



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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Phone: 905-527-4322 ext. 42822 Fax: 905 526-6775 E-mail: [ccopgi@mcmaster.ca](mailto:ccopgi@mcmaster.ca)

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### Table of Contents

Section 1: Guideline Recommendations .....	1
Section 2: Evidentiary Base .....	24
Section 3: Development Methods, Recommendations Development and External Review Process .....	76

**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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*Contact Information*

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](mailto:ccopgi@mcmaster.ca)

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