

## Economic evaluation of nurse practitioner and clinical nurse specialist roles: A methodological review



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### ABSTRACT

**Background:** Advanced practice nurses (e.g., nurse practitioners and clinical nurse specialists) have been introduced internationally to increase access to high quality care and to tackle increasing health care expenditures. While randomised controlled trials and systematic reviews have demonstrated the effectiveness of nurse practitioner and clinical nurse specialist roles, their cost-effectiveness has been challenged. The poor quality of economic evaluations of these roles to date raises the question of whether current economic evaluation guidelines are adequate when examining their cost-effectiveness.

**Objective:** To examine whether current guidelines for economic evaluation are appropriate for economic evaluations of nurse practitioner and clinical nurse specialist roles.

**Methods:** Our methodological review was informed by a qualitative synthesis of four sources of information: 1) narrative review of literature reviews and discussion papers on economic evaluation of advanced practice nursing roles; 2) quality assessment of economic evaluations of nurse practitioner and clinical nurse specialist roles alongside randomised controlled trials; 3) review of guidelines for economic evaluation; and, 4) input from an expert panel.

**Results:** The narrative literature review revealed several challenges in economic evaluations of advanced practice nursing roles (e.g., complexity of the roles, variability in models and practice settings where the roles are implemented, and impact on outcomes that are difficult to measure). The quality assessment of economic evaluations of nurse practitioner and clinical nurse specialist roles alongside randomised controlled trials identified methodological limitations of these studies. When we applied the Guidelines for the Economic Evaluation of Health Technologies: Canada to the identified challenges and limitations, discussed those with experts and qualitatively synthesized all findings, we concluded that standard guidelines for economic evaluation are appropriate for economic evaluations of nurse practitioner and clinical nurse specialist roles and should be routinely followed. However, seven out of 15 current guideline sections (describing a decision problem, choosing type of economic evaluation, selecting comparators, determining the study perspective, estimating effectiveness, measuring and valuing health, and assessing resource use and costs) may require additional role-specific considerations to capture costs and effects of these roles.

**Conclusion:** Current guidelines for economic evaluation should form the foundation for economic evaluations of nurse practitioner and clinical nurse specialist roles. The proposed role-specific considerations, which clarify

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application of standard guidelines sections to economic evaluation of nurse practitioner and clinical nurse specialist roles, may strengthen the quality and comprehensiveness of future economic evaluations of these roles.

**What is already known about the topic?**

- Innovative models of health care delivery, such as advanced practice nursing roles (e.g., nurse practitioners and clinical nurse specialists), have been implemented to address challenges of increasing disease burden in the aging population, constantly growing health care expenditures, scarcity of health resources and the need for quality care.
- Systematic reviews, randomised controlled trials and observational studies have reported positive outcomes of advanced practice nursing roles; however, published economic evaluations of these roles are generally of poor quality, and, therefore, cost-effectiveness of these roles is often challenged.
- Conclusive evidence on cost-effectiveness of advanced practice nursing roles is important for making decisions about implementation of these roles and the optimal use of health human resources.

**What this paper adds?**

- A unique approach, which combined multiple sources of evidence (narrative review, quality assessment of economic evaluations of nurse practitioner and clinical nurse specialist roles alongside randomised controlled trials, review of guidelines for economic evaluation, and, input from an expert panel), informed our methodological review.
- The current guidelines for economic evaluation should be followed when planning, conducting and reporting economic evaluations of nurse practitioner and clinical nurse specialist roles.
- Eight of the 15 guideline sections are appropriate for economic evaluation of nurse practitioner and clinical nurse specialist roles and do not require additional considerations, but the remaining seven sections may require additional role-specific considerations to fully capture the costs and effects associated with these roles.
- The role-specific considerations clarify application of the standard guidelines for economic evaluation to the evaluation of nurse practitioner and clinical nurse specialist roles and aim to strengthen the quality and comprehensiveness of future economic evaluations of these roles.

**1. Introduction**

In high income countries, the increasing burden of diseases in the aging population and scarcity of health resources sharpen the need for innovative models of health care delivery to meet the growing demand in care and maximise efficiency of care (Laurant et al., 2005; Liu et al., 2014). Extended roles of non-physician clinicians, such as advanced practice nursing roles, have been recognised as one of the proposed solutions to these challenges (Laurant et al., 2009; Safriet, 1992).

According to the International Council of Nurses, the nurse practitioner/advanced practice nurse is a “registered nurse who has acquired the expert knowledge base, complex decision-making skills and clinical competencies for expanded practice, the characteristics of which are shaped by the context and/or country in which s/he is credentialed to practice. A master’s degree is recommended for entry level.” (International Council of Nurses, 2016). Core advanced practice nursing role domains include direct patient care, research, education, consultation, and leadership activities. Nurse practitioners and clinical nurse specialists are two types of advanced practice nurses. Nurse practitioners are more common in primary care and clinical nurse specialists are more common in acute care settings (Canadian Nurses Association, 2008). Some countries have two additional types of advanced practice nurses: the nurse midwife and the nurse anaesthetist (Heale and Rieck Buckley, 2015).

This paper focuses on nurse practitioners and clinical nurse specialists. Nurse practitioners have advanced competencies to practice autonomously and collaboratively to perform assessments, order laboratory and diagnostic tests, diagnose, prescribe medications and treatments, and perform procedures, as authorised by legislation and their regulatory scope of practice (International Council of Nurses, 2016). Randomised controlled trials and systematic reviews have shown that nurse practitioners deliver high quality care in terms of clinical outcomes and patient and provider satisfaction (Horrocks et al., 2002; Laurant et al., 2009; Newhouse et al., 2011; Tsiachristas et al., 2015). Clinical nurse specialists have a clinical specialty in which they manage the care of complex and vulnerable populations, educate and support interprofessional staff to provide optimal care through use of best evidence, and facilitate change within health care systems (Lewandowski and Adamle, 2009). Randomised controlled trials and systematic reviews have demonstrated that clinical nurse specialist involvement in patient care results in reduced hospital length of stay,

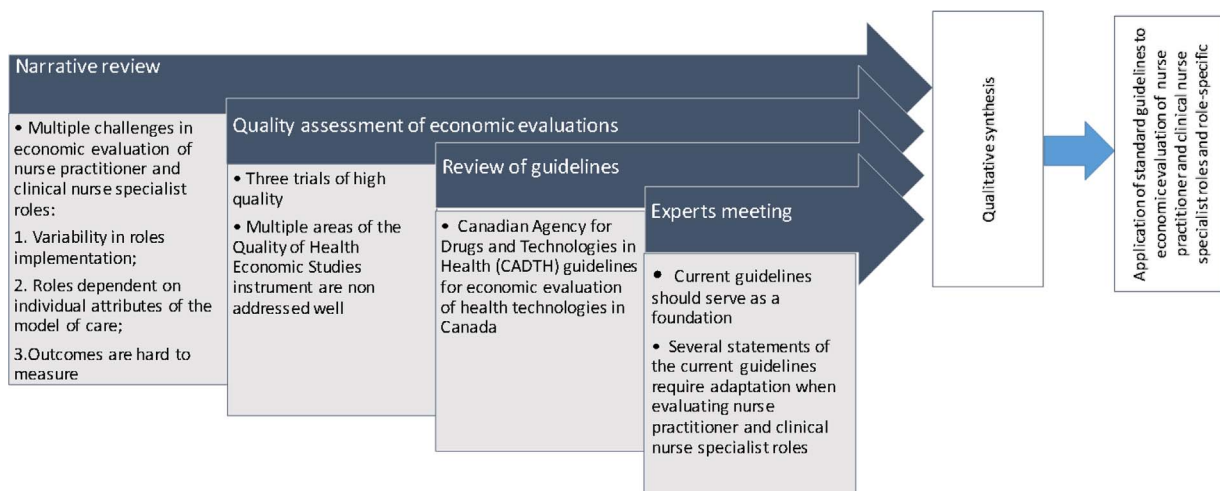


Fig. 1. The process that informed the methodological review of economic evaluations of nurse practitioner and clinical nurse specialist roles.

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