use; oncology nurses need to be aware of these barriers and address them (Gray et al., 2017) (see Figure 2). Research demonstrates that a lack of insurance results in lower screening rates and limited access to primary care for prompt evaluation of symptoms, resulting in a diagnosis at a later stage of tumor development, when treatment is less likely to be effective, and is associated with increased morbidity, mortality, and economic costs (ACS, 2017b). For example, in 2015, 50% of women aged 40 years or older reported having a mammogram within the past year, and 63% of adults aged 60 years or older reported having a colonoscopy within the past 10 years, suggesting much room for improvement (ACS, 2017b).

Cancer screening is effective only if accompanied by prompt evaluation and follow-up of any abnormal screening examination. Patient navigation has been implemented particularly in populations likely to be lost to follow-up, such as minorities and the un- and underinsured, to help ensure diagnostic follow-up of abnormal screening examinations (Ali-Faisal, Colella, Medina-Jaudes, & Benz Scott, 2017). For example, the ACS recommends that women continue mammography as long as they have an estimated 10-year life expectancy (ACS, 2017a).

Just as with primary prevention, multiple opportunities exist to implement secondary cancer prevention measures. It begins with oncology nurses personally engaging in appropriate screening based on age and risk factors. At the time of diagnosis and during treatment, family members may be concerned about their personal risks for developing malignancy (Howell et al., 2013). Oncology nurses can provide information to family members about risk factors, recommendations for screening, and resources and recommendations for where to obtain care.

**Tertiary Prevention**
Survivorship care plans, which are routinely becoming a standard of care, provide cancer prevention and detection recommendations (Powel & Seibert, 2017). Following treatment, cancer survivors may be more motivated to engage in cancer prevention measures (Loprinzi & Lee, 2014). Establishing and reviewing survivorship care plans provides an excellent opportunity to educate patients who have completed treatment and their families about the importance of primary cancer prevention and to offer recommendations for screening for second malignancies based on personal medical history, lifestyle risk factors, and, when appropriate, genetic testing results.

> Patients may be less likely to value the education and advice of nurses who do not model a healthy lifestyle.
Conclusion
Oncology nurses need to view risk factor assessment as a unique opportunity to educate patients on not only cancer risk factors, but also cancer prevention and early detection activities. Many resources are available (see Figure 3). Risk assessment occurs regularly with patient encounters, such as at admission to a hospital or at regular clinic visits. The opportunities are abundant, and patients are often accompanied by family members, affording even more opportunities for education. Risk assessment is more than just gathering information; oncology nurses are encouraged to communicate risk information in understandable terms and as accurately as possible. Once risk is communicated, education about cancer prevention and screening options must be provided, which includes information about the accuracy, benefits, and risks associated with screening tests. Individuals with normal screening results should understand when screening is again indicated. Patients with abnormal screens need to be directed through appropriate follow-up diagnostic evaluation. At every point of care and at every level of practice, nurses can improve cancer prevention and screening through their interactions with patients and families.

FIGURE 3.
RESOURCES FOR CANCER PREVENTION AND EARLY DETECTION

AMERICAN CANCER SOCIETY (ACS)
Each year, ACS publishes Cancer Facts and Figures. These references include information about incidence, prevention, detection, survivorship, and treatment. The ACS also publishes facts and figures that deal with specific cancers, such as breast cancer; specific minority populations; and on cancer prevention and survivorship. These are updated regularly and can be downloaded from the ACS website.

CAMPAIGN FOR TOBACCO-FREE KIDS
Extensive information on the epidemiology of tobacco use and resources to use in educating the public about tobacco control
- www.tobaccofreekids.org

CENTERS FOR DISEASE CONTROL AND PREVENTION
Information, statistics, research, and recommendations for cancer prevention and early detection
- www.cdc.gov/cancer

GET UP, GET MOVING CAMPAIGN
National campaign by the Oncology Nursing Society providing oncology nurses with resources to help patients meet evidence-based guidelines for physical activity during treatment and survivorship

HEALTHY PEOPLE 2020
Guidelines and recommendations for reaching target goals for cancer prevention and early detection
- www.healthypeople.gov

LIVESTRONG AT THE YMCA
12-week free or low-cost program at many YMCAs to help cancer survivors engage in healthy lifestyles
- www.livestrong.org/what-we-do/program/livestrong-at-the-ymca

NATIONAL BREAST AND CERVICAL CANCER EARLY DETECTION PROGRAM
Program by the Centers for Disease Control and Prevention that provides low-income, uninsured, and underserved women access to timely breast and cervical cancer screening and diagnostic services
- www.cdc.gov/cancer/nbccedp/about.htm

NATIONAL CANCER INSTITUTE
Extensive bibliography and links to risk assessment models for a variety of cancers
- https://epi.grants.cancer.gov/cancer_risk_prediction

NATIONAL COMPREHENSIVE CANCER NETWORK
Evidence-based guidelines for cancer prevention and early detection, including guidelines for those with genetic risk for developing cancer. User can view guidelines in an algorithm format; website requires a password for use.
- www.nccn.org

NATIONAL GUIDELINE CLEARINGHOUSE
Searchable database of guidelines by the Agency for Healthcare Research and Quality with a feature that allows guidelines to be compared
- www.guideline.gov

SURVEILLANCE, EPIDEMIOLOGY, AND END RESULTS PROGRAM
Searchable database of cancer statistics by disease type, ethnicity, gender, geographic region, year of diagnosis, and multiple other demographic factors
- https://seer.cancer.gov/data

U.S. PREVENTIVE SERVICES TASK FORCE
Extensive guidelines for health maintenance, including guidelines for cancer screening
- www.uspreventiveservicestaskforce.org

REFERENCES

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The author takes full responsibility for this content and did not receive honoraria or disclose any relevant financial relationships.


Lynn, B., Hatry, A., Burnett, C., Kan, L., Olatunbosun, T., & Bluman, B. (2017). Identifying primary care physicians continuing education needs by examining clinical practices, attitudes, and barriers to screening across multiple cancers. *Journal of Cancer Education*. Advance online publication. [https://doi.org/10.1007/s13187-017-1240-5](https://doi.org/10.1007/s13187-017-1240-5)


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