

Chapter 22

Role of the Oncologist in Cancer Prevention

William Hryniuk

22.1 Introduction

More than 40% of individuals will develop cancer in their lifetime, and cancer is now the number one cause of death. Although newer treatments are more effective, they are also increasingly expensive. Meanwhile, it is becoming evident that one-third of all cancers can be prevented by application of existing knowledge (UICC 2010). As a result of these trends, there has been a paradigm shift of emphasis: from cancer treatment to cancer prevention.

Physicians specializing in the treatment of cancer patients (surgical oncologists, radiation oncologists, medical oncologists, and hematologists) have been caught up in this paradigm shift. Their efforts are resulting in steady improvement in cancer survival as they select the optimal treatment path for each patient from a widening array of options: new surgical and radiation techniques, an avalanche of new systemic agents, and a rapidly expanding genetic database which is revolutionizing the approach to targeted therapy—the era of personalized medicine. Following on their success, oncologists are now being entreated to expand their role to encompass cancer prevention.

W. Hryniuk (✉)
CAREpath, 123 Edward Street, Suite 502, Toronto, ON M5G 1E, Canada
e-mail: whryniuk@carepath.ca

22.2 Calls for Expanding the Roles of Oncologists in Cancer Prevention

22.2.1 *The “Teachable Moment”*

Oncologists’ clinical expertise, research experience, and relationship with their patients create a unique opportunity to provide advice and guidance toward lifestyle changes that would reduce cancer recurrence in cancer survivors. During this “teachable moment,” they might induce greater changes in behavior in their patients than other health-care providers, particularly during repeated follow-up visits (Ganz 2005). As a demonstration of its commitment to cancer prevention, the American Society of Clinical Oncology has established a standing Cancer Prevention Committee and encouraged its membership to take a leadership role in risk assessment and cancer prevention in cancer survivors by integrating these aspects into clinical practice (Zon et al. 2008).

22.2.2 *Survivors “Lost in Transition”*

Oncologists are also being confronted by the findings of the Institute of Medicine’s (IOM) landmark study, “Lost in Transition” (Institute of Medicine 2005). The results highlighted the plight of cancer patients who, having completed initial treatment, are still left with a range of significant residual problems related not only to the risk of cancer recurrence but also to the need for rehabilitation. Thus, the IOM emphasized the need for better coordination between specialists and primary care providers to prevent recurrence of cancer (including second primaries) and provide increased surveillance for earlier detection as well as to:

- Assess medical and psychosocial late effects
- Intervene in the consequences of cancer and its treatment including medical problems such as lymphedema and sexual dysfunction
- Reduce symptoms, including pain and fatigue
- Address psychological distress in cancer survivors and their caregivers
- Advise on concerns related to employment, insurance, and disability

22.2.3 *Treatment-Induced Second Primaries*

Because of more effective treatments, cancer survivors are living longer. However, they are also developing second primaries at other sites. The increasing emergence of second primaries is of considerable concern since they are caused, at least in part, by treatment of the initial cancer. Such malignancies comprise up to 16% of all

cancers (Travis et al. 2006) and are a particular problem among survivors of pediatric cancers (Meadows et al. 2009). Specific examples include:

- Breast cancer in young women treated with radiotherapy for Hodgkin’s disease (Bhatia et al. 1996)
- Uterine corpus cancer in women treated with tamoxifen for breast cancer (Bernstein et al. 1999)
- Leukemia in women treated with platinum compounds for ovarian cancer (Travis et al. 1999)
- Leukemia in women receiving dose-intensive chemotherapy for breast cancer (Levine et al. 1998)
- Skin cancer in patients receiving the anti-melanoma drug vemurafenib (Weeraratna 2012)

In addition, a variety of malignancies can occur in:

- Patients treated with radiation for testicular cancer (Travis et al. 2005), cervical cancer (Behtash et al. 2002), and prostate cancer (Brenner et al. 2000)
- Women treated for papillary thyroid cancer (Canchola et al. 2006)
- Patients treated for myeloma (Thomas et al. 2012)
- Patients treated for chronic lymphocytic leukemia (Royle et al. 2011)

22.3 Definition(s) of Cancer Prevention

Before suggesting how oncologists’ practice could be redirected toward cancer prevention, it is necessary to first define the term. Surprisingly, there seems to be no agreement among oncologists about exactly what is meant by cancer prevention. The European Society of Medical Oncology (ESMO) has taken the position that cancer prevention is “The reduction of cancer mortality via reduction in the incidence of cancer achieved by lifestyle or dietary modifications, identifying the individuals with genetic predisposition and screening them and by chemoprevention” (Baselga and Senn 2008).

Expanding on this definition, ESMO recognized the traditional three levels of cancer prevention:

Primary prevention: reduction in incidence by controlling or avoiding exposure to risk factors or by increasing an individuals’ resistance to these factors by immunization or chemoprevention

Secondary prevention: detection of cancer at an early stage by screening when treatment is more effective, leading to a higher rate of cure and a reduced frequency of more serious consequences of disease

Tertiary prevention: prevention of locoregional relapse and/or metastatic disease after primary (initial) treatment by surgery or radiation

On the other hand, the American Society of Clinical Oncology (ASCO) Committee on Cancer Prevention has adopted a somewhat different definition:

“A reduction in the risk of developing clinically evident cancer, whether first or second primary cancer, or of developing intraepithelial neoplasia (IEN), a frequent cancer precursor” (Lippman et al. 2004).

The ASCO committee declined to further subclassify prevention into the three traditional levels recognized by ESMO.

22.4 Need for Rehabilitation

The situation is further complicated by the fact that when the term “*tertiary prevention*” is applied to diseases other than cancer, the definition has been focused on rehabilitation as “Methods to reduce the negative impact of extent of disease by restoring function and reducing disease related complications” (Wikipedia 2012). While rehabilitation of cancer survivors has attracted considerable attention, including that of the IOM, it has not been included in cancer agencies’ definitions of tertiary cancer prevention but there are exceptions (Alberts and Hess 2008).

In this chapter, we address the issues facing oncologists, describe the roles they presently play in cancer prevention, suggest possible additional roles, and propose how they might be engaged more fully in a practical manner. For discussion purposes, the chapter is organized around the ESMO definition of cancer prevention (Baselga and Senn 2008).

22.5 Present Roles of Oncologists in Cancer Prevention

22.5.1 Primary and Secondary Prevention

22.5.1.1 Societal (Public) Roles

Practicing oncologists are engaged as volunteers advocating for cancer prevention in the public arena. They contribute to and participate in awareness campaigns, serve as members in community partnerships, and work with coalitions to advance tobacco control, espouse healthy eating and exercise habits, and counsel avoidance of exposure to excess sunlight and occupational and environmental carcinogens. However, their efforts have been limited, are largely one-off, and remain unorganized.

22.5.1.2 Professional (Medical) Roles

Oncologists also engage in primary and secondary prevention as part of their professional duties such as:

- Surgery to remove organs and tissues at high risk of developing cancer (Bertagnolli 2005)

- Radiation to ablate ovarian function in patients unsuitable for surgery
- Participation in clinical trials testing alternative methods of cancer treatments which might result in fewer secondary malignancies (Meyer et al. 2012)
- Participation in clinical trials testing the effectiveness of chemoprevention agents in high-risk individuals (Zon et al. 2008)
- Service on committees overseeing screening programs
- Encouragement of patients with genetically transmitted risk for cancer to encourage first-degree relatives to undergo genetic counseling (Guillem et al. 2006; Garber and Offit 2005)
- Encouragement of patients and their families to adopt healthy lifestyles

22.5.2 Tertiary Prevention

Oncologists efforts are also directed at preventing locoregional relapse and/or metastatic disease by:

- Radiating tissue beds and node-bearing areas after surgery to reduce local recurrence
- Administering adjuvant systemic therapy to eliminate distant micrometastases after surgical or radiation removal/ablation has eradicated the primary cancer
- Designing and conducting clinical trials testing local and systemic adjuvant treatments

22.6 Possible Additional Roles of Oncologists in Cancer Prevention

22.6.1 Primary and Secondary Prevention

22.6.1.1 Societal (Public) Roles

Oncologists' efforts could have a greater impact if they focused on targeted areas:

- Greater participation in public campaigns advocating prevention and screening
- Lobbying governments to introduce policies which foster cancer prevention
- Encouraging granting agencies to increase funds for cancer prevention research
- Lobbying for improved reimbursement for cancer prevention by oncologists

However, to maximize their impact on the public at large, it will be necessary for oncologists' professional societies and cancer agencies to include cancer prevention as a priority, provide resources to support activities in the targeted areas, and deputize representatives to liaise with volunteer cancer groups in combining efforts to achieve the stated goals.

22.6.1.2 Professional Roles

Based on their special medical and research expertise, oncologists could, with relatively little effort and time expenditure, contribute to primary and secondary cancer prevention simply by providing advice in four important areas which have been relatively neglected:

- Identification of high-risk individuals using presently available screening tools (New NCI Risk Website, Harvard School of Public Health¹, Central Pennsylvania Medical Oncology Group, Mayo Clinic²)
- Design of trials to alter lifestyle in high-risk individuals
- Encouragement and support of primary care physicians in the administration of chemoprevention agents to high-risk individuals (Zon et al. 2008)
- Education of students and trainees about the importance of cancer prevention

Although these activities would incur opportunity costs to oncologists (time and effort deflected from their primary mission of treating cancer), large returns might accrue for minimal effort. One area of cancer prevention that oncologists can hardly avoid is prevention of recurrence in cancer survivors.

22.6.2 Prevention of Cancer Recurrence in Cancer Survivors

The American Cancer Society has adopted the premise that risk factors which lead to development of the initial cancer are probably the same as those predisposing to its recurrence or the development of a second primary. The society has therefore recommended that reduction of risk factors in cancer survivors should be a priority (Doyle et al. 2006). As noted earlier, the IOM has also placed a top priority on the prevention of recurrent and new cancers among cancer survivors. Since oncologists have a unique opportunity to alter the behavior of their patients through the “teachable moment” and since the treatments they administer can lead to development of second primaries, the largest contribution they might make to cancer prevention, in addition to testing less carcinogenic therapies, would be to counsel their own patients on how to reduce risk through behavioral change (Straus 2012).

Such counseling would require identification of risk factors unique to each patient through administration of detailed questionnaires (including the Gail model for survivors whose primary cancer was other than breast) (Chen et al. 2006), followed by appropriate advice based on questionnaire results (Demark-Wahnefried et al. 2006).

Specific areas in which behavioral changes could make a difference include:

- Cessation of smoking in patients with head and neck cancer (Chen et al. 2011)
- Top of Form

¹<http://www.yourdiseaserisk.harvard.edu>

²<http://www.mayoclinic.com/health/cancer-prevention/CA00024>

- Lowering dietary fat in ER-negative breast cancer survivors (Chlebowski et al. 2006)
- Dietary change in colon cancer survivors (Meyerhardt et al. 2007; Zell et al. 2007)
- Weight reduction in obese breast cancer survivors (Djuric et al. 2002; Ewertz et al. 2011) after screening for mood disorders (Djuric et al. 2002; Jenkins et al. 2003)
- Increasing physical activity in all survivors (Knols et al. 2005; Meyerhardt et al. 2006a; Meyerhardt et al. 2006b; Zell 2011)
- Reducing alcohol consumption in breast cancer survivors (Kwan et al. 2010)
- Psychological interventions in breast cancer survivors (Andersen et al. 2008)

As well, oncologists could ensure their patients enroll in screening schedules to detect second primaries and encourage them to accept chemoprevention agents when appropriate.

22.7 Barriers to an Expanded Role for Oncologists

Oncologists have not been quick to respond to calls for involvement in additional activities related to cancer prevention (Chlebowski et al. 1992; Ganz et al. 2006). Their reluctance is understandable not only because of the opportunity costs but also because of significant barriers to dispersion of their efforts.

A major barrier has been oncologists' discomfort with becoming involved in areas in which they lack expertise. Forty-three percent of respondents in the 2004 ASCO survey said they needed more information on what was involved in cancer prevention (Ganz et al. 2006). To address this gap, ASCO has developed a range of educational offerings. One of the first was the *ASCO Curriculum: Cancer Genetics & Genetic Susceptibility Testing*, which set forth a policy for genetic testing for cancer susceptibility (Zon et al. 2008). As well, the Cancer Prevention Track has been initiated at the ASCO Annual Meeting. It remains to be seen if these resources will increase oncologists' involvement in cancer prevention.

Another barrier is lack of sufficient reimbursement for prevention activities. In the 2004 survey of ASCO members, 65% of respondents pinpointed this deficiency (Ganz et al. 2006). Reimbursement schedules in the USA for counseling services have since been improved [(a) Centers for Medicare and Medicaid Services, Zon et al. 2006]. Again, it remains to be seen if improved reimbursement will significantly increase oncologists' involvement in cancer prevention since few claims for these services were reported initially [(b) Centers for Medicare and Medicaid Services claims data].

Lack of role clarity is a significant barrier. Screening and prevention for average risk individuals are usually provided by primary care providers (see Katz, this volume). While the oncologist might provide prevention services to cancer survivors at increased risk for second cancers (ASCO Policy Statement 2009), experience has shown that maximum benefit of preventive care is achieved when follow-up is provided by a medical oncologist working in close collaboration with a primary care provider (Earle et al. 2003; Earle and Neville 2004). And therein lies the problem: the discontinuity of care provided to cancer survivors.

22.8 Prerequisites for Expanding Oncologists' Role in Cancer Prevention

Greater involvement by oncologists in cancer prevention would require them to assume a leadership role in overcoming barriers to collaboration and coordination with primary care providers. The roles of the two groups have to be specified, lines of communication arranged, and steps taken to enable the respective parties to carry out their roles. The barriers to achieving these ends and the methods for overcoming them have been well summarized in a report prepared for the Canadian Association of Provincial Cancer Agencies "Supporting the Role of Primary Care in Cancer Follow-up" (Chomik 2010). There was general agreement not only on the need for precise description of roles and for tools to stay connected with each other but also for:

- Provision of widely accepted prevention and screening guidelines
- Further education and training
- Access to resources
- Assurance that patients would remain satisfied with greater primary care provider involvement
- Adequate compensation for both groups

These steps are necessary but not sufficient. An additional step is active engagement of oncologists with specialists of other disciplines who can identify proven strategies for effecting behavioral change (Earle et al. 2003; Earle and Neville 2004).

Notwithstanding the importance of the many opportunities presented to oncologists for greater involvement in cancer prevention, given the obstacles to achieving this end, it remains to determine in practical terms how they could contribute while still attending to their primary duty of providing optimal treatment. Addressing these barriers in a practical manner could be effected by taking advantage of the proposal by the Institute of Medicine: produce a "survivorship care plan."

22.9 The Survivorship Care Plan (SCP)

To meet the objectives outlined in their report, the IOM described a survivorship care plan (SCP) which would be prepared for each cancer patient upon completion of initial therapy. Such an SCP would cover:

- Cancer type, treatments received, and their potential consequences
- The timing and content of recommended follow-up
- Recommendations regarding preventive practices and how to maintain health and well-being
- Information on legal protections regarding employment and access to health insurance
- Availability of psychosocial services in the community

Following these lines, there has been considerable interest in developing an SCP (Ganz and Hahn 2008; Horning 2008; Lewis et al. 2009; Faul et al. 2010; Salz et al. 2012) which would:

- Detail the patient's cancer and treatment history (Gilbert et al. 2008; Miller 2008; Ristovski-Slijepcevic 2008)
- Be organized around a set of widely known clinical practice guidelines (Earle 2006; Gilbert et al. 2008)
- Identify health priorities including psychosocial concerns and lifestyle practices (Earle 2006; Gilbert et al. 2008; Ristovski-Slijepcevic 2008)
- Address employment, insurance, and economic issues (Earle 2006)
- Identify which providers will be responsible for which roles (Earle 2006; Gilbert et al. 2008)
- Specify recommended tests and their frequency to monitor for recurrence, second malignancies, ongoing toxicities, and late effects (Faul et al. 2010)
- Provide contact information for each specialist (Miller 2008)
- Be modified according to concerns and needs of the individual patient
- Be shared among the patient, the primary care provider, and members of the patient's support network (Gilbert et al. 2008; Miller 2008)

22.9.1 Results from a Randomized Trial Testing the Effectiveness of an SCP

Not surprisingly, in the present era of evidence-based medicine, one version of an SCP has already been studied in a randomized trial to determine if it could improve outcomes compared to usual practice of having the oncologist send a discharge letter to the primary care provider (Grunfeld et al. 2011). The specific objectives were to assess whether the SCP could better reduce patients' perceived level of psychological distress, improve health-related quality of life, produce more satisfaction, and improve continuity/coordination of care. The test SCP was generated after receiving input from the oncologist, the primary care provider, and patients. It included a personalized summary of treatment, follow-up guidelines, and a kit describing supportive care resources. The SCP was transmitted to the patient by an oncology nurse during a 30-min educational session. Surprisingly, the results of the trial showed no differences in any of the outcome measures between the SCP and the oncologist's discharge letter.

However, closer examination of the trial revealed it was restricted to only breast cancer survivors and 36% of candidates offered the study declined to participate. It also did not address the main objectives of a primary care provider as envisaged by the IOM: There were no patient-specific recommendations for healthy living to prevent cancer recurrence or second primaries, no recommendations for early detection and prevention of the late consequences of the cancer or its treatment, nor any recommendations addressing concerns related to employment, insurance, or

disability. Thus, the results cannot yet be taken as evidence negating the possible utility of an SCP as recommended by the IOM. As one observer put it, “The study will not be believed by unshakeable SCP fans” (Smith and Snyder 2011). Notwithstanding the negative results, they do emphasize the importance of subjecting the concept of an SCP to rigorous scientific study. Thus, it still remains to determine if an SCP would achieve the objectives originally laid out by the IOM.

22.9.2 The SCP as an Instrument for Involving Oncologists in Cancer Prevention

On the assumption that testing the effectiveness of an SCP as suggested by the IOM continues to be worthwhile, a trial of its utility could also serve as a means of engaging oncologists in cancer prevention. To do so would require, in addition to meeting the requirements for rehabilitation specified in the IOM report, two additional steps in the preparation of a test SCP: First, a detailed profile would be required of each patient’s lifestyle and behavior in order to identify risky behaviors and indicate where corrective measures were best applied. Several comprehensive self-administered risk-assessment questionnaires referred to earlier could be used for this purpose. Secondly, appropriate corrective measures could be tailored to each patient based on questionnaire results and integrated into the test SCP.

22.9.3 SCP Generated by a Discharge Conference

The corrective measures required to reduce the risk of cancer recurrence in the individual case could be based on practical advice generated at a “discharge conference.” The discharge conference would be led by the treating oncologist and attended by a panel of experts including nutritionists, physiotherapists, behavioral scientists, geneticists, social workers, and nurses. The oncologist would present to the panel the survivor’s case history, indicate the immediate and possible late complications of therapy, estimate chances of recurrence of the original cancer and of a new primary, and provide results of the risk-assessment questionnaire. Panel members, focusing their expertise on the case at hand, would discuss and define the most effective and practical ways to reduce the risk factors identified by the questionnaire. These recommendations would be added to the SCP along with the other elements required by the IOM.

Such a multidisciplinary “discharge conference” would be analogous to the site-specific multidisciplinary “treatment conferences” now routinely held in which various subspecialty oncologists gather together and formulate a customized treatment plan for each patient admitted to the cancer center.

Organization of the analogous discharge conference would not only result in specifying risk reduction maneuvers tailored to the individual case; it would also engage oncologists at the point where they had the most interest: improving their patient’s

well-being. By presiding at the discharge conferences, oncologists would also learn about current concepts and methods for preventing cancer. With a better knowledge base and improved understanding, they might be motivated to take up challenges in the broader areas of cancer prevention. As a corollary, the other participating professionals, by becoming familiar with the details of cases presented by the oncologist, would get a better grasp of the individual variations encountered in practice.

22.9.4 SCP Generated by the Oncology Team

An alternative approach to the multidisciplinary discharge conference would be to have the SCP prepared by the original treatment team of oncology physician and oncology nurse. The nurse or her designate could administer and interpret the risk-assessment questionnaire, and the team would then identify interventions and advise on practical means for implementing them. The team would also formulate the other elements of the SCP, transmit them to the patient, and ensure the completed SCP was copied to all care providers (Miller 2008). Responsibility for this process would have to be accepted by the treatment team. It would require them to acquire more detailed knowledge of cancer prevention, knowledge which is not in their lexicon. It would also incur opportunity costs, diverting attention away from their primary role. While this approach for producing the SCP might be more economical of aggregate professional time compared to a discharge conference, by not engaging the combined expertise of more specialized disciplines, it probably would not produce equivalent results. It would, however, be more akin to “usual practice.”

22.10 Importance of Evaluation of the Utility of the SCP

Either model for generating the SCP, discharge conference or oncology team approach, should be subjected to careful evaluation. To that end, advantage could be taken of a time-honored and integral component of oncologists’ professional activity: personal involvement in clinical research. Outcomes from an SCP should be compared with usual practice or alternative models to evaluate its effectiveness in meeting the objectives specified by the IOM. If utility of the SCP were proven, oncologists would be more inclined to become involved in cancer prevention as part of their routine practice.

22.11 Conclusion

As oncologists have steadily improved their treatment of cancer, their success has evoked calls for them to become more involved with cancer prevention and rehabilitation. Although they have not been in the habit of thinking of themselves as a hub for cancer prevention, their concern for keeping patients staying cancer-free should be

preeminent. To quote a past president of the American Society of Oncology, Dr George Sledge: “if we do not address causation, who will? and how?” (Sledge 2012).

ASCO has formed a Cancer Survivorship Committee which held its first meeting in 2011 and developed goals for the year as a necessary first step in the process. But it will take more than a committee to recruit oncologists into an active role in cancer prevention and more than oncologists to prevent cancer in survivors. The answer to “who will?” may require a variety of other disciplines. The answer to “how?” could be, by moving behind the stalking horse of clinical research, to entice oncologists to become involved in tests of the effectiveness of an SCP compared to “usual practice.”

References

- Alberts DS, Hess LM. *Fundamentals of Cancer Prevention*. Springer-Verlag Berlin Heidelberg, 2008; pp 6–7.
- Andersen BL, Yang H-C, Farrar WB, Golden-Kreutz DM, Emery CF, Thornton LM. Psychologic intervention improves survival for breast cancer patients. A Randomized Clinical Trial. *Cancer* 2008; 113:3450–3458.
- ASCO. Policy Statement Highlights Oncologist’s Role in Providing Cancer Prevention Services *J Oncol Pract* 2009; 5: 10–12.
- Baselga J, Senn H-J. The perspective and role of the medical oncologist in cancer prevention: A Position Paper by the European Society of Medical Oncology. *Annals of Oncology* 2008; 19:1033–1035.
- Behtash N, Tehranian A, Ardalan FA, Hanjani P. Uterine Papillary Serous Carcinoma after Pelvic Radiation Therapy for Cancer of the Cervix. *J Obst & Gynecol* 2002; 22:96–97.
- Bernstein L, Deapen D, Cerhan JR, Schwartz SM, Liff J, McGann-Maloney E, et al. Tamoxifen Therapy for Breast Cancer and Endometrial Cancer Risk. *J Natl Cancer Inst* 1999; 91:1654–1662.
- Bertagnolli MM. Surgical Prevention of Cancer. *J Clin Oncol* 2005; 23:324–332.
- Bhatia S, Robison LL, Oberlin O, Greenberg M, Bunin G, Fossati-Bellani F, et al. Breast Cancer and Other Second Neoplasms after Childhood Hodgkin’s Disease. *N Engl J Med* 1996; 334:745–751.
- Brenner DJ, Curtis R, Hall EJ, Ron E. Second Malignancies in Prostate Carcinoma Patients after Radiotherapy Compared with Surgery. *Cancer* 2000; 88:398–406.
- Canchola AJ, Horn-Ross PL, Purdie DM. Risk of Second Primary Malignancies in Women with Papillary Thyroid Cancer. *Am J Epidemiol* 2006; 163:521–527.
- Centers for Medicare and Medicaid Services (a): National coverage determination for smoking and tobacco-use cessation counseling <http://www.cms.hhs.gov/mcd>
- Centers for Medicare and Medicaid Services (b): claims data. <http://www.cms.hhs.gov/mcd>
- Central Pennsylvania Medical Oncology Group: Cancer risk assessment. <http://www.hmc.psu.edu/cpog/risk/index.htm> & Fox Chase Cancer Center: What are your cancer risks? www.fccc.edu/cancer/risk-quiz.html
- Chen AM, Chen LM, Vaughan MA, Sreeraman R, Farwell DG, Luu Q et al. [http://www.redjournal.org/article/S0360-3016\(09\)03526-3/abstract](http://www.redjournal.org/article/S0360-3016(09)03526-3/abstract) - article-footnote-1 Tobacco Smoking During Radiation Therapy for Head-and-Neck Cancer Is Associated With Unfavorable Outcome. *Int J Radn Oncol Biology Physics* 2011; 79:414–419.
- Chen J, Pee D, Ayyagari R, Graubard B, Schairer C, Byrne C, Benichou J. Projecting Absolute Invasive Breast Cancer Risk in White Women With a Model That Includes Mammographic Density. *J Natl Cancer Inst* 2006; 98:1215–1226.
- Chlebowski RT, Blackburn GL, Thomson CA, Nixon DW, Shapiro A, Hoy MK, et al. Dietary Fat Reduction and Breast Cancer Outcome: Interim Efficacy Results from the Women’s Intervention Nutrition Study. *J Natl Cancer Inst* 2006; 98:1767–1776.

- Chlebowski RT, Sayre J, Frank-Stromborg M, Lillington LB. Current Attitudes and Practice of American Society of Clinical Oncology-Member Clinical Oncologists Regarding Cancer Prevention and Control. *J Clin Oncol* 1992; 10:165–168.
- Chomik TA Consulting & Research Ltd. http://www.capca.ca/wpcontent/uploads/CAPCA_SupportingPrimaryCareinCancerFollowup.Report.Oct31..10.Final.pdf, 2010
- Demark-Wahnefried W, Pinto BM, Gritz ER. Promoting Health and Physical Function Among Cancer Survivors: Potential for Prevention and Questions that Remain. *J Clin Oncol* 2006; 24:5125–5131.
- Djuric Z, DiLaura N, Jenkins I, Mood D, Jen C, Bradley E, Hryniuk W. Combining Weight Loss Counseling with the Weight Watchers Plan for Obese Breast Cancer Survivors. *Obesity Research* 2002; 10:657–665.
- Doyle C, Kushi LH, Byers T, for the 2006 Nutrition, Physical Activity and Cancer Survivorship Advisory Committee: Nutrition and Physical Activity During and after Cancer Treatment: an American Cancer Society Guide for Informed Choices. *CA Cancer J Clin* 2006; 56:323–353.
- Earle CC, Burstein HJ, Winer EP, et al. Quality of Non-breast Cancer Health Maintenance Among Elderly Breast Cancer Survivors. *J Clin Oncol* 2003; 21:1447–1451.
- Earle CC, Neville BA. Under-use of Necessary Care Among Cancer Survivors. *Cancer* 2004; 101:1712–1719.
- Earle CC. Failing to plan is planning to fail: Improving the Quality of Care with Survivorship Care Plans. *J Clin Oncol* 2006; 24:5112–5116.
- Ewertz M, Jensen M, Gunnarsdottir KA, Hojris I, Jakobsen EH, Nielsen D, et al. Effect of Obesity on Prognosis after Early Stage Breast Cancer. *J Clin Oncol* 2011; 29:25–31.
- Faul L, Shibata D, Townsend I, Jacobsen, P. Improving Survivorship Care for Patients with Colorectal Cancer. *Cancer Control* 2010; 17:35–43.
- Ganz PA. Teachable Moment for Oncologists: Cancer Survivors, 10 Million Strong and Growing! *J Clin Oncol* 2005; 23:5458–5460.
- Ganz PA, Kwan L, Somerfield MR, Albert D, Garber JE, Offit K. The Role of Prevention in Oncology Practice: Results From a 2004 Survey of American Society of Clinical Oncology Members. *J Clin Oncol* 2006; 24:2948–2957.
- Ganz PA, Hahn EE. Implementing a Survivorship Care Plan for Patients with Breast Cancer. *J Clin Oncol* 2008; 26:759–767.
- Garber JE, Offit K. Hereditary Cancer Predisposition Syndromes. *J Clin Oncol* 2005; 23:276–292.
- Gilbert S, Miller D, Hollenbeck B, Montie J, Wei, J. Cancer Survivorship: Challenges and Changing Paradigms. *J Urol* 2008; 179:431–438.
- Grunfeld, E, Julian JA, Pond G, Maunsell E, Coyle D, Folkes A, et al. Evaluating Survivorship Care Plans: Results of a Randomized Clinical Trial of Patients with Breast Cancer. *J Clin Oncol* 2011; 29:4755–4762
- Guillem JG, Wood WC, Moley J, Berchuck A, Karlan BY, Mutch DJ et al. ASCO/SSO Review of Current Role of Risk-Reducing Surgery in Common Hereditary Cancer Syndromes. *J Clin Oncol* 2006; 24:4642–4660.
- Horning SJ. Follow-up of Adult Cancer Survivors: New Paradigms for Survivorship Care Planning. *Hematol/Oncol Clinics of North America* 2008; 22:201–210.
- Institute of Medicine. *From Cancer Patient to Cancer Survivor: Lost in Transition* http://books.nap.edu/openbook.php?record_id=11468, 2005
- Jenkins I, Djuric Z, Darga L, DiLaura N, Hryniuk W. Influence of Psychiatric Diagnosis on Weight Loss Maintenance in Obese Breast Cancer Survivors. *Obesity Research* 2003; 11:1369–1375.
- Knols R, Aaronson NK, Uebelhart D, Fransen J, Aufdemkampe G. Physical Exercise in Cancer Patients during and after Medical Treatment: A Systematic Review of Randomized and Controlled Clinical Trials. *J Clin Oncol* 2005; 23:3830–3842.
- Kwan ML, Kushi LH, Weltzien E, Tam EK, Castillo A, Sweeney C, et al. Alcohol Consumption and Breast Cancer Recurrence and Survival Among Women With Early-Stage Breast Cancer: The Life After Cancer Epidemiology Study. *J Clin Oncol* 2010; 29:4410–4416.
- Levine MN, Bramwell VH, Pritchard KI, Norris BD, Shepherd LE, Abu-Zahra H, et al. Randomized Trial of Intensive Cyclophosphamide, Epirubicin, and Fluorouracil Chemotherapy Compared

- With Cyclophosphamide, Methotrexate, and Fluorouracil in Premenopausal Women With Node-Positive Breast Cancer. *J Clin Oncol* 1998; 16:2651–2658.
- Lewis R, Neal R, Hendry, M, France, B, Williams, N, Russell, D, et al. Patients' and Healthcare Professionals' Views of Cancer Follow-up: Systematic Review. *Br J Gen Practice* 2009; 59:e248–259.
- Lippman SM, Levin B, Brenner DE, Gordon GB, Aldige CR, Kramer BS, et al. Cancer Prevention and the American Society of Clinical Oncology. *J Clin Oncol* 2004; 22:3848–3851.
- Meadows AT, Freidman DL, Neglia JP, Mertens AC, Donaldson SS, Stovall M, et al. Second Neoplasms in Survivors of Childhood Cancer: Findings from the Childhood Cancer Survivor Study Cohort. *J Clin Oncol* 2009; 27:2356–2362.
- Meyer RM, Gospodarowicz MK, Connors JM, Pearcey RG, Wells WA, Winter JN, et al. ABVD Alone versus Radiation-Based Therapy in Limited-Stage Hodgkin's Lymphoma. *N Eng J Med* 2012; 366:399–408.
- Meyerhardt JA, Giovannucci EL, Holmes MD, Chan AT, Chan JA, Colditz GA et al. Physical Activity and Survival after Colorectal Cancer Diagnosis. *J Clin Oncol* 2006a; 24:3527–3534.
- Meyerhardt JA, Heseltine D, Niedzwiecki D, Hollis D, Saltz LB, Mayer RJ, et al. Impact of Physical Activity on Cancer Recurrence and Survival in Patients with Stage III Colon Cancer: Findings from CALGB 89–803. *J Clin Oncol* 2006b; 24:3535–3541.
- Meyerhardt JA, Niedzwiecki D, Hollis D, Saltz LB, Hu FB, Mayer RJ, et al. Association of Dietary Patterns with Cancer Recurrence and Survival in Patients with Stage III Colon Cancer. *JAMA* 298:754–764.
- Miller R. Implementing a Surviving Care Plan for Patients with Breast Cancer. *Clin J Oncol Nursing* 2008; 12:479–487.
- New NCI Risk Website Aims at Consumers. *J Natl Cancer Inst* 2006; 98:1596–1598.
- Ristovski-Slijepcevic, S. Environmental Scan of Cancer Survivorship in Canada: Conceptualization, Practice, and Research. Vancouver, BC: Canadian Partnership Against Cancer; BC Cancer Agency, 2008
- Royle JA, Baade PD, Joske D, Girschik J, Fritschi L. Second cancer Incidence and Cancer Mortality Among Chronic Lymphocytic Leukemia Patients: a Population-based Study. *Br J Cancer* 2011; 105:1076–1081.
- Salz T, Oeffinger KC, McCabe MS, Layne TM, Bach PB et al. Survivorship Care Plans in Research and Practice. *Ca Cancer J for Clinician*, in press, 2012
- Sledge G. *ASCO Connection*, January 2012; p12
- Smith TJ, Snyder C. Is It Time for (Survivorship Care) Plan B? *J Clin Oncol* 2011; 29:4740–4742.
- Straus DJ. Chemotherapy Alone for Early-Stage Hodgkin's Lymphoma. *N Eng J Med* 2012; 366:399–408.
- Thomas A, Malankody S, Korde N, Kristinsson SY. Second Malignancies Following Multiple Myeloma: from 1960s to 2010s. *Blood* 2012; published on line before print Feb 6
- Travis LB, Holowaty EJ, Bergfeldt K, Lynch CF, Kohler BA, Wiklund T et al. Risk of Leukemia after Platinum-based Chemotherapy for Ovarian Cancer. *N Eng J Med* 1999; 340:351–357.
- Travis LB, Fossà SD, SJ, McMaster ML, Lynch CF, Storm H. Second Cancers Among 40,576 Testicular Cancer Patients: Focus on Long-term Survivors. *J Natl Cancer Inst* 2005; 97:1354–1365.
- Travis LB, Rabkin CS, Brown LM, Allan JM, Alter BP, Ambrosone CB et al. Cancer Survivorship-Genetic Susceptibility and Second Primary cancers: Research Strategies and Recommendations. *J Natl Cancer Inst* 2006; 98:15–25.
- UICC. Office Press release, One Third of All Cancers are Preventable but Urgent Action is Still Needed: <http://www.uicc.org/general-news/one-third-all-cancers-are-preventable-urgent-action-still-needed> 2010
- Weeraratna A. RAF Around the Edges-The Paradox of BRAF Inhibitors. *N Engl J Med* 2012; 366:271– 273.
- Wikipedia. Definitions, Tertiary Prevention http://en.wikipedia.org/wiki/Medical_Subject_Headings, 2012

- Zell JA, Ignatenko NA, Yerushalmi HF, Ziogas A, Besselsen DG, Gerner EW et al. Risk and Risk Reduction Involving Arginine Intake and Meat Consumption in Colorectal Tumorigenesis and Survival. *Int J Cancer* 2007; 120:459–468.
- Zell JA. Clinical Trials Update: Tertiary Prevention of Colorectal Cancer. *Carcinog.* 2011; 10:8.
- Zon RT, Goss E, Vogel VG, Chlebowski RT, Jatoi I, Robson ME et al. American Society of Clinical Oncology Policy Statement: the Role of the Oncologist in Cancer Prevention and Risk Assessment. *J Clin Oncol* 2008; 27:986–993.
- Zon RT, Towle E, Ndoping M, Levinson J, Colbert A, Williams C. Reimbursement for Preventive Counseling Services. *J Oncol Practice* 2006; 2:214–218.