



Evidence-Based Series #16-4

A Quality Initiative of the
Program in Evidence-Based Care (PEBC), Cancer Care Ontario (CCO)

Effective Use of Advanced Practice Nurses in the Delivery of Adult Cancer Services in Ontario

*D. Bryant-Lukosius, R. Cosby, D. Bakker, C. Earle, B. Fitzgerald, V. Burkoski
and the Advanced Practice Nursing Guideline Development Group*

Report Date: May 11, 2015

Evidence-Based Series 16-4 is comprised of three sections:

Section 1:	Guideline Recommendations
Section 2:	Evidentiary Base
Section 3:	Development Methods, Recommendations Development and External Review Process

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Evidence-Based Series 16-4: Section 1

**A Quality Initiative of the
Program in Evidence-Based Care (PEBC), Cancer Care Ontario (CCO)**

**Effective Use of Advanced Practice Nurses in the Delivery of
Adult Cancer Services in Ontario:
Guideline Recommendations**

*D. Bryant-Lukosius, R. Cosby, D. Bakker, C. Earle, B. Fitzgerald, V. Burkoski
and the Advanced Practice Nursing Guideline Development Group*

Report Date: May 11, 2015

SUMMARY OF RECOMMENDATIONS

PREVENTION

- No recommendations can be made about the utilization of advanced practice nursing (APN) roles for cancer prevention.

SCREENING

- In primary care and community-based settings, nurse practitioners (NPs) working in alternate provider roles can be utilized to improve access to breast and cervical cancer screening.
- As alternate providers to physicians, NPs can provide safe and effective care in performing esophagoscopy, flexible sigmoidoscopy, and colonoscopy for cancer screening.

DIAGNOSIS

- For women with cervical dysplasia, NPs are an appropriate alternate provider to physicians in performing colposcopy-guided biopsies to diagnose cervical cancer.

TREATMENT

- Clinical nurse specialist (CNS)-led care is an appropriate alternate model to care provided by physicians, particularly for newly diagnosed patients undergoing surgery or radiation therapy.
- The addition of complementary CNS care may improve psychological and mental well-being and survival for patients with a new diagnosis of cancer who are post cancer surgery, or receiving chemotherapy or radiation treatment.

SURVIVORSHIP/POST-TREATMENT FOLLOW-UP CARE

- For patients with breast and colorectal cancer, CNS- or NP-delivered telephone follow-up may provide a safe and acceptable alternate model to outpatient clinic follow-up care provided mostly by physicians.

- The addition of a complementary and comprehensive assessment and intervention program provided by a NP may be effective for reducing menopausal symptoms in women following treatment for breast cancer.

PALLIATIVE CARE

- The complementary addition of CNS care to cancer services may improve health-related quality of life (HRQL) and mental and social well-being for patients with advanced cancer or cancer-related pain, while providing similar or improved outcomes related to healthcare utilization.

END-OF-LIFE CARE

- No evidence-based recommendations can be made about the utilization of APN roles for end-of-life care.

OTHER RECOMMENDATIONS

- For those involved in planning, implementing, and evaluating CNS and NP roles (e.g., healthcare administrators, researchers, and advanced practice nurses), careful selection of outcomes that are the target of specific CNS and NP interventions is required.
- No recommendations can be made about the effectiveness of CNS or NP roles for improving healthcare provider outcomes.
- No recommendations can be made about the cost effectiveness of CNS or NP roles in cancer control.

GUIDELINE OBJECTIVES

The guideline objective was to make evidence-based recommendations about APN roles (i.e., CNS, NP) for optimizing patient, provider, and health system outcomes across the cancer journey. Based on this objective, this guidance document address two specific questions:

- (1) For which patient populations and in which situations (types of needs, practice settings, phase of the cancer journey) have APN roles demonstrated equivalence or improved outcomes or reduced harms in appropriate controlled comparative studies of cancer care?
- (2) What specific patient, provider, or health system outcome indicators are associated with CNS or NP roles?

TARGET POPULATION

The target population includes patients across the cancer journey (i.e., prevention, screening/diagnosis, treatment, survivorship/recovery, palliative care, end-of-life care).

OUTCOMES OF INTEREST

Potential outcomes of interest include: quality of life; physical, functional, psychosocial and mental health; morbidity; mortality; symptom management; patient and provider satisfaction; health care utilization; costs; and quality of care.

INTENDED USERS

The intended users of this guideline include:

- Healthcare administrators who plan the delivery of services in cancer and other health care settings
- Chief Nurse Executives
- Models of care steering committees
- Healthcare policy makers
- Registered nurses (RNs), advanced practice nurses, physicians and other allied health professionals involved in the delivery of cancer care
- APN educators and researchers
- Directors of Interprofessional Practice
- Professional associations (e.g., Canadian Association of Nurses in Oncology, Registered Nurses Association of Ontario)

As with any planning strategy, the complete range of clinicians with the knowledge, skills, and competence to provide various care options should be considered in the context of patient need, quality goals, access, demand, and availability of resources. This guideline provides evidence-based recommendations related to appropriate clinical roles for advanced practice nurses.

Canada recognizes two types of APN roles, the CNS and the NP. According to the Canadian Nurses Association, CNSs and NPs provide *“an advanced level of clinical nursing practice that maximizes the use of graduate educational preparation, in-depth nursing knowledge and expertise in meeting the health needs of individuals, families, groups, communities and populations. It involves analyzing and synthesizing knowledge; understanding, interpreting and applying nursing theory and research; and developing and advancing nursing knowledge and the profession as a whole”* (1). CNSs and NPs have overlapping and complementary skill sets. Both roles are involved in the delivery of direct and indirect clinical care, providing organizational leadership, leading or participating in research and evidence-based practice activities, and educating patients, nurses, and other health providers. The two roles differ with respect to their scope and focus of practice. CNSs have the same regulated scope of practice as an RN. While CNSs provide clinical care they tend to have greater expertise and responsibilities for leading organizational change, education, evidence-based practice, and research (2,3). NPs have an expanded regulated scope of practice (i.e., RN-EC) that gives them the authority to diagnose, prescribe, treat and refer patients to other providers, and to admit and discharge patients from hospital (4,5). With this expertise, NPs tend to have greater role responsibilities related to clinical care but also engaged in leadership, education, evidence-based practice, and research.

ALTERNATE APN ROLES

Alternate APN roles are introduced as a replacement or substitute for another provider, most often a physician. The aim is to provide services that reduce cost or address workload or workforce shortages while maintaining or improving the quality of care (6). Studies of alternate roles are usually designed to assess for equivalent outcomes.

COMPLEMENTARY APN ROLES

Complementary APN roles are introduced to augment the services of existing healthcare provider roles with the goal of improving quality of care (7). Studies of complementary roles compare APN plus standard care with standard care alone and are designed to assess for improved outcomes.

Note, this guideline focuses solely on direct evidence specific to CNS and NP roles and does not include evidence or recommendations related to additional roles that could be provided by RNs or other types of clinicians (e.g., radiation therapists). Clinical activities listed below may also be appropriate to be offered by alternative, appropriately trained care providers.

In the section that follows, recommendations related to Questions 1 and 2 are provided beginning with recommendations for Question 1. These recommendations are presented by phase of the cancer journey.

RECOMMENDATIONS, KEY EVIDENCE, AND JUSTIFICATION

RESEARCH QUESTION #1

For which patient populations and in which situations (types of needs, practice settings, phase of the cancer journey) have APN roles demonstrated equivalence or improved outcomes or reduced harms in appropriate controlled comparative studies of cancer care?

The following factors were taken into consideration in formulating guideline recommendations about the effective use of CNS and NP roles in cancer control:

Current Status of APN

- APN roles in Canada are not new. CNSs and NPs have existed in Canada for almost 60 years. In 2013, there were 424 Adult NPs, 1635 Primary Healthcare NPs, and 848 CNSs and RNs in APN roles in Ontario (8).
- Compared with other countries with similar APN experience, Canada has yet to fully exploit CNS and NP expertise in healthcare, including cancer control. For example, NPs and CNSs are far more integrated into the healthcare system in the United States, making up 6.5% and 2.5% of the RN workforce, respectively (9). In Canada, NPs and CNSs each make up 1% or less of the RN workforce. In a survey of patients with chronic conditions in primary care settings, those in the United Kingdom were more likely to receive care from a NP compared with similar patients in Canada (48% versus 22%) (10).
- Nurses working in cancer care make up a very small proportion of the Canadian nursing workforce. In 2010, there were 3953 RNs (including CNSs and NPs) (1.5% of all nurses) working in oncology in all provinces and territories (11). In 2013 in Ontario, there were 497 RNs (includes CNSs), 55 NPs, and 138 registered practical nurses working in oncology (8). Given the rising incidence/prevalence of cancer and gaps in access and quality of care, there are opportunities to optimize generalist, specialized, and advanced nursing roles in cancer control.

Quality of Evidence

- Multiple systematic reviews demonstrate the safety and effectiveness of CNS and NP roles in a variety of contexts (12-14). The findings of this systematic review are consistent with other reviews.
- The overall quality of the evidence reported in this systematic review is poor (moderate to high risk of bias in all but one study) and the results of individual studies must be interpreted with caution. However, the consistent pattern of results demonstrating equivalent or improved quality of care and patient health outcomes for different types of APN roles across varied patient populations, geographic jurisdictions, and phases of cancer is compelling.

Future Directions

- Further research about the effective development and use of CNS and NP roles in Canada is required.
- Innovative approaches that optimize the scope of practice and expertise of all members of the healthcare team are required to deliver timely, coordinated, accessible, and efficient models of patient-centred cancer care (15).

PREVENTION

RECOMMENDATION 1

No recommendations can be made about the utilization of APN roles for cancer prevention owing to a lack of data at this time.

Future research should: i) examine the broader international literature about the effectiveness of primary prevention strategies delivered by advanced practice nurses in the non-cancer literature that may be relevant to cancer; and ii) assess the need to optimize APN role involvement in primary and secondary cancer prevention services.

Summary of Key Evidence for Recommendation 1

- No comparative studies about the effective use of advanced practice nurses related to the primary or secondary prevention of cancer were identified.

Justification for Recommendation 1

There is no evidence currently available on which to make a recommendation regarding the use of advanced practice nurses in cancer prevention.

Qualifying Statements for Recommendation 1

- The lack of research studies related to cancer prevention was a surprising finding given that health promotion and illness prevention are important aspects of APN and, in particular, NP roles in primary care (16-18).
- Relevant studies on the primary prevention of chronic diseases including cancer (e.g., health promotion/healthy lifestyle interventions related to diet, exercise, smoking cessation, alcohol use) may have been missed in this review because of the cancer-specific focus of the literature search strategies. The absence of research about APN roles in primary prevention has been noted in a non-cancer-specific systematic review of CNSs and NPs (14). Research on these roles has focused on the management of episodic conditions, secondary prevention, and chronic disease management (14).
- People with a history of cancer may be at risk for developing a second cancer and other chronic conditions including cardiovascular disease, pulmonary disease, diabetes, and hypertension (19-21). Efforts to improve the long-term health of cancer survivors through secondary prevention strategies are required.

SCREENING

RECOMMENDATION 2

In primary care and community-based settings, NPs working in alternate provider roles can be utilized to improve access to breast and cervical cancer screening.

Summary of Key Evidence for Recommendation 2

- NPs providing same-day services in primary care clinics for underscreened patients had improved breast and cervical screening rates compared with physician chart reminders (22).
- Two studies demonstrated that the quality of Papanicolaou (Pap) smears conducted by NPs was not detectably different and, in some cases, was superior to physicians (23,24).

Justification for Recommendation 2

The evidence demonstrated consistent results with similar or improved patient outcomes, and no reported harms, with respect to breast and cervical cancer screening for NPs working in alternate provider roles.

Qualifying Statements for Recommendation 2

- No studies compared RNs and NPs in performing Pap smears.
- Quality of Pap smear is defined as the proportion of satisfactory smears and the proportion of smears with endocervical cells.

Additional Implementation Considerations

- In Canada, RNs (who have acquired competency through additional training) and NPs are authorized to perform Pap smears.

RECOMMENDATION 3

As alternate providers to physicians, NPs can provide safe and effective care in performing esophagoscopy, flexible sigmoidoscopy, and colonoscopy for cancer screening.

Summary of Key Evidence for Recommendation 3

- The sensitivity and specificity of NP-conducted sigmoidoscopy and esophagoscopy was found to be no different to that of physicians (25,26).
- Compared with physicians, NP-led colonoscopy was found to provide equivalent quality of care with respect to procedural pain, duration of the procedure and depth of insertion, and improved care related to patient satisfaction and detection of adenomas (27).

Justification for Recommendation 3

The evidence demonstrated consistent similar (i.e., no difference) or improved patient outcomes, with no reported harms, with respect to esophagoscopy, flexible sigmoidoscopy, and colonoscopy for cancer screening for NPs working in alternate provider roles.

Qualifying Statements for Recommendation 3

- The studies included patients at average risk for colorectal cancer and at above-average risk for colorectal cancer and esophageal cancer.

Additional Implementation Considerations

- In Ontario, RN-performed flexible sigmoidoscopy is standard care in 14 sites and has been found to be a safe and effective model of care (28). No studies were identified that compared RNs with NPs in performing flexible sigmoidoscopies.

DIAGNOSIS**RECOMMENDATION 4**

For women with cervical dysplasia, NPs are an appropriate alternate provider to physicians in performing colposcopy-guided biopsies to diagnose cervical cancer.

Summary of Key Evidence for Recommendation 4

- Two studies found the sensitivity and specificity of colposcopy-guided cervical biopsies conducted by NPs to be no different than those conducted by physicians (29,30). NPs were more likely to take two or more biopsies and this was associated with improved sensitivity (29). These results are based on randomized controlled trial and chart review data.
- One study found that compared with physicians, there was greater consistency between Pap smear and biopsy, less variability and greater consistency with standards of care, higher rates of patient follow-up, and better documentation by NPs.

Justification for Recommendation 4

The evidence demonstrated consistent similar (i.e., no difference) or improved patient outcomes, with no reported harms, with respect to colposcopy-guided biopsies to diagnose cervical cancer performed by NPs working in alternate provider roles.

Additional Implementation Considerations:

- NPs may be particularly effective at improving access to care for women with cervical dysplasia in underserved communities.

TREATMENT

RECOMMENDATION 5

CNS-led outpatient supportive care is an appropriate alternative model to the provision of such care by physicians, particularly for newly diagnosed patients undergoing surgery or radiation therapy.

Summary of Key Evidence for Recommendation 5

- CNS-led care was evaluated in five studies involving patients considering reconstructive surgery due to breast cancer (31), receiving homecare for lung cancer (32), undergoing radical prostatectomy for prostate cancer (33), and receiving radical radiation therapy for head and neck, bladder, or prostate cancer (34,35).
- CNS-led care is associated with similar or improved patient health outcomes and satisfaction with care including:
 - delay in symptoms and physical impairment for lung cancer patients
 - reduction in early urinary and gastrointestinal symptoms, less fatigue, and better physical functioning for patients receiving pelvic radiation
 - reduction in urinary symptoms, improved continence for prostate cancer patients
- Substitution of physician care with CNS management did not lead to unnecessary duplication of services for patients receiving radiation therapy.
- CNS-led care is not associated with reduced healthcare utilization (e.g., hospital length of stay, readmissions, and emergency department visits) but may lead to a reduction in diagnostic tests, prescriptions, and clinic visits.
- No studies of NPs related to the treatment phase of the cancer journey were identified.

Justification for Recommendation 5

Several studies demonstrated consistent reduced harms, or similar (i.e., no difference) or improved patient outcomes, with very few reporting negative outcomes with respect to patients undergoing surgery or radiation therapy for CNSs working in alternate provider roles. The benefits of CNS care exceeded the harms.

Qualifying Statements for Recommendation 5

- It is not possible to make recommendations about the specificity of interventions to be included in the package of services offered in alternate models of CNS-led care for patients receiving cancer treatment. Overall, the studies are small and heterogenous.

Additional Implementation Considerations

- In general, CNS care most commonly involved a package of interventions or services that included comprehensive and holistic patient assessments, provision of information, development of patient self-care management skills, symptom management, psychosocial support, and care coordination with patient referral to other healthcare providers and services, including physicians as required (31-35). Patients also had on-demand access to the CNS as needed via telephone and ad hoc clinic appointments (31,33-35).
- Developing CNS care interventions requires careful assessment of unmet patient population health needs and integration of clinical practice guidelines for the assessment and management of specific disease- and treatment-related symptoms and side effects.

- In some instances, CNSs provided medical care outside of their regulated scope of practice such as communicating a diagnosis (33), discussing treatment options (31,33), and ordering diagnostics tests (33,34) or symptom management medications (34,35). In these cases, CNSs used predetermined and physician agreed-upon protocols or medical directives (33-35), and had completed additional training (31,35).

RECOMMENDATION 6

The addition of complementary CNS care to usual care may improve psychological and mental well-being and survival for patients with a new diagnosis of cancer who are post cancer surgery or receiving chemotherapy or radiation treatment.

Summary of Key Evidence for Recommendation 6

- Complementary CNS care was evaluated in six studies for patients receiving chemotherapy and/or radiation therapy (36,37), undergoing radiation therapy alone (38,39), or who were post cancer surgery (40-42).
- The studies included patients with breast, gynecological, head and neck, gastrointestinal, lung, or urological cancers.
- The addition of CNS care to usual care did not improve HRQL for patients receiving radiation or chemotherapy (36-38), except for unmarried women with breast cancer who had improved HRQL and mood (37).
- There were no differences in symptom distress (42) or radiation treatment side effects for patients who did or did not receive CNS care (38,39).
- There were variable results related to psychosocial and mental health outcomes.
- One study evaluated the impact of CNS care on survival (42). There were no survival benefits for elderly patients post cancer surgery who had early stage solid tumour cancers. Patients with advanced stage cancer in the CNS group had improved survival at two years (67% versus 40%, 95% confidence interval [CI], 1.33 to 3.12; p=0.001) due to fewer deaths from postoperative complications.
- The addition of CNS care to usual care did not lead to reduced health service use, but importantly, was also not associated with increased healthcare costs.

Justification for Recommendation 6

Several studies demonstrated consistent similar (i.e., no difference) or improved patient outcomes with respect to newly diagnosed cancer patients who were post cancer surgery or receiving chemotherapy or radiation therapy for CNSs working in complementary provider roles. The benefits of CNS care exceeded the harms.

Qualifying Statements for Recommendation 6

- No studies evaluated complementary NP roles.
- Patients who may benefit the most from CNS care are unmarried women with breast cancer, and those who have more intensive and complex healthcare needs related to psychological distress, older age, and advanced cancer.
- CNS care focused on the prevention, early detection, and management of health problems following patient discharge from hospital may have contributed to improved survival for patients with advanced stage cancer.

Additional Implementation Considerations

- CNS care involved a package of interventions emphasizing patient self-care through education, provision of information and skill development; coping; symptom assessment and management; care coordination and referral to other supportive care providers and community services; and decision support.
- Most CNS interventions occurred over eight to 24 weeks, took place during scheduled weekly or alternate week and on-demand clinics, telephone or home visit appointments. In one study, patients had access to a CNS seven days per week by telephone, but not for 24 hours each day (42).
- CNSs had extensive training to deliver psychoeducational interventions (36) or had specialized knowledge and skills related to clinical decision making, symptom management, diagnostic and cancer treatment protocols, community resources and negotiation (42).
- The studies by McCorkle et al. (40,42) and Ritz et al. (37) highlight the importance of careful patient assessment to determine subgroup populations who may benefit the most from CNS interventions and also tailoring the intensity of interventions to match the needs of different at-risk patient populations.

SURVIVORSHIP/POST-TREATMENT FOLLOW-UP CARE

RECOMMENDATION 7

For patients with breast and colorectal cancer, CNS- or NP-delivered telephone follow-up may provide a safe and acceptable alternate model to outpatient clinic follow-up care provided mostly by physicians.

Summary of Key Evidence for Recommendation 7

- CNS- or NP-led telephone follow-up for patients with breast and colorectal cancer, respectively, was associated with improved patient satisfaction and achieved similar (i.e., no difference) outcomes including anxiety, psychological well-being, quality of life, self-care, recurrence, and time to detect recurrence (43-45).
- There were no differences in hospitalization, numbers of tests, or contacts between scheduled appointments for CNS or NP telephone follow-up care for patients with breast or colorectal cancer (43,46).
- In one study, the combination of longer consultation times and a 20% increase in consultations, resulted in higher overall per patient costs for CNS care (mean difference £55, 95% CI, £26 to £77) (46). It is unclear whether these costs would generalize to the Ontario context.
- Patients receiving CNS telephone follow-up had lower travel and lost productivity costs (46).

Justification for Recommendation 7

The evidence demonstrated consistent similar (i.e., no difference) or improved patient outcomes with respect to follow-up care of low to moderate risk for cancer recurrence in breast or colorectal cancer patients for NPs and CNSs working in alternate provider roles. There were very few negative outcomes and the benefits of APN-delivered care exceeded the harms.

Qualifying Statements for Recommendation 7

- CNS or NP telephone follow-up is suitable for patients at low to moderate risk for cancer recurrence and those wishing to avoid clinic visits due to long travel distance and/or mobility issues (44,45).
- Standard post-treatment follow-up care for breast cancer was delivered in outpatient clinics and was most often provided by junior doctors (residents), but also by oncologists, CNSs, or a colorectal NP (43,44).

RECOMMENDATION 8

The addition of a complementary and comprehensive assessment and intervention program provided by a NP may be effective for reducing menopausal symptoms in women following treatment for breast cancer.

Summary of Key Evidence for Recommendation 8

- Women receiving the NP-led intervention had significant improvements in menopausal symptoms and sexual functioning compared with those in the attention control/usual care group (47). There were no significant differences in vitality.

Justification for Recommendation 8

The evidence consisted of one randomized controlled trial (RCT) that demonstrated decreased harms or similar (i.e., no difference) or improved patient outcomes, with no reported harms, with respect to menopausal symptoms in women following breast cancer treatment for NPs working in complementary provider roles.

Qualifying Statements for Recommendation 8

- Study participants were female, and between eight months and five years following a diagnosis of stage I or II breast cancer. They had completed chemotherapy or radiation therapy at least four months prior to study participation, but could be taking tamoxifen (47).
- Study participants had at least one menopausal symptom (hot flashes, vaginal dryness, or stress urinary incontinence) of moderate to severe intensity (47).

Note:

One study evaluated CNS-performed flexible cystoscopy for the follow-up care of patients with bladder cancer (48). Based on the results of this one study, there is insufficient evidence to make recommendations about the use of CNS or NPs as alternate providers to physicians in performing follow-up flexible cystoscopy for patients with bladder cancer.

PALLIATIVE CARE

RECOMMENDATION 9

The complementary addition of CNS care to cancer services may improve HRQL and mental and social well-being for patients with advanced cancer or cancer-related pain while providing similar or improved outcomes related to healthcare utilization.

Summary of Key Evidence for Recommendation 9

- Three studies evaluated very different models of complementary CNS care in providing proactive palliative care services for patients with advanced cancer in oncology settings (49,50) and coaching for cancer pain management (51).
- No studies evaluating NPs were identified.
- The early introduction of CNS palliative care services did not lead to improved HRQL, symptoms, or mood but was associated with increased survival and fewer hospital admissions (49).
- In contrast, Bakitas et al. (50) found higher HRQL and less depression but no differences in symptom severity, survival, hospital days, and intensive care unit days for patients receiving a CNS-delivered self-care program.
- Similarly, a CNS coaching intervention using motivational interview techniques also led to better HRQL, mood, and psychosocial well-being (reduced pain interference) but no improvement in pain attitudes or symptoms (pain relief, pain intensity) (51). Health service utilization outcomes were not evaluated in this study.

Justification for Recommendation 9

The addition of CNS care was similar to usual care for most patient and health system outcomes. No harms were reported for CNS care. In select studies, CNS care led to improved patient outcomes for survival, HRQL, mental well-being, and pain interference and improved health system outcomes related to reduced hospitalization.

END-OF-LIFE CARE

RECOMMENDATION 10

No evidence-based recommendations can be made about the utilization of APN roles for end-of-life care owing to a lack of data at this time.

Summary of Key Evidence for Recommendation 10

- No comparative studies about the effective use of advanced practice nurses related to end-of-life care were identified.

Justification for Recommendation 10

There is insufficient evidence currently available on which to make a recommendation regarding the use of advanced practice nurses in cancer end-of-life care.

RESEARCH QUESTION #2

What specific patient, provider, or health system outcome indicators are associated with CNS or NP roles?

RECOMMENDATION 11

For those involved in planning, implementing, and evaluating CNS and NP roles (e.g., healthcare administrators, researchers, and advanced practice nurses), careful selection of outcomes that are the target of specific CNS and NP interventions is required.

Summary of Key Evidence for Recommendation 11

- In many studies included in this systematic review, there were findings of no differences between CNS or NP care and usual care for a variety of outcomes. It is possible that the outcomes are, in fact, similar. Other factors noted in this review may also explain these results including poor intervention design and/or failure to select outcomes that are sensitive or responsive to CNS and NP interventions. The selection of outcomes should be driven by the type of CNS or NP intervention and the need or problem it aims to address.
- Patient outcomes evaluated in studies of CNS or NP roles include HRQL, pain and symptom management, mental health, physical function, performance status, self-care, information needs, satisfaction with care, and survival (Table 9A). Of these, HRQL, symptoms, and mental health were the most frequently reported outcomes.
- Health systems outcomes evaluated in studies of CNS and NP roles related to indicators of care quality, healthcare costs, and health service utilization including hospital length of stay, hospital readmission, emergency department visits, number of advanced practice nurse consultations, and number of physician visits (Table 9B). Quality of care indicators were the most frequently reported outcome.

RECOMMENDATION 12

No recommendations can be made about the effectiveness of CNS or NP roles for improving healthcare provider outcomes owing to a lack of data at this time.

Summary of Key Evidence for Recommendation 12

- No comparative studies about the effective use of advanced practice nurses for improving healthcare provider outcomes, such as job satisfaction, workload, or team functioning, were identified.

Justification for Recommendation 12

There is no evidence currently available on which to make a recommendation regarding the use of advanced practice nurses for improving healthcare provider outcomes.

RECOMMENDATION 13

No recommendations can be made about the cost-effectiveness of CNS or NP roles in cancer control.

Summary of Key Evidence for Recommendation 13

- No studies identified for this review conducted an economic analysis. In the few studies measuring costs, only a direct cost comparison is provided, rather than a comprehensive assessment of the incremental costs and benefits of APN care (37,46,48).
- One study reported on health utilization outcomes for NPs (43). There were no differences in the number of tests ordered but NPs had longer consultation times.
- Longer consultation times were also reported for CNSs (35,46).
- Overall, CNS outcomes related to healthcare utilization including hospital length of stay, hospital readmission, emergency department visits, consultations, physician visits, and tests and investigations were equivalent to standard care and costs were either similar or reduced (Section 2, Table 11 and 9B).
- Increased costs may be associated with the time required for CNSs to develop cystoscopy skills and experience (48) with the increased number and length of CNS consultations (46).

Justification for Recommendation 13

There is insufficient evidence on which to make a recommendation regarding cost-effectiveness of advanced practice nurses in alternate or complementary provider roles in cancer control.

FUTURE RESEARCH

Several recommendations regarding future research were developed by the Working Group as follows:

- Further research about the cost-effectiveness of CNS and NP roles in cancer control is required, particularly within the context of the Ontario and Canadian healthcare systems.
- Further research to evaluate innovative models of CNS and NP care is required across all phases of the cancer journey, but particularly for prevention, palliative care, and end-of-life care.
- Beyond screening and diagnosis, future research should evaluate alternate and complementary models of NP care in other phases of the cancer journey.
- In addition to patient outcomes, future research should examine the impact of CNS and NP roles in cancer control on families and family caregivers, healthcare teams and providers, productivity and efficiency, quality of care and evidence-based practice, and access to care.
- Future research should provide decision-makers with guidance about the appropriate use of RNs, CNSs, and NPs in alternate and complementary models of care for specific patient populations and phases of the cancer journey.

- To build capacity to conduct timely and meaningful evaluations of innovative models of CNS and NP care in Ontario that permit comparison across regional cancer programs, practice settings, and patient populations, Cancer Care Ontario should provide leadership and support to:
 - develop an evaluation framework with associated tools to examine the structures, processes and outcomes associated with CNS and NP care;
 - establish an agreed-upon template of priority patient, provider and health system outcome indicators and measures; and
 - strengthen the use of technology and data management support to collect and analyze administrative data relevant to CNS and NP roles.
- To improve the quality of research and generalizability of the results, researchers should address the following methodological issues:
 - use of mixed-method study designs and relevant evaluation theories and concepts to evaluate and understand how CNS and NP roles impact on outcomes;
 - provide more detailed reporting of key study methods (i.e., randomization, randomization concealment, power calculations, and outcome assessment);
 - explicitly report the type of APN role being evaluated (i.e., CNS or NP) and details about APN education and training and the package of APN interventions provided; and
 - measure and evaluate the impact of the APN intervention dose (timing, frequency, intensity, duration of advanced practice nurse-patient interactions) for different at-risk or vulnerable populations.

Important Considerations for the Uptake of Practice Guideline Recommendations

This practice guideline identifies the potential for introducing new models of cancer care delivery that expand the use of CNSs and NPs and maximize their expertise to improve access, quality of care, and health outcomes for patients and families in Ontario. The introduction of new care delivery models, especially those requiring the optimization or expansion of existing nursing roles or the introduction of new roles, is a complex process necessitating thoughtful planning and strategic implementation to ensure successful achievement of expected outcomes.

Research-based approaches and strategies to promote the successful integration of CNS and NP roles in Canada provide important guidance for the application of practice guideline recommendations (52,53). Key considerations for planning, implementing, and evaluating the introduction of CNS and NP roles in cancer control include, but are not limited to, the following:

- Decisions to expand the role of CNSs and NPs for Ontario cancer services should be based on established patient, healthcare team, organization, and healthcare system needs, and assessment of existing health human resources and expertise (15).
- Substantive planning and use of change management strategies to identify and address potential barriers to optimal role implementation. Frequently reported or common issues include:

- allocation and/or reallocation of healthcare funding dollars for new CNS and NP roles, especially with those roles that are aligned with strategic provincial priorities for improving cancer care;
 - current physician funding models and reimbursement policies do not make it attractive for institutions to substitute advance practice nurses for physicians
 - regulatory and legislative barriers and the need for new organizational structures, policies, and other strategies to support enhanced or expanded scopes of practice (e.g., medical directives, referral policies, documentation systems);
 - engagement of the healthcare team and other key stakeholders in the role design and planning process and targeted education and marketing to ensure role clarity and to foster stakeholder understanding and support for the role;
 - physician concerns about liability, especially for alternate CNS and NP roles;
 - need for CNS or NP education, training, and mentorship;
 - need to increase the pool of CNSs and NPs; and
 - mechanisms and resources for appropriate role supervision and support.
- Given the paucity of information about the use of CNS and NP roles in Canada, the introduction of these roles in new models of care should be evaluated to determine their impact on patient and family, healthcare team and provider and health system outcomes.
 - Use of the PEPPA Framework, a Participatory, Evidenced-Informed, and Patient-Centred Process for APN Role Development, Implementation and Evaluation. This framework is a best practice approach outlining systematic steps and strategies to guide activities and inform decision making about the introduction and effective use of CNS and NP roles in cancer control (54,55). In Canada and internationally, the framework has been used to successfully introduce and evaluate CNS, NP, and other advanced healthcare provider roles. *Designing Innovative Cancer Services and APN Roles - Toolkit* (56) is a research-based resource that was developed and tested in Ontario regional cancer centres. It provides guidance, tools, and resources for PEPPA framework application and is freely available at:
<https://www.cancercare.on.ca/about/programs/otherinitiatives/peppaproject/>

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Updating

All PEBC documents are maintained and updated as described in the PEBC Document Assessment and Review Protocol.

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For information about the PEBC and the most current version of all reports, please visit the CCO website at <http://www.cancercare.on.ca/> or contact the PEBC office at: Phone: 905-527-4322 ext. 42822 Fax: 905 526-6775 E-mail: ccopgi@mcmaster.ca

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Evidence-Based Series 16-4 Section 2

A Quality Initiative of the
Program in Evidence-Based Care (PEBC), Cancer Care Ontario (CCO)

Effective Use of Advanced Practice Nurses in the Delivery of Adult
Cancer Services in Ontario: Evidentiary Base

*D. Bryant-Lukosius, R. Cosby, D. Bakker, C. Earle, B. Fitzgerald, V. Burkoski
and the Advanced Practice Nursing Guideline Development Group*

Report Date: May 11, 2015

A systematic review manuscript based on this EBS has been submitted to a peer-reviewed journal. The full EBS will be posted on the CCO Web site once the publication process is completed.

Evidence-Based Series 16-4: Section 3

A Quality Initiative of the Program in Evidence-Based Care (PEBC), Cancer Care Ontario (CCO)

Effective Use of Advanced Practice Nurses in the Delivery of Adult Cancer Services in Ontario: Development Methods, Recommendations Development and External Review Process

*D. Bryant-Lukosius, R. Cosby, D. Bakker, C. Earle, B. Fitzgerald, V. Burkoski
and the Advanced Practice Nursing Guideline Development Group*

Report Date: May 11, 2015

THE PROGRAM IN EVIDENCE-BASED CARE

The Program in Evidence-Based Care (PEBC) is an initiative of the Ontario provincial cancer system, Cancer Care Ontario (1). The PEBC mandate is to improve the lives of Ontarians affected by cancer through the development, dissemination, and evaluation of evidence-based products designed to facilitate clinical, planning, and policy decisions about cancer care.

The PEBC supports a network of disease-specific panels, termed Disease Site Groups, (DSGs), as well as other groups or panels called together for a specific topic, all mandated to develop the PEBC products. These panels are comprised of clinicians, other healthcare providers and decision makers, methodologists, and community representatives from across the province.

The PEBC produces evidence-based and evidence-informed guidelines, known as Evidence-based Series (EBS) reports, using the methods of the Practice Guidelines Development Cycle (1,2). The EBS report consists of an evidentiary base (typically a systematic review), an interpretation of and consensus agreement on that evidence by our Groups or Panels, the resulting recommendations, and an external review by Ontario clinicians and other stakeholders in the province for whom the topic is relevant. The PEBC has a formal standardized process to ensure the currency of each document, through the periodic review and evaluation of the scientific literature and, where appropriate, the integration of that literature with the original guideline information.

This EBS is comprised of the following sections:

- *Section 1: Guideline Recommendations.* Contains the clinical recommendations derived from a systematic review of the clinical and scientific literature and its interpretation by the Group or Panel involved and a formalized external review in Ontario by review participants.
- *Section 2: Evidentiary Base.* Presents the comprehensive evidentiary/systematic review of the clinical and scientific research on the topic and the conclusions reached by the Group or Panel.

- *Section 3: Development Methods, Recommendations Development, and External Review Process.* Summarizes the EBS development process, the recommendations development process, and the results of the formal external review of the draft version of the EBS.

FORMATION OF GUIDELINE DEVELOPMENT/WORKING GROUP

The Models of Care clinical program asked the PEBC to develop a guideline on the effective use of advanced practice nurses in the delivery of adult cancer care services in Ontario. In consultation with the Models of Care clinical program, a Working Group was identified by members of the clinical program. These experts were then invited to become members of the Working Group. This Working Group consisted of four nurses (one PhD who is a former oncology clinical nurse specialist [CNS] and current oncology nurse researcher and faculty; one PhD and current Professor Emerita; one previously practicing nurse practitioner [NP]-Primary Health Care; and one former oncology CNS in a Chief Nursing Executive position), one medical oncologist, and one methodologist (Section 3, Appendix 1). The Working Group in conjunction with members of the Models of Care clinical program then identified other experts who could provide feedback on the document when it was developed. These people were contacted and invited to join the Expert Panel (Section 3, Appendix 2). The Working Group and the Expert Panel formed the Advanced Practice Nursing Guideline Development Group. This group would take responsibility for providing feedback on the guideline as it was being developed and acted as Expert Panel for the document at Internal Review, reviewing the document and requiring changes as necessary before approving it.

OBJECTIVES AND RESEARCH QUESTIONS

This Working Group developed the following objective(s) for this guideline in consultation with the Models of Care clinical program.

- **OBJECTIVE 1** - To make evidence-based recommendations about the roles of advanced practice nurses (i.e., CNS, NP) for optimizing patient, provider, and health system outcomes across the cancer journey.

From these objectives, the following research questions were derived to direct the search for available evidence to inform recommendations to meet the objectives.

- **QUESTION 1** - For which patient populations and in which situations (types of needs, practice settings, phase of the cancer journey) have advanced practice nursing (APN) roles demonstrated equivalence or improved outcomes or reduced harms in appropriate controlled comparative studies of cancer care?
- **QUESTION 2** - What specific patient, provider, or health system outcome indicators are associated with CNS or NP roles?

EVIDENTIARY BASE DEVELOPMENT

Using the research questions described above, a search for existing systematic reviews and a systematic review of the primary literature was conducted, as described in Section 2 of this EBS.

INITIAL RECOMMENDATIONS

Using the evidentiary base in Section 2, the Working Group developed a set of initial recommendations. These initial recommendations were developed through a consideration of the aggregate evidence quality and the potential for bias in the evidence and the likely

benefits and harms of APN interventions in either alternate or complementary roles. The Working Group considered the values they used in weighing benefits compared with harms, and then made a considered judgement. This process is described in detail for each topic area described below.

Overall Aggregate Evidence Quality and Potential for Bias

This section describes the overall aggregate evidence quality and potential for bias for most of the recommendations; specifically, Recommendations 2 to 9, and 11. Information regarding the aggregate evidence quality and potential for bias for Recommendations 1, 10, 12, and 13 are provided separately in the sections that follow that cover these recommendations specifically.

There are few randomized controlled trials of APN roles in cancer control. There was moderate to high risk of bias across all studies designs for the identified studies with the exception of one study that had a low risk of bias (3,4). Poor reporting of advanced practice nurse (education, experience) and APN role characteristics (e.g., new versus established role) and role implementation issues (e.g., timing, frequency, and intensity of APN interventions; barriers to implementation) in many studies make it difficult to assess intervention fidelity, interpret results, and draw definitive conclusions about role outcomes. The results of some studies may not be readily generalizable to APN roles in other practice settings owing to inadequate descriptions of the APN role and the few number of advanced practice nurses (often only one advanced practice nurse) evaluated. Given the evidence that does exist, there is a consistent pattern of results demonstrating improved or no difference in quality of care and patient health outcomes for:

- NPs working in alternate provider roles for cancer screening (Recommendations 2 and 3)
- NPs working in alternate provider roles for colposcopy-guided cervical biopsies (Recommendation 4)
- Quality of care and patient health outcomes for CNSs working in alternate and complementary provider roles for outpatient cancer treatment (Recommendations 5 and 6)
- Quality of care and patient health outcomes for CNSs and NPs working in alternate provider roles in providing post-treatment follow-up care; specifically, delivering telephone follow-up as an alternate to outpatient clinic follow-up usually provided by physicians or with NP interventions for reducing menopausal symptoms in women following breast cancer treatment. There was no evidence supporting the use of advanced practice nurses in performing follow-up flexible cystoscopy for patients with bladder cancer (Recommendations 7 and 8)
- The addition of CNS care for most patient and health system outcomes. There were no reported harms (Recommendation 9)
- Quality of care and patient health outcomes for advanced practice nurses working in alternate and complementary provider roles for specific patient outcomes (Recommendation 11).

Overall Values of the Working Group

This section describes the overall values of the Working Group for most of the recommendations; specifically, Recommendations 2 to 9, and 11. Information regarding the values of the Working Group for Recommendations 1, 10, 12, and 13 are provided separately in the sections that follow that cover these recommendations specifically.

The Working Group considered the values of patient-centred care as well as the consistency of the evidence. The Working Group strongly believed that similar or improved outcomes or decreased harms with respect to quality of care and patient health outcomes for different APN roles across various patient populations and in various screening settings were important values to consider. Moreover, the value of the right care by the right provider and, thus, optimal use of expertise within the healthcare team was considered. These values in conjunction with values specific to each recommendation were combined and considered judgements were made in developing the recommendations for each topic area.

Values the Working Group considered during the development of specific recommendations included the following:

- NPs and registered nurses (RNs) are already authorized to perform certain screening tests (e.g., Papanicolaou [Pap] smears). Although provision of these services by alternate providers is a standard of care, it is currently an underutilized standard of care (Recommendations 2 and 3).
- The Working Group strongly believed that similar or improved outcomes or decreased harms were important to consider, with respect to:
 - quality of care and patient health outcomes, for APN roles in colposcopy-guided cervical biopsies (Recommendation 4).
 - quality of care and patient health outcomes, for APN roles in outpatient cancer treatment (Recommendations 5 and 6).
 - quality of care and patient health outcomes, for APN roles in providing telephone follow-up compared with outpatient clinic follow-up usually provided by physicians, and reducing menopausal symptoms in women following breast cancer treatment (Recommendations 7 and 8).
 - quality of care, and patient and health system outcomes, for APN roles in providing palliative care (Recommendation 9).
 - quality of care and patient health outcomes, for APN roles in improving patient-specific outcomes (Recommendation 11).

Overall Considered Judgement

This section describes the considered judgement of the Working Group for most of the recommendations; specifically, Recommendations 2 to 9, and 11. Information regarding the considered judgement of the Working Group for Recommendations 1, 10, 12, and 13 are provided separately in the sections that follow that cover these recommendations specifically.

The Working Group recognized that some may believe that the overall quality of the evidence would preclude the development of recommendations. However, the Working Group believed that the totality of the evidence and the consistency within that evidence warranted the development of recommendations. The benefits of the utilization of advanced practice nurses outweighed the harms in the case of:

- Cancer screening (there were no reported harms) (Recommendations 2 and 3)
- Cancer diagnosis with colposcopy-guided cervical biopsies (there were no reported harms) (Recommendation 4)

- Outpatient cancer treatment (there were very few reported harms) (Recommendations 5 and 6)
- Cancer post-treatment telephone follow-up delivered by advanced practice nurses rather than outpatient clinic follow-up usually provided by physicians, and the use of NPs for reducing menopausal symptoms in women following breast cancer treatment, (there were no reported harms) (Recommendations 7 and 8)
- The complementary provision of palliative care delivered by advanced practice nurses, (Recommendation 9)
- Several patient-specific outcomes (Recommendation 11)

Topic Area 1- Patient populations in which APN roles have demonstrated equivalence or improved outcomes or reduced harms with respect to cancer prevention.

Key Evidence for Benefits and Harms

No comparative studies about the effective use of advanced practice nurses related to the primary prevention of cancer were identified.

Aggregate Evidence Quality and Potential for Bias

There is no evidence regarding APN roles with respect to primary cancer prevention.

Values of the Working Group

As there was no evidence regarding APN roles with respect to primary cancer prevention, the Working Group did not believe it was appropriate to make any recommendations on this topic.

Considered Judgement

The Working Group made no recommendations owing to the lack of any evidence with respect to cancer prevention.

Initial (DRAFT) Recommendations

PREVENTION

RECOMMENDATION 1

No recommendations can be made about the utilization of APN roles for cancer prevention. Future research should: i) examine the broader international literature about the effectiveness of primary prevention strategies delivered by advanced practice nurses in the non-cancer literature that may be relevant to cancer; and ii) assess the need to optimize APN role involvement in cancer primary and secondary prevention services.

Qualifying Statements for Recommendation 1

- Up to 50% of cancers may be preventable (5). Increased emphasis on primary prevention may help to reduce the cancer burden.
- Relevant studies on the primary prevention of chronic diseases including cancer (e.g., health promotion/healthy lifestyle interventions related to diet, exercise, smoking cessation, alcohol use) may have been missed in this review because of the cancer-specific focus of the literature search strategies. The absence of research about APN roles in primary prevention has been noted in a non-cancer-specific systematic review of CNSs and NPs (6). Health promotion and illness prevention is an important aspect of NP roles in primary care, but research on these roles has focused on the management of episodic conditions, secondary prevention, and chronic disease management (6). Primary prevention services commonly take place in public health settings where few APNs roles have been implemented (7).
- People with a history of cancer may be at risk for developing a second cancer and other chronic conditions including cardiovascular disease, pulmonary disease, diabetes, and hypertension (8-10). Efforts to improve the long-term health of cancer survivors through secondary prevention strategies are required.

Topic Area 2 - Patient populations in which APN roles have demonstrated equivalence or improved outcomes or reduced harms with respect to cancer screening.

Key Evidence for Benefits and Harms

Several studies demonstrated the effective use of NPs working in alternate provider roles in breast and cervical screening as well as in the performance of esophagoscopy, flexible sigmoidoscopy, and colonoscopy for screening purposes. There were no reported harms.

SCREENING

RECOMMENDATION 2

In primary care and community-based settings, NPs working in alternate provider roles can be utilized to improve access breast and cervical cancer screening.

Qualifying Statements for Recommendation 2

- No studies compared RNs and NPs in performing Pap smears.
- In Canada, RNs (who have acquired competency through additional training) and NPs are authorized to perform Pap smears.
- Maximizing the efficient use of skill sets and the scope of practice of RNs, NPs, and other members of the healthcare team, should be taken into consideration when making decisions about who is the best provider for cervical screening.
- Quality of Pap smear is defined as the proportion of satisfactory smears and the proportion of smears with endocervical cells.

RECOMMENDATION 3

As alternate providers to physicians, NPs can provide safe and effective care in performing esophagoscopy, flexible sigmoidoscopy, and colonoscopy for cancer screening.

Qualifying Statements for Recommendation 3

- No studies were identified that compared RNs with NPs in performing flexible sigmoidoscopies.
- In Ontario, RN-performed flexible sigmoidoscopy is the standard of care in 14 sites across the province and has been found to be a safe and effective model of care (11). Based on the findings of this review, the advantages (if any) for introducing NPs as an alternate provider to RNs in performing flexible sigmoidoscopy are unknown. The need for NP-led flexible sigmoidoscopy is likely small, given perceptions that this role is adequately performed by RNs.
- In Ontario, the need to consider alternative provider roles, such as NPs, for the delivery of services such as esophagoscopy and colonoscopy for cancer screening has not been established.
- Schroy et al. (12) included patients who were at average risk for colon cancer and were referred because they were ≥ 50 years of age as well as at-risk patients who were ≥ 40 years of age and had a first-degree relative with any cancer.
- Wildi et al (13) included patients who were at risk for esophageal cancer and who had an indication for esophagoscopy.
- Limoges-Gonzalez et al. (14) included patients who were at average risk for colon cancer and were referred because they were ≥ 50 years of age.

Topic Area 3 - Patient populations in which APN roles have demonstrated equivalence or improved outcomes or reduced harms with respect to cancer diagnosis.

Key Evidence for Benefits and Harms

Several studies demonstrated the effective use of NPs working in alternate provider roles in performing colposcopy-guided cervical biopsies. There were no reported harms.

DIAGNOSIS

RECOMMENDATION 4

For women with cervical dysplasia, NPs are an appropriate alternate provider to physicians in performing colposcopy-guided biopsies to diagnose cervical cancer and may improve access to care, especially for women in underserved communities.

Topic Area 4 - Patient populations in which APN roles have demonstrated equivalence or improved outcomes or reduced harms with respect to cancer treatment.

Key Evidence for Benefits and Harms

Several studies demonstrated the effective use of CNSs working in alternate provider roles with respect to outpatient management for newly diagnosed patients undergoing surgery or radiation therapy. In addition, several studies demonstrated the effective use of CNSs working in complementary roles added to usual care with respect to the improvement of psychological and mental well-being and survival for newly diagnosed patients who are post cancer surgery or receiving chemotherapy or radiation therapy. There were very few reported harms compared with the many reported benefits.

TREATMENT

RECOMMENDATION 5

CNS-led care may provide a safe and acceptable alternate model to outpatient management provided by physicians, especially for newly diagnosed patients undergoing surgery or radiation therapy. The focus of care in this model is to address patient needs related to treatment decision making, self-care management, psychosocial support, assessment and management of treatment side effects and disease-related symptoms, and care coordination.

Qualifying Statements for Recommendation 5

- Patients with lung cancer who received oncology CNS care, were aged 18 to 89 years with newly diagnosed stage II or greater disease, recruited mostly from radiation treatment facilities, and not able to use public transportation on a routine basis without assistance (15). Participants in both intervention groups experienced progressive disease over the course of the study. The primary reason (30% of admissions) for hospitalization was to receive cancer treatment (chemotherapy). Advances in the treatment of lung cancer necessitate further evaluation of this model. Since 1989, when this study was published, the treatment for lung cancer has become more complex and associated with greater side effects (16,17). Patients are also less likely to be admitted to hospital for treatment and more likely to receive chemotherapy, often concurrently with radiation therapy, as an outpatient. The need for CNS-led care for patients receiving treatment for lung cancer may be even more relevant today.

- Lack of statistical power may account for findings of no difference in patient and health utilization outcomes between RN- and CNS-led home care (15).
- The study by Wells et al. (18) was not sufficiently powered to detect clinically important differences in health-related quality of life (HRQL).
- In general, CNS care involved a package of interventions or services that included comprehensive and holistic patient assessments, provision of information, development of patient self-care management skills, symptom management, psychosocial support, and care coordination with patient referral to other healthcare providers and services, including physicians as required (15,18-21). Patients also had on-demand access to the CNS as needed via telephone and ad hoc clinic appointments (18-21). The specific nature of CNS interventions must be tailored to each patient population and to individual patients. These interventions require a CNS with highly specialized oncology nursing expertise and experience and strong clinical reasoning and decision-making skills, who is comfortable working independently and yet collaboratively with other members of the healthcare team.
- It is not possible to make specific recommendations about the package of services that should be included in alternate models of CNS-led care for patients receiving cancer treatment, because of the small number of studies and variability of patient populations and needs examined. The development of CNS-led interventions requires careful assessment of unmet patient population health needs and integration of clinical practice guidelines for the assessment and management of specific disease and treatment-related symptoms and side effects.
- In some instances, CNSs provided medical care outside of their scope of practice such as communicating a diagnosis (20), discussing treatment options (20,21), and ordering diagnostics tests (19,20) or symptom-management medications (18-19). In these cases, CNSs used predetermined and physician agreed-upon protocols or medical directives (18-20) and had completed additional training (18,21).

RECOMMENDATION 6

The addition of complementary CNS care to usual care may improve psychological and mental well-being and survival for patients with a new diagnosis of cancer who are post cancer surgery or receiving chemotherapy or radiation treatment. Patients who may benefit the most from CNS care are unmarried women with breast cancer and those who have more intensive and complex healthcare needs related to psychological distress, older age, and advanced cancer. The addition of CNS care did not reduce or increase healthcare costs.

Qualifying Statements for Recommendation 6

- The primary goal of complementary CNS roles during the treatment phase was to improve HRQL and psychosocial well-being. The CNSs provided a package of interventions emphasizing patient self-care through education, provision of information and skill development; coping; symptom assessment and management; care coordination and referral to other supportive care providers and community services; and decision support.
- One CNS intervention included a computer-based program to assess and monitor patient health needs and the effectiveness of interventions (22).
- Most CNS interventions occurred over eight to 24 weeks, took place during scheduled weekly or alternate week and on-demand clinics, telephone or home visit appointments. Depending on patient need, appointments took 15 to 45 minutes. In one study, patients were followed for 24 months but patient need for CNS care was minimal after 12 months

(23). In another study, patients had access to a CNS seven days a week by telephone, but not for 24 hours each day (24).

- CNSs had extensive training to deliver the psychoeducational intervention (22) or had specialized knowledge and skills related to clinical decision making, symptom management, diagnostic and cancer treatment protocols, community resources, and negotiation (24).
- The studies by McCorkle et al. (3,24) and Ritz et al. (23) highlight the importance of careful patient assessment to determine subgroup populations who may benefit the most from CNS interventions, and also tailoring the intensity of interventions to match the needs of different at-risk patient populations.

Topic Area 5 - Patient populations in which APN roles have demonstrated equivalence or improved outcomes or reduced harms with respect to cancer survivorship/post-treatment follow-up care.

Key Evidence for Benefits and Harms

Several studies demonstrated the effective use of CNSs and NPs working in alternate provider roles in performing post-treatment follow-up care; specifically, telephone outpatient follow-up and NP interventions for reducing menopausal symptoms in women following breast cancer treatment. There were no reported harms.

SURVIVORSHIP/POST-TREATMENT FOLLOW-UP CARE

RECOMMENDATION 7

For patients with breast and colorectal cancer, CNS- or NP-delivered telephone follow-up may provide a safe and acceptable alternate model to outpatient clinic follow-up care provided mostly by physicians. CNS or NP telephone follow-up is suitable for patients at low to moderate risk for cancer recurrence and those wishing to avoid clinic visits due to long travel distance and/or mobility issues. Telephone follow-up care may reduce patient costs but not result in cost savings for cancer centres. Telephone follow-up may help to reduce clinic wait times for other patients with urgent healthcare needs by reducing clinic workload and freeing up appointment schedules.

Qualifying Statements for Recommendation 7

- Patients with breast cancer were at low to moderate risk of recurrence (25) or had stage I or II disease according to the Union for International Cancer Control (UICC) classification (26).
- Stage of disease or risk for recurrence was not reported for patients with colorectal cancer, but they were in remission post cancer treatment (surgery, chemotherapy, or radiation therapy) (25).
- There were few cancer recurrences in control or intervention groups (25,27).
- Standard post-treatment follow-up care for breast cancer was delivered in outpatient clinics and was most often provided by junior doctors (residents), but also by oncologists, CNSs, or a colorectal NP (25,27).

RECOMMENDATION 8

The addition of a complementary and comprehensive assessment and intervention program provided by a NP may be effective for reducing menopausal symptoms in women following treatment for breast cancer.

Qualifying Statements for Recommendation 9

- Study participants were female, and between eight months and five years following a diagnosis of stage I or II breast cancer. They had completed chemotherapy or radiation therapy at least four months prior to study participation, but could be taking tamoxifen (28).
- Study participants had at least one menopausal symptom (hot flashes, vaginal dryness, or stress urinary incontinence) of moderate to severe intensity (28).

Topic Area 6 - Patient populations in which APN roles have demonstrated equivalence or improved outcomes or reduced harms with respect to palliative care.

Key Evidence for Benefits and Harms

In one study, the early introduction of CNS palliative care services did not lead to improved HRQL, symptoms, or mood but was associated with increased survival and fewer hospital admissions (29). In contrast, Bakitas et al. (30) found higher HRQL and less depression but no differences in symptom severity, survival, hospital days, or intensive care unit days for patients receiving a CNS-delivered self-care program. Similarly, a CNS coaching intervention using motivational interview techniques also led to better HRQL and psychosocial well-being (reduced pain interference), but no improvement in pain attitudes or symptoms (pain relief, pain intensity) (31).

PALLIATIVE CARE**RECOMMENDATION 9**

The complementary addition of CNS care to cancer services may improve HRQL and mental and social well-being for patients with advanced cancer or cancer-related pain, while providing similar or improved outcomes related to healthcare utilization.

Topic Area 7 - Patient populations in which APN roles have demonstrated equivalence or improved outcomes or reduced harms with respect to cancer end-of-life care.

Key Evidence for Benefits and Harms

No studies evaluated the use of NPs working in alternate provider roles in cancer end-of-life care.

Aggregate Evidence Quality and Potential for Bias

There is no comparative evidence regarding APN roles with respect to cancer end-of-life care.

Values of the Working Group

As there was no evidence regarding APN roles with respect to end-of-life care, the Working Group did not believe it was appropriate to make any recommendations on this topic.

Considered Judgement

The Working Group made no recommendations owing to the lack of comparative evidence with respect to cancer end-of-life care.

END-OF-LIFE CARE

RECOMMENDATION 10

No evidence-based recommendations can be made about the utilization of APN roles for end-of-life care.

Topic Area 8 - Specific patient outcome indicators associated with APN roles.

Key Evidence for Benefits and Harms

Evidence demonstrated the effective use of NPs working in alternate provider roles resulting in equivalent or improved patient outcomes particularly related to satisfaction with care, breast and cervical screening rates, and quality of care. Other evidence demonstrated the effective use of NPs working in complementary provider roles resulting in improvement in outcomes related to symptoms, sexual functioning, and information needs. CNS interventions are most likely suited to equivalence or improvements with respect to symptoms and psychological well-being as well as HRQL, physical functioning, meeting informational needs, satisfaction with care, and survival.

RECOMMENDATION 11

For those involved in planning, implementing, and evaluating CNS and NP roles (e.g., healthcare administrators, researchers, and advanced practice nurses), careful selection of outcomes that are the target of specific CNS and NP interventions is required.

Topic Area 9 - Specific healthcare provider outcome indicators associated with APN roles.

Key Evidence for Benefits and Harms

No comparative studies regarding the effective use of advanced practice nurses for improving healthcare provider outcomes such as job satisfaction, workload, or team functioning were identified.

Aggregate Evidence Quality and Potential for Bias

There is no comparative evidence regarding APN roles for improving healthcare provider outcomes.

Values of the Working Group

As there was no evidence regarding specific provider outcome indicators associated with APN roles, the Working Group did not believe it was appropriate to make any recommendations on this topic.

Considered Judgement

The Working Group made no recommendations owing to the lack of comparative evidence with respect to improving healthcare provider outcomes.

RECOMMENDATION 12

No recommendations can be made about the effectiveness of CNS or NP roles for improving healthcare provider outcomes.

Topic Area 10 - Specific healthcare system outcome indicators associated with APN roles.

Key Evidence for Benefits and Harms

No studies regarding the effective use of advanced practice nurses for improving healthcare system outcomes were identified.

Aggregate Evidence Quality and Potential for Bias

There is no comparative evidence regarding APN roles for improving healthcare system outcomes (e.g., economic analyses).

Values of the Working Group

As there was no evidence regarding specific system outcome indicators associated with APN roles, the Working Group did not believe it was appropriate to make any recommendations on this topic.

Considered Judgement

The Working Group made no recommendations owing to the lack of evidence with respect to improving healthcare provider outcomes, specifically, economic analyses.

RECOMMENDATION 13

No recommendations can be made about the cost effectiveness of CNS or NP roles in cancer control.

INTERNAL REVIEW

Almost all PEBC documents undergo internal review. This review is conducted by the Expert Panel and the Report Approval Panel (RAP). The Working Group was responsible for incorporating the feedback and required changes of both of these panels, and both panels had to approve the document before it could be sent to External Review.

Expert Panel Review and Approval

The Advanced Practice Nursing Guideline Development Group acted as the Expert Panel for this document. The members of this group were required to submit conflict of interest declarations prior to reviewing the document. These declarations are described in Section 3 in the section labelled “Conflict of Interest” on page 92. The document must be approved by formal vote. To be approved, 75% of the Advanced Practice Nursing Guideline Development Group membership must cast a vote or abstain, and of those that voted, 75% must approve the document. At the time of the voting, the Advanced Practice Nursing Guideline Development Group members could suggest changes to the document, and possibly make their approval conditional on those changes. In those cases, the Working Group was responsible for considering the changes, and if those changes could be made without substantially altering the recommendations, the altered draft would not need to be resubmitted for approval again.

The Advanced Practice Nursing Guideline Development Group reviewed the document during September and October 2014. The document was distributed by email and comments were returned by email. During this review, the Advanced Practice Nursing Guideline Development Group provided the following key feedback.

- 1) Studies of NPs in primary care were not included in the document.
- 2) Policy recommendations should be included in the document or as a supplementary document.
- 3) With respect to managed care and complementary care there is no comparison of CNSs to RNs.
- 4) A suggestion that the definition of the NP role is too simplified in the introduction.
- 5) Add Directors of Interprofessional Practice to the list of intended users.
- 6) Indicate how many of the general class RNs are CNSs.
- 7) Some confusion regarding the meaning of the term ‘alternative role’.
- 8) Several small editorial and grammatical changes were suggested.

In response to this feedback, the Working Group made the following changes.

- 1) The role of NPs in primary care is beyond the scope of this project; therefore, no change was made.
- 2) Policy recommendations are beyond the scope of this project. However, this guidance document can be used by policy makers to develop such recommendations.
- 3) The Working Group believed it was important to look at the competencies of each type of provider. This will be included under Future Research in Section 1.
- 4) The Working Group added information regarding the NP competency framework.
- 5) Directors of Interpersonal Practice were added to the list of intended users.
- 6) It is unknown how many of the general class RNs are CNSs; therefore, no change was made.
- 7) ‘Alternative role’ was changed to ‘alternate role’.
- 8) Editorial and grammatical changes were made.

Of the nine members of the Advanced Practice Nursing Guideline Development Group, nine members cast votes by email and zero abstained, for a total of 100% response. Of those that cast votes, nine approved the document (100%).

Report Approval Panel Review and Approval

The purpose of the Report Approval Panel (RAP) review is to ensure the methodological rigour and quality of PEBC documents. The RAP consists of nine clinicians with broad experience in clinical research and guideline development, and the Director of the PEBC. For each document, three RAP members review the document; the Director and two others. RAP members must not have had any involvement in the development of the guideline prior to Internal Review. All three RAP members must approve the document, although they may do so conditionally. If there is a conditional approval, the Working Group is responsible for ensuring the necessary changes are made, with the Assistant Director of Quality and Methods, PEBC, making a final determination that the RAP's concerns have been addressed.

In September to November 2014, the RAP reviewed this document. The RAP approved the document. Key issues raised by the RAP included the following:

- 1) There is a lot of repetition in Section 3. Instead of having 'aggregate evidence quality and potential for bias', 'values of the Working Group' and 'considered judgement' sections for each topic area, construct an 'overall aggregate evidence quality and potential for bias', 'overall values of the Working Group' and 'overall considered judgement' sections.
- 2) Add in a statement in Section 1 that guides the reader as to the number of questions and how the evidence is organized.
- 3) A suggestion to shade the recommendation boxes in Section 1 to make the recommendations stand out better.
- 4) Add the outcomes of interest to Section 1.
- 5) Add more information to the definitions of NP and CNS in Section 1.
- 6) A suggestion that the term 'CNS-managed care' was confusing.
- 7) Reorder and group the statements about the factors that were taken into consideration in formulating the guideline recommendations in Section 1.
- 8) A suggestion to add a summary page to the beginning of Section 1 to highlight the recommendations.
- 9) Expand the search strategy so studies on smoking cessation will be accessed.
- 10) A suggestion to keep only the summary tables for Question 2 in Section 2.
- 11) Several small editorial changes were suggested.

The Working Group made the following changes in response to the RAP review:

- 1) The repetition in Section 3 was removed. An 'overall aggregate evidence quality and potential for bias', 'overall values of the Working Group' and 'overall considered judgement' section was generated instead.
- 2) Statements were added to Section 1 indicating that there were two questions and the evidence was structured by the phases of the cancer journey.
- 3) The recommendation boxes in Section 1 were shaded.
- 4) A list of the outcomes of interest was added to Section 1.
- 5) More information was added to the definitions of NP and CNS in Section 1.
- 6) The term 'CNS-managed care' was changed to 'CNS-led care'.
- 7) The statements about the factors that were taken into consideration in formulating the guideline recommendations in Section 1 were reordered and grouped.

- 8) A summary page was added to the beginning of Section 1 that highlights the recommendations.
- 9) The search strategy would have found smoking cessation studies by advanced practice nurses if such studies existed.
- 10) All of the individual tables by phase of the cancer journey were removed for Question 2 in Section 2. Only the summary tables were retained.
- 11) Suggested editorial changes were made.

External Review by Ontario Clinicians and Other Experts

The PEBC external review process is two-pronged and includes a targeted peer review that is intended to obtain direct feedback on the draft report from a small number of specified content experts and a professional consultation that is intended to facilitate dissemination of the final guidance report to Ontario practitioners.

Following approval of the document at Internal Review, the Advanced Practice Nursing Working Group circulated the draft document with recommendations modified as noted under Internal Review, above, to external review participants for review and feedback. Appendix 3 (Section 3) summarizes the draft recommendations and supporting evidence developed by the Advanced Practice Nursing Working Group as submitted for External Review.

Methods

Targeted Peer Review: During the guideline development process, seven targeted peer reviewers from Ontario, Alberta and Australia considered to be clinical and/or methodological experts on the topic were identified by the Working Group. Several weeks prior to completion of the draft report, the nominees were contacted by email and asked to serve as reviewers. Five reviewers agreed and the draft report and a questionnaire were sent via email for their review. The questionnaire consisted of items evaluating the methods, results, and interpretive summary used to inform the draft recommendations and whether the draft recommendations should be approved as a guideline. Written comments were invited. The questionnaire and draft document were sent out on February 18, 2015. Follow-up reminders were sent at two weeks (email) and at four weeks (telephone call). The Advance Practice Nursing Working Group reviewed the results of the survey.

Professional Consultation: Feedback was obtained through a brief online survey of health care professionals who are the intended users of the guideline. The Oncology Nursing Program at Cancer Care Ontario was able to provide us with a comprehensive list of professionals from Ontario to contact by email to inform them of the survey. These included healthcare administrators, nurses (APNs and RNs), those in nursing leadership roles, nurse educators, physicians including palliative care physicians, allied health professionals, directors of clinical programs, provincial program heads, clinical leads, patient and family advisors, models of care steering committee members and chief nursing executives. Participants were asked to rate the overall quality of the guideline (Section 1) and whether they would use and/or recommend it. Written comments were invited. Participants were contacted by email and directed to the survey website where they were provided with access to the survey, the guideline recommendations (Section 1) and the evidentiary base (Section 2). The notification email was sent on February 18, 2015. The consultation period ended on March 23, 2015. The Advance Practice Nursing Working Group reviewed the results of the survey.

Results

Targeted Peer Review: Four responses were received from five reviewers. Key results of the feedback survey are summarized in Table 1.

Table 1. Responses to nine items on the targeted peer reviewer questionnaire.

Question	Reviewer Ratings (N=4)				
	Lowest Quality (1)	(2)	(3)	(4)	Highest Quality (5)
1. Rate the guideline development methods.				1	3
2. Rate the guideline presentation.				2	2
3. Rate the guideline recommendations.				1	3
4. Rate the completeness of reporting.				1	3
5. Does this document provide sufficient information to inform your decisions? If not, what areas are missing?				2	2
6. Rate the overall quality of the guideline report.					4
	Strongly Disagree (1)	(2)	Neutral (3)	(4)	Strongly Agree (5)
7. I would make use of this guideline in my professional decisions.					4
8. I would recommend this guideline for use in practice.					4

9. What are the barriers or enablers to the implementation of this guideline report?

Barriers stated included the funding issues to support alternate models, professional barrier to changes to scope of practice, the need for more CNSs and NPs in Canada, and the need for a champion for this model.

Enablers stated included the ministry and their urgent need to address capacity issues and gaps in care and access, and taking the document forward to administrators and professional practice leads in cancer across Canada to enlist their help.

Summary of Written Comments

The main points contained in the written comments along with the modification(s) made by the working group (*in italics*) were:

- i. A concern that it might be perceived that evidence demonstrating NP ability to do a task means a CNS cannot or vice versa. *On page 4 it was clarified that the guideline focuses only of the evidence specific to CNS and NP roles and does not include evidence for roles that could be provided by other healthcare professionals.*
- ii. A concern that Recommendation 5, taken on its own without looking at the Key Evidence, may be interpreted that newly diagnosed patients need not see a physician. *Recommendation 5 was reworded so that it was clear that it was related to outpatient supportive care only.*
- iii. A suggestion that the no recommendation statements be reworded so that it was clear that the lack of recommendation was owing to a current lack of data. *This modification was made.*

Professional Consultation: Fifty-four responses were received. Key results of the feedback survey are summarized in Table 2.

Table 2. Responses to four items on the professional consultation survey.

General Questions: Overall Guideline Assessment	Number (%)				
	Lowest Quality (1)	(2)	(3)	(4)	Highest Quality (5)
1. Rate the overall quality of the guideline report.		1(2)	6(11)	28(52)	19(35)
	Strongly Disagree (1)	(2)	(3)	(4)	Strongly Agree (5)
2. I would make use of this guideline in my professional decisions.	2(4)	3(6)	8(15)	17(32)	23(43)
3. I would recommend this guideline for use in practice.	2(4)	2(4)	4(7)	19(35)	27(50)

4. What are the barriers or enablers to the implementation of this guideline report?

Barriers noted by respondents included the need for buy-in from institutions/organizations and/or senior leadership, length of the document and the difficulty in disseminating it, focussing on only one type of healthcare provider, expense of APNs in conjunction with the current funding models, cultural barriers within organizations to fully understand and embrace the role of CNSs and NPs, lack of cost-effectiveness data, weak data, larger expert panel was needed, resistance to changing historical practices, need to increase the pool of CNSs and NPs

Enablers noted by respondents included comprehensiveness of the document, the ability of document to be used to inform discussions about the role of CNSs and NPs, being able to use the evidence in the guideline to support decisions around the use of CNSs and NPs, methodological rigour used in the development of the guideline, wide distribution in order to facilitate the use of the guideline, using the guideline to drive the future research agenda, clear indications of how APNs can be used at the various stages of the cancer journey, and the success stories seen in the evidence collected,

Summary of Written Comments

The main points contained in the written comments along with the modification(s) made by the working group (*in italics*) were:

- i. A concern that the provision of care by other healthcare providers (e.g., physician assistants, RNs, etc.) were not included in the guideline. *The guideline was meant to focus on CNSs and NPs. All other healthcare providers were beyond the scope of this guideline.*
- ii. A concern that there was a lack of evidence in some stages of the cancer journey. *The Working Group shares this concern. Perhaps future research will fill this gap in knowledge.*

- iii. The need for wide dissemination of the guideline and guideline recommendations. *The Working Group agreed this is important; however, dissemination is beyond the prevue of the PEBC.*

CONCLUSION

This EBS report reflects the integration of feedback obtained through the external review process with final approval given by the Advance Practice Nursing Panel and the Report Approval Panel of the PEBC. Updates of the report will be conducted in accordance with the PEBC Document Assessment and Review Protocol.

CONFLICT OF INTEREST

In accordance with the PEBC Conflict of Interest (COI) Policy, the guideline authors, Advanced Practice Nursing Guideline Development Group members, and internal and external reviewers were asked to disclose potential conflicts of interest. All authors declared they had no conflicts of interest. For The Expert Panel, eight members declared they had no conflicts of interest. One expert panel member declared a conflict in that when she was president of the Nurse Practitioners' Association of Ontario she had been interviewed by a television news network regarding NP access to narcotics. Each of the three RAP reviewers declared no conflicts of interest. All Targeted Peer Reviewers declared no conflicts of interest.

The COI declared above did not disqualify any individuals from performed their designated role in the development of this guideline, in accordance with the PEBC COI Policy. To obtain a copy of the policy, please contact the PEBC office by email at ccopgi@mcmaster.ca.

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Appendix 1. Members of the Advance Practice Nursing Working Group Panel.

Member Name	Affiliation	Conflict of Interest Declaration
Denise Bryant-Lukosius, RN, CON(C) PhD, former oncology CNS (lead)	School of Nursing, McMaster University Dept. of Oncology McMaster University	No conflicts of interest.
Debra Bakker, RN, PhD, Professor Emerita	School of Nursing, Laurentian University	No conflicts of interest.
Vanessa Burkoski, RN, MScN, DHA, former NP	London Health Sciences Centre	No conflicts of interest.
Roxanne Cosby, BSc, MA	Cancer Care Ontario's Program in Evidence-based Care Dept. of Oncology, McMaster University	No conflicts of interest.
Craig Earle, MD	Medical Oncologist, Odette Cancer Centre	No conflicts of interest.
Barbara Fitzgerald, RN, MScN former oncology CNS	Chief of Interprofessional Practice, Juravinski Hospital and Cancer Centre	No conflicts of interest.

Appendix 2. Members of the Advance Practice Nursing Expert Panel.

Member Name	Affiliation	Conflict of Interest Declaration
Beth Cowper-Fung	Nurse Practitioner Georgina Nurse Practitioner Led Clinic	When president of Nurse Practitioners' Association of Ontario, interviewed by a television news network regarding NP access to narcotics.
Tannice Fletcher-Stackhouse	Nurse Practitioner NorWest Community Health Centre	No conflicts of interest.
Mark Hartman	Interim Regional Vice President, North East Regional Cancer Program	No conflicts of interest.
Cathy Kiteley	Clinical Nurse Specialist Trillium Health Partners, Credit Valley Site	No conflicts of interest.
Gail Macartney	Director, Nursing Research & Knowledge Translation Children's Hospital of Eastern Ontario	No conflicts of interest.
Maurene McQuestion	Clinical Nurse Specialist Princess Margaret Hospital Adjunct Lecturer Faculty of Nursing, University of Toronto	No conflicts of interest.
Ralph Meyer	President, Juravinski Hospital and Cancer Centre Regional Vice President, Cancer Care Ontario Professor, Dept of Oncology, McMaster University	No conflicts of interest.
Shari Moura	Clinical Nurse Specialist Princess Margaret Hospital	No conflicts of interest.
Janice Wright	Nurse Practitioner Hotel Dieu-Shaver Health & Rehabilitation Centre	No conflicts of interest.

Appendix 3. Recommendations submitted for external review.

DRAFT RECOMMENDATIONS (approved for external review February 12, 2015)

PREVENTION

RECOMMENDATION 1

No recommendations can be made about the utilization of APN roles for cancer prevention.

Future research should: i) examine the broader international literature about the effectiveness of primary prevention strategies delivered by advanced practice nurses in the non-cancer literature that may be relevant to cancer; and ii) assess the need to optimize APN role involvement in primary and secondary cancer prevention services.

Summary of Key Evidence for Recommendation 1

- No comparative studies about the effective use of advanced practice nurses related to the primary or secondary prevention of cancer were identified.

Justification for Recommendation 1

There is no evidence currently available on which to make a recommendation regarding the use of advanced practice nurses in cancer prevention.

Qualifying Statements for Recommendation 1

- The lack of research studies related to cancer prevention was a surprising finding given that health promotion and illness prevention are important aspects of APN and, in particular, NP roles in primary care (16-18).
- Relevant studies on the primary prevention of chronic diseases including cancer (e.g., health promotion/healthy lifestyle interventions related to diet, exercise, smoking cessation, alcohol use) may have been missed in this review because of the cancer-specific focus of the literature search strategies. The absence of research about APN roles in primary prevention has been noted in a non-cancer-specific systematic review of CNSs and NPs (14). Research on these roles has focused on the management of episodic conditions, secondary prevention and chronic disease management (14).
- People with a history of cancer may be at risk for developing a second cancer and other chronic conditions including cardiovascular disease, pulmonary disease, diabetes, and hypertension (19-21). Efforts to improve the long-term health of cancer survivors through secondary prevention strategies are required.

SCREENING

RECOMMENDATION 2

In primary care and community-based settings, NPs working in alternate provider roles can be utilized to improve access to breast and cervical cancer screening.

Summary of Key Evidence for Recommendation 2

- NPs providing same-day services in primary care clinics for underscreened patients had improved breast and cervical screening rates compared with physician chart reminders (22).
- Two studies demonstrated that the quality of Papanicolaou (Pap) smears conducted by NPs was not detectably different and, in some cases, was superior to physicians (23,24).

Justification for Recommendation 2

The evidence demonstrated consistent results with similar or improved patient outcomes, and no reported harms, with respect to breast and cervical cancer screening for NPs working in alternate provider roles.

Qualifying Statements for Recommendation 2

- No studies compared RNs and NPs in performing Pap smears.
- Quality of Pap smear is defined as the proportion of satisfactory smears and the proportion of smears with endocervical cells.

Additional Implementation Considerations

- In Canada, RNs (who have acquired competency through additional training) and NPs are authorized to perform Pap smears.

RECOMMENDATION 3

As alternate providers to physicians, NPs can provide safe and effective care in performing esophagoscopy, flexible sigmoidoscopy, and colonoscopy for cancer screening.

Summary of Key Evidence for Recommendation 3

- The sensitivity and specificity of NP-conducted sigmoidoscopy and esophagoscopy was found to be no different to that of physicians (25,26).
- Compared with physicians, NP-led colonoscopy was found to provide equivalent quality of care with respect to procedural pain, duration of the procedure and depth of insertion, and improved care related to patient satisfaction and detection of adenomas (27).

Justification for Recommendation 3

The evidence demonstrated consistent similar (i.e., no difference) or improved patient outcomes, with no reported harms, with respect to esophagoscopy, flexible sigmoidoscopy, and colonoscopy for cancer screening for NPs working in alternate provider roles.

Qualifying Statements for Recommendation 3

- The studies included patients at average risk for colorectal cancer and at above-average risk for colorectal cancer and esophageal cancer.

Additional Implementation Considerations

- In Ontario, RN-performed flexible sigmoidoscopy is standard care in 14 sites and has been found to be a safe and effective model of care (28). No studies were identified that compared RNs with NPs in performing flexible sigmoidoscopies.

DIAGNOSIS**RECOMMENDATION 4**

For women with cervical dysplasia, NPs are an appropriate alternate provider to physicians in performing colposcopy-guided biopsies to diagnose cervical cancer.

Summary of Key Evidence for Recommendation 4

- Two studies found the sensitivity and specificity of colposcopy-guided cervical biopsies conducted by NPs to be no different than those conducted by physicians (29,30). NPs were more likely to take two or more biopsies and this was associated with improved sensitivity (29). These results are based on randomized controlled trial and chart review data.
- One study found that compared with physicians, there was greater consistency between Pap smear and biopsy, less variability and greater consistency with standards of care, higher rates of patient follow-up, and better documentation by NPs.

Justification for Recommendation 4

The evidence demonstrated consistent similar (i.e., no difference) or improved patient outcomes, with no reported harms, with respect to colposcopy-guided biopsies to diagnose cervical cancer performed by NPs working in alternate provider roles.

Additional Implementation Considerations:

- NPs may be particularly effective at improving access to care for women with cervical dysplasia in underserved communities.

TREATMENT

RECOMMENDATION 5

CNS-led care is an appropriate alternative model to outpatient management provided by physicians, particularly for newly diagnosed patients undergoing surgery or radiation therapy.

Summary of Key Evidence for Recommendation 5

- CNS-led care was evaluated in five studies involving patients considering reconstructive surgery due to breast cancer (31), receiving homecare for lung cancer (32), undergoing radical prostatectomy for prostate cancer (33), and receiving radical radiation therapy for head and neck, bladder, or prostate cancer (34,35).
- CNS-led care is associated with similar or improved patient health outcomes and satisfaction with care including:
 - delay in symptoms and physical impairment for lung cancer patients
 - reduction in early urinary and gastrointestinal symptoms, less fatigue, and better physical functioning for patients receiving pelvic radiation
 - reduction in urinary symptoms, improved continence for prostate cancer patients
- Substitution of physician care with CNS management did not lead to unnecessary duplication of services for patients receiving radiation therapy.
- CNS-led care is not associated with reduced healthcare utilization (e.g., hospital length of stay, readmissions, and emergency department visits) but may lead to a reduction in diagnostic tests, prescriptions, and clinic visits.
- No studies of NPs related to the treatment phase of the cancer journey were identified.

Justification for Recommendation 5

Several studies demonstrated consistent reduced harms, or similar (i.e., no difference) or improved patient outcomes, with very few reporting negative outcomes with respect to patients undergoing surgery or radiation therapy for CNSs working in alternate provider roles. The benefits of CNS care exceeded the harms.

Qualifying Statements for Recommendation 5

- It is not possible to make recommendations about the specificity of interventions to be included in the package of services offered in alternate models of CNS-led care for patients receiving cancer treatment. Overall, the studies are small and heterogenous.

Additional Implementation Considerations

- In general, CNS care most commonly involved a package of interventions or services that included comprehensive and holistic patient assessments, provision of information, development of patient self-care management skills, symptom management, psychosocial support, and care coordination with patient referral to other healthcare providers and services, including physicians as required (31-35). Patients also had on-demand access to the CNS as needed via telephone and ad hoc clinic appointments (31,33-35).
- Developing CNS care interventions requires careful assessment of unmet patient population health needs and integration of clinical practice guidelines for the assessment and management of specific disease- and treatment-related symptoms and side effects.

- In some instances, CNSs provided medical care outside of their regulated scope of practice such as communicating a diagnosis (33), discussing treatment options (31,33), and ordering diagnostics tests (33,34) or symptom management medications (34,35). In these cases, CNSs used predetermined and physician agreed-upon protocols or medical directives (33-35), and had completed additional training (31,35).

RECOMMENDATION 6

The addition of complementary CNS care to usual care may improve psychological and mental well-being and survival for patients with a new diagnosis of cancer who are post cancer surgery or receiving chemotherapy or radiation treatment.

Summary of Key Evidence for Recommendation 6

- Complementary CNS care was evaluated in six studies for patients receiving chemotherapy and/or radiation therapy (36,37), undergoing radiation therapy alone (38,39), or who were post cancer surgery (40-42).
- The studies included patients with breast, gynecological, head and neck, gastrointestinal, lung, or urological cancers.
- The addition of CNS care to usual care did not improve HRQL for patients receiving radiation or chemotherapy (36-38), except for unmarried women with breast cancer who had improved HRQL and mood (37).
- There were no differences in symptom distress (42) or radiation treatment side effects for patients who did or did not receive CNS care (38,39).
- There were variable results related to psychosocial and mental health outcomes.
- One study evaluated the impact of CNS care on survival (42). There were no survival benefits for elderly patients post cancer surgery who had early stage solid tumour cancers. Patients with advanced stage cancer in the CNS group had improved survival at two years (67% versus 40%, confidence interval [CI], 1.33 to 3.12; $p=0.001$) due to fewer deaths from postoperative complications.
- The addition of CNS care to usual care did not lead to reduced health service use, but importantly, was also not associated with increased healthcare costs.

Justification for Recommendation 6

Several studies demonstrated consistent similar (i.e., no difference) or improved patient outcomes with respect to newly diagnosed cancer patients who were post cancer surgery or receiving chemotherapy or radiation therapy for CNSs working in complementary provider roles. The benefits of CNS care exceeded the harms.

Qualifying Statements for Recommendation 6

- No studies evaluated complementary NP roles.
- Patients who may benefit the most from CNS care are unmarried women with breast cancer, and those who have more intensive and complex healthcare needs related to psychological distress, older age, and advanced cancer.
- CNS care focused on the prevention, early detection, and management of health problems following patient discharge from hospital may have contributed to improved survival for patients with advanced stage cancer.

Additional Implementation Considerations

- CNS care involved a package of interventions emphasizing patient self-care through education, provision of information and skill development; coping; symptom assessment and management; care coordination and referral to other supportive care providers and community services; and decision support.
- Most CNS interventions occurred over eight to 24 weeks, took place during scheduled weekly or alternate week and on-demand clinics, telephone or home visit appointments. In one study, patients had access to a CNS seven days per week by telephone, but not for 24 hours each day (42).
- CNSs had extensive training to deliver psychoeducational interventions (36) or had specialized knowledge and skills related to clinical decision making, symptom management, diagnostic and cancer treatment protocols, community resources, and negotiation (42).
- The studies by McCorkle et al. (40,42) and Ritz et al. (37) highlight the importance of careful patient assessment to determine subgroup populations who may benefit the most from CNS interventions and also tailoring the intensity of interventions to match the needs of different at-risk patient populations.

SURVIVORSHIP/POST-TREATMENT FOLLOW-UP CARE**RECOMMENDATION 7**

For patients with breast and colorectal cancer, CNS- or NP-delivered telephone follow-up may provide a safe and acceptable alternate model to outpatient clinic follow-up care provided mostly by physicians.

Summary of Key Evidence for Recommendation 7

- CNS- or NP-led telephone follow-up for patients with breast and colorectal cancer, respectively, was associated with improved patient satisfaction and achieved similar (i.e., no difference) outcomes including anxiety, psychological well-being, quality of life, self-care, recurrence, and time to detect recurrence (43-45).
- There were no differences in hospitalization, numbers of tests, or contacts between scheduled appointments for CNS or NP telephone follow-up care for patients with breast or colorectal cancer (43,46).
- In one study, the combination of longer consultation times and a 20% increase in consultations resulted in higher overall per patient costs for CNS care (mean difference £55, 95% CI, £26 to £77) (46). It is unclear whether these costs would generalize to the Ontario context.
- Patients receiving CNS telephone follow-up had lower travel and lost productivity costs (46).

Justification for Recommendation 7

The evidence demonstrated consistent similar (i.e., no difference) or improved patient outcomes with respect to follow-up care of low to moderate risk for cancer recurrence in breast or colorectal cancer patients for NPs and CNSs working in alternate provider roles. There were very few negative outcomes and the benefits of APN-delivered care exceeded the harms.

Qualifying Statements for Recommendation 7

- CNS or NP telephone follow-up is suitable for patients at low to moderate risk for cancer recurrence and those wishing to avoid clinic visits due to long travel distance and/or mobility issues (44,45).
- Standard post-treatment follow-up care for breast cancer was delivered in outpatient clinics and was most often provided by junior doctors (residents), but also by oncologists, CNSs, or a colorectal NP (43,44).

RECOMMENDATION 8

The addition of a complementary and comprehensive assessment and intervention program provided by a NP may be effective for reducing menopausal symptoms in women following treatment for breast cancer.

Summary of Key Evidence for Recommendation 8

- Women receiving the NP-led intervention had significant improvements in menopausal symptoms and sexual functioning compared with those in the attention control/usual care group (47). There were no significant differences in vitality.

Justification for Recommendation 8

The evidence consisted of one RCT that demonstrated decreased harms or similar (i.e., no difference) or improved patient outcomes, with no reported harms, with respect to menopausal symptoms in women following breast cancer treatment for NPs working in complementary provider roles.

Qualifying Statements for Recommendation 8

- Study participants were female, and between eight months and five years following a diagnosis of stage I or II breast cancer. They had completed chemotherapy or radiation therapy at least four months prior to study participation, but could be taking tamoxifen (47).
- Study participants had at least one menopausal symptom (hot flashes, vaginal dryness, or stress urinary incontinence) of moderate to severe intensity (47).

Note:

One study evaluated CNS-performed flexible cystoscopy for the follow-up care of patients with bladder cancer (48). Based on the results of this one study, there is insufficient evidence to make recommendations about the use of CNS or NPs as alternate providers to physicians in performing follow-up flexible cystoscopy for patients with bladder cancer.

PALLIATIVE CARE

RECOMMENDATION 9

The complementary addition of CNS care to cancer services may improve HRQL and mental and social well-being for patients with advanced cancer or cancer-related pain while providing similar or improved outcomes related to healthcare utilization.

Summary of Key Evidence for Recommendation 9

- Three studies evaluated very different models of complementary CNS care in providing proactive palliative care services for patients with advanced cancer in oncology settings (49,50) and coaching for cancer pain management (51).
- No studies evaluating NPs were identified.
- The early introduction of CNS palliative care services did not lead to improved HRQL, symptoms, or mood but was associated with increased survival and fewer hospital admissions (49).
- In contrast, Bakitas et al. (50) found higher HRQL and less depression but no differences in symptom severity, survival, hospital days, and intensive care unit days for patients receiving a CNS-delivered self-care program.
- Similarly, a CNS coaching intervention using motivational interview techniques also led to better HRQL, mood, and psychosocial well-being (reduced pain interference) but no improvement in pain attitudes or symptoms (pain relief, pain intensity) (51). Health service utilization outcomes were not evaluated in this study.

Justification for Recommendation 9

The addition of CNS care was similar to usual care for most patient and health system outcomes. No harms were reported for CNS care. In select studies, CNS care led to improved patient outcomes for survival, HRQL, mental well-being, and pain interference and improved health system outcomes related to reduced hospitalization.

END-OF-LIFE CARE

RECOMMENDATION 10

No evidence-based recommendations can be made about the utilization of APN roles for end-of-life care.

Summary of Key Evidence for Recommendation 10

- No comparative studies about the effective use of advanced practice nurses related to end-of-life care were identified.

Justification for Recommendation 10

There is insufficient evidence currently available on which to make a recommendation regarding the use of advanced practice nurses in cancer end-of-life care.

RESEARCH QUESTION #2

What specific patient, provider, or health system outcome indicators are associated with CNS or NP roles?

RECOMMENDATION 11

For those involved in planning, implementing, and evaluating CNS and NP roles (e.g., healthcare administrators, researchers, and advanced practice nurses), careful selection of outcomes that are the target of specific CNS and NP interventions is required.

Summary of Key Evidence for Recommendation 11

- In many studies included in this systematic review, there were findings of no differences between CNS or NP care and usual care for a variety of outcomes. It is possible, that the outcomes are, in fact, similar. Other factors noted in this review may also explain these results including poor intervention design and/or failure to select outcomes that are sensitive or responsive to CNS and NP interventions. The selection of outcomes should be driven by the type of CNS or NP intervention and the need or problem it aims to address.
- Patient outcomes evaluated in studies of CNS or NP roles include HRQL, pain and symptom management, mental health, physical function, performance status, self-care, information needs, satisfaction with care and survival (Table 9A). Of these, HRQL, symptoms, and mental health were the most frequently reported outcomes.
- Health systems outcomes evaluated in studies of CNS and NP roles related to indicators of care quality, healthcare costs, and health service utilization including hospital length of stay, hospital readmission, emergency department visits, number of advanced practice nurse consultations, and number of physician visits (Table 9B). Quality of care indicators were the most frequently reported outcome.

RECOMMENDATION 12

No recommendations can be made about the effectiveness of CNS or NP roles for improving healthcare provider outcomes.

Summary of Key Evidence for Recommendation 12

- No comparative studies about the effective use of advanced practice nurses for improving healthcare provider outcomes, such as job satisfaction, workload, or team functioning, were identified.

Justification for Recommendation 12

There is no evidence currently available on which to make a recommendation regarding the use of advanced practice nurses for improving healthcare provider outcomes.

RECOMMENDATION 13

No recommendations can be made about the cost-effectiveness of CNS or NP roles in cancer control.

Summary of Key Evidence for Recommendation 13

- No studies identified for this review conducted an economic analysis. In the few studies measuring costs, only a direct cost comparison is provided, rather than a comprehensive assessment of the incremental costs and benefits of APN care (37,46,48).
- One study reported on health utilization outcomes for NPs (43). There were no differences in the number of tests ordered but NPs had longer consultation times.
- Longer consultation times were also reported for CNSs (35,46).
- Overall, CNS outcomes related to healthcare utilization including hospital length of stay, hospital readmission, emergency department visits, consultations, physician visits, and tests and investigations were equivalent to standard care, and costs were either similar or reduced (Section 2, Table 11 and 9B).
- Increased costs may be associated with the time required for CNSs to develop cystoscopy skills and experience (48) with the increased number and length of CNS consultations (46).

Justification for Recommendation 13

There is insufficient evidence on which to make a recommendation regarding cost-effectiveness of advanced practice nurses in alternate or complementary provider roles in cancer control.