TOURANGEAU OUTCOMES RESEARCH

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The Impact of Home Care Nurse Staffing, Work Environment & Collaboration on Patient Outcomes

APPLIED HEALTH RESEARCH QUESTION (AHRQ):

"What does the literature say about the role of Advanced Practice Nurses and Nurse Practitioners in community care?"

Key Findings

- The delivery of in-home health care services in Canada is a rapidly growing $3.4 billion industry (McWilliam et al., 2003). Homecare agencies are facing escalating acuity of medical care and the need for health care providers with advanced clinical skills and expertise has never been greater (McWilliam et al., 2003; Milone-Nuzzo & Pike, 2001).

- Advanced practice nurses (APNs) have the potential to help bridge the gap between these unique challenges with effective planning and implementation strategies at the national, provincial, and local organizational levels (Cestari & Currier, 2001; Restrepo, Davitt, & Thompson, 2001).

  - Two APN roles exist in Canada, the *clinical nurse specialist* (CNS) and the *nurse practitioner* (NP) (CNA, 2008). Core APN dimensions include research, direct patient care, education, consultation and collaboration, and leadership (CNA, 2008; DiCenso & Bryant-Lukosis, 2010b).

Bryant-Lukosius, D. (2004 & 2008). *The continuum of advanced practice nursing roles.* Unpublished document.

- Understanding the difference between CNS and NP roles can be challenging at times due to the overlap in role competencies, the flexible nature of APN roles, and the notion that APN roles are continually evolving and purposefully dynamic in response to the changing structure of the healthcare system, needs of patients, and organizations (Carter et al., 2010; CNA, 2009; DiCenso & Bryant-Lukosis, 2010b; Elsom, Happell, & Manias, 2006).

- Research consistently demonstrates that APNs are safe and effective health practitioners who have the ability to positively impact the patient, provider, and health care system outcomes (DiCenso & Bryant-Lukosis, 2010b).

- Outcome-based care requires APNs to use evidence based practice and clinical guidelines to collect and analyze data on patient outcomes (Smith, 2012). In turn, these programs will influence best practice and patient outcomes, promote visibility of home care excellence through presentations and publications, and increase the marketability of home services and chronic disease management programs (Dailey & O'Brien, 2000).

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- McWilliam et al. (2003) discuss full scale long-term integration of hospital in the home services requires macro-level decision making including system design, resource allocation, physician and nurse practitioner reimbursement, and professional practice regulations.

- Innovative nursing practice requires APNs to have a *balance* between clinical and non-clinical activities (Bryant‐Lukosius, DiCenso, Browne, & Pinelli, 2004b). APNs value the *non-clinical aspects* (e.g. leadership, research, and education) of the role, thus contributing to role satisfaction (Carter et al., 2010; DiCenso & Bryant-Lukosis, 2010b).

- Lack of *role awareness* among health care team members and the public is a commonly identified barrier to APN role integration (Carter et al., 2010; DiCenso & Bryant-Lukosis, 2010b).

- The Participatory, Evidence-Based, Patient-Focused, Process for Advanced Practice Nursing Role Development, Implementation and Evaluation (PEPPA) framework is a model and process that has been developed to guide the development and utilization of APN roles to overcome role implementation barriers (Bryant-Lukosius & DiCenso, 2004).

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The changing economic tides of the Canadian healthcare system presents unique challenges and complex issues related to the increasing needs of the aging population, inadequate funding models, restructuring of hospitals, and health human resource shortages (Carter et al., 2010; McWilliam et al., 2003). As a result, the delivery of in-home health care services in Ontario is a rapidly growing $2.68 billion industry with home care expenditures anticipated to increase by 80% between 1999 and 2026 (Drummond, Giroux, Pigott, & Stephenson, 2012; McWilliam et al., 2003). Homecare agencies are facing earlier discharges and an escalating acuity of medical care, while the need for health care providers with advanced clinical skills and expertise has never been greater (McWilliam et al., 2003; Milone-Nuzzo & Pike, 2001). Internationally, more than 60 countries have implemented various forms of the advanced practice nurse (APN) roles (Sangster-Gormley, Martin-Misener, Downe-Wamboldt, & DiCenso, 2011). APNs have the potential to help bridge the gap between these unique challenges through the process of effective planning and implementation strategies at the national, provincial, and local organizational levels (Cestari & Currier, 2001; Restrepo et al., 2001). The methodology and search strategy used to answer this AHRQ can be found in Appendix A.

What is an Advanced Practice Nurse (APN)?

According to the Canadian Nurses Association (CNA) (2008), advanced practice nursing is “an umbrella term describing 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” (p.10). Two APN roles exist in Canada: the *clinical nurse specialist* (CNS) and the *nurse practitioner* (NP) (CNA, 2008). Core APN dimensions include research, direct patient care, education, consultation and collaboration, and leadership (CNA, 2008).

Understanding the difference between CNS and NP roles can be challenging at times due to the overlap in role competencies, the flexible nature of APN roles, and the notion that APN roles are continually evolving and purposefully dynamic in response to the changing structure of the healthcare system, needs of patients, and organizations (Bryant‐Lukosius et al., 2004b; Carter et al., 2010; CNA, 2009; DiCenso & Bryant-Lukosis, 2010b; Elsom et al., 2006). A visual representation of the continuum of APN roles can be found in Appendix B. Despite their similarities, differences do exist between the APN roles and will be discussed in the next section.

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Clinical Nurse Specialist (CNS)

CNSs are registered nurses (RNs) who hold a master's or doctoral degree in nursing and have clinical expertise in any given nursing specialty (e.g. cardiology, paediatrics, oncology) (CNA, 2009). The CNS practices within the current scope of the practice of a registered nurse (RN) (CNA, 2009). With in-depth skills and knowledge, clinical experience, and advanced clinical judgement, the CNS provides solutions for complex healthcare issues, develops protocols and clinical guidelines, provides expert support and consultation, promotes the use of evidenced-based practice and facilitates system change (CNA, 2009). Based on self-reported CNS data (no protected title or standard credentialing exists), the numbers of CNSs in Canada have decreased from 2,747 in 2004 to 2,288 in 2006 (Canadian Institute for Health Information (CIHI), 2006). While NPs have greater clinical role responsibilities and spend majority of their time providing direct patient care, CNSs spend proportionately more time on education, organizational leadership, research, and professional development activities (DiCenso & Bryant-Lukosis, 2010b). The CNS role supports high-quality clinical practice environments that emphasize patient safety and system effectiveness (CNA, 2009). The CNA (2009) suggests that in order to determine if the CNS role is required in a service or program, administrators must make decisions based on client needs and healthcare team competencies (e.g. a high percentage of new graduate RNs).

Nurse Practitioner (NP)

Nurse Practitioners (NPs) are "registered nurses with additional educational preparation and experience who possess and demonstrate the competencies to autonomously diagnose, order and interpret diagnostic tests, prescribe pharmaceuticals and perform specific procedures within their legislated scope of practice" (Canadian Nurse Practitioner Initiative (CNPI), 2006. p.4). According to the CIHI (2012), the supply of NPs eligible to practice grew by 96.9% from 2008 to 2012, resulting in a total of 3,286. Also, the number of employed NPs nearly doubled from 1,626 to 3,157 between 2008 to 2012 (CIHI, 2012). It should be noted however that NPs still only make up 1% of the RN workforce in Canada (CIHI, 2012). There are currently three streams of NP practice across Canada: Primary Health Care NP (all ages), NP – Adult, and NP – Paediatric (CNA, 2009b).

The "nurse practitioner" title is protected in all jurisdictions where legislation exists (CNA, 2009b). As of 2012, the Yukon was the last territory in Canada to license NPs, however legislation and scope of practice varies across provinces and territories (CNPI, 2006). In Ontario, the protected title of the Extended Class RN, RN(EC) or NP, is able to work to the full scope of an RN as well as: a) communicate a diagnosis of a

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disease or disorder, b) prescribe a range of drugs (e.g. excluding controlled drugs and substances), c) apply or order a prescribed form of energy (e.g. specific x-ray/ ultrasound), and d) set or cast a fracture of a bone or dislocation of a joint (CNO, 2011). As of May 2015, NPs in Ontario are now able to refer clients directly to specialist services. Previously, NPs had to refer patients to physicians in order receive specialist referrals. As articulated by the CNA (2009) the role of the NP is predominantly clinical, including providing comprehensive care of clients, including curative, rehabilitative, health promotion and disease prevention, and palliative care.

APN Care Activities in Home Care

CNSs are involved with direct patient care including the assessment and management of chronic and acute conditions, engage in health promotion, discharge planning, education and care coordination (DiCenso & Bryant-Lukosis, 2010b). Additionally, CNSs are responsible for developing standardized education programs for patients and staff, clinical and professional development, and facilitate communication between nursing leadership and front-line staff (DiCenso & Bryant-Lukosis, 2010b). Nurse practitioners engage in health surveillance by performing physical exams, ordering laboratory tests, prescribing medication, performing medication reconciliations, performing psychosocial assessments and evaluations, as well as the planning, managing and evaluation of treatment plans (Dick & Frazier, 2006; Hall et al., 2014). NPs also engage in patient and family health teaching, guidance and counselling, initiate referrals to other medical professionals as needed, conduct staff education, and provide case management (DiCenso et al., 2007; Dick & Frazier, 2006; Hall et al., 2014; Milone-Nuzzo & Pike, 2001).

Home Care Research: Effectiveness of APNs

Research consistently demonstrates that APNs are safe and effective health care practitioners who have the ability to positively impact the patient, provider, and health care system outcomes (DiCenso & Bryant-Lukosis, 2010b). An annotated bibliography of approximately 70 studies found that CNS roles were associated with a reduction in costs, emergency room visits, readmissions, and hospital length of stay as well as improvements in staff nurse functional performance and knowledge and higher patient satisfaction (Fulton & Baldwin, 2004). Additionally, a systematic review conducted by Horrocks, Anderson, and Salisbury (2002) compared NPs and physicians providing care in the primary care setting and found that patients who received care from NPs experienced higher satisfaction and better quality of care, with no differences in health outcomes. No differences were found in the number of medications prescribed, return

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visits, or referrals to specialists, however NPs did order more tests and spent longer time with patients (Horrocks et al., 2002). The literature consistently articulates the importance of APNs in regards to transitional care and chronic disease management initiatives (Dailey & O'Brien, 2000; Naylor et al., 2004; Neff, Madigan, & Narsavage, 2003), while conflicting literature continues to exist on the hospital in the home (HTH) model of care (Armstrong et al., 2008; McWilliam et al., 2003).

Transitional Care & APN-Directed Coordination

The transitional care model provides APN continuity of care from hospital to home (Neff et al., 2003). A study conducted by Neff et al. (2003) investigated whether an APN-directed and supervised transitional home care program was superior to routine home care for patients living with Chronic Obstructive Pulmonary Disease (COPD). Investigators determined that patients in the APN-directed group had a significantly shorter lengths of stay 24.4 vs. 32.2 days ($p = < .05$), fewer re-hospitalizations and acute care visits ($p = <.05$), and a significantly higher number of patients who were discharged from the APN group remained at home, compared to the control group, 82.9% and 51.3% respectively (Neff et al., 2003).

In a multisite randomized controlled trial, Naylor et al. (2004) compared APN-directed discharge planning with a 3-month home follow-up to usual care in 239 patients admitted with a diagnosis of heart failure (HF). The average age was 76 and each participant had a mean of 6 active comorbid conditions. APNs made an initial visit within 24 hours of admission, visited daily during the hospitalization, and made at least eight APN home visits including visits within 24 hours of discharge, weekly for the first month, to attend the first follow-up visit with patient's physician, and bimonthly for the second and third months (Naylor et al., 2004).

A major focus of APNs' intervention in the study was placed on preventing functional decline, organizing medication regimens, and working with discharge planners to prevent duplication of post-discharge services and coordinate the ordering of essential medical supplies. APNs conducted targeted in-home physical assessments and health teaching in order to identify early signs of problems such as impending volume overload. Patients were followed for one-year post-hospital discharge. At 52 weeks, the intervention group had significantly fewer readmissions, 104 vs. 162, ($P = 0.047$), and at 12-weeks, the intervention group had significant improvements in overall quality of life compared to the control group (Naylor et al., 2004). APNs were able to manage and prevent readmissions related cardiac symptoms of HF and other comorbid conditions as well as address other psychosocial issues (Naylor et al., 2004).

As per Dailey and O'Brien (2000), there are unique opportunities in the home care setting for CNSs, with the optimal situation involving the collaboration of CNSs

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across the continuum of care (e.g. acute and home care). The development of comprehensive center for excellence (COE) programs by APNs should be considered in areas such as geriatrics, diabetes, oncology, and wound, ostomy, and continence in order to set policies and standards of care (Dailey & O'Brien, 2000). Outcome-based care requires APNs to use evidence-based practice and clinical guidelines to collect and analyze data on patient outcomes (Smith, 2012). In turn, these programs influence best practice and patient outcomes, provide expert consultation, promote visibility of home care excellence through presentations and publications, and increase the marketability of home services and chronic disease management programs (Dailey & O'Brien, 2000).

Hospital in the Home (HTH)

As the hospital sector is the most expensive aspect of the current health care system, alternatives such as hospital in the home where patients who would otherwise be admitted to an acute care hospital, receive medical care in the home, are being investigated (Armstrong et al., 2008). Home-based care provided by NPs is as effective when compared to hospital-based care (Ansari, Shamssain, Farrow, & Keaney, 2009; Whitaker, Butler, Semlyen, & Barnes, 2001). Patients consistently report higher levels of satisfaction and preference to be treated at home (Shepperd et al., 2009; Shepperd & Iliffe, 2005; Stewart et al., 2010). Despite their ability to provide adequate medical care with no increased mortality (Shepperd et al., 2009), the economic effects (e.g. cost savings) of these HTH programs remain inconclusive (Shepperd & Iliffe, 2005).

In a study conducted by Armstrong et al. (2008), researchers investigated whether a home-based intermediate care (HBIC) program would result in cost savings including reduced length of hospital stay, readmissions, and community services post-hospital discharge. The most common diagnoses included COPD (32%), cellulitis (11%), HF (9%), and diabetes (9%). All patients were medically managed by the NP of the program, who made daily home visits and was available by telephone until discharged. Case-control analysis determined that patients enrolled in the program had a significantly longer length of stay (3.3 days, $P < 0.001$), used more community care services following discharge ($729, $P = 0.007$), and were more likely to be readmitted to hospital within 3 months of discharge ($P = 0.12$) (Armstrong et al., 2008).

Despite these findings, investigators discuss that full-scale mature programs, as compared to research studies, will provide the best evidence and “have the advantage of having implemented economies of scale and maximized capacity” (Armstrong et al., 2008, p. 73). Additionally, McWilliam et al. (2003) discuss that full scale long term integration of hospital in the home services require macro-level decision making

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including system design, resource allocation, physician and nurse practitioner reimbursement, and professional practice regulations. Through the process of identifying the successes and barriers to APN role implementation, health care administrators and organizations can appreciate and reflect on the process prior to development and implementation.

The Successes and Barriers with APN Role Implementation

Successes	*Barriers*
• It is imperative that key stakeholders have the *knowledge of the NP role* and a *clear expectation* of NP functions, competencies, capabilities and scope of practice (Carter et al., 2010; Sangster-Gormley et al., 2011).	• Lack of *role clarity* contributes to role conflict, role overload, resistance from other health care team members and variable stakeholder acceptance of APNs (Bryant-Lukosius et al., 2004b; Carter et al., 2010; Sangster-Gormley et al., 2011).
• Strong *administrative support* is associated with APN role satisfaction, role clarity, role autonomy, role innovation and fewer issues related to role conflict and overload (Bryant-Lukosius et al., 2004b).	• *Inexperience* with APNs by those introducing and implementing the role can lead to misinterpretation, under-utilization of the role, improper titling and APNs not working to full scope of practice (Bryant-Lukosius et al., 2004b).
• *Role introduction* including scope of practice and benefits of the NP role should be provided to staff prior to implementation (Carter et al., 2010; Stolee, Hillier, Esbaugh, Griffiths, & Borrie, 2006).	• *Role overload* occurs when APNs lack direction to address the unexpected and excessive role demands (Bryant-Lukosius et al., 2004b).
• *Role acceptance* and the support from the health care team are associated with role satisfaction and APN role implementation (Bryant-Lukosius et al., 2004b; Sangster-Gormley et al., 2011)	• Lack of *role awareness* among the health care team members and public is a commonly identified barrier to APN role integration (Carter et al., 2010; DiCenso & Bryant-Lukosis, 2010b).

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Success	*Barriers*
• The importance of *mentorship and supportive networks* has been documented as a means to assist with role integration, especially for those in their first APN role (Carter et al., 2010).	• *Physician resistance* and lack of staff understanding of the NP role, combined with limited direct contact with the NP have been identified as barriers across various practice settings (Sangster-Gormley et al., 2011).
• The ability for NPs to work to *full scope of practice* is associated with a high degree of independence in decision making (e.g. ordering diagnostic tests and prescribing medication) (Stolee et al., 2006).	• Lack of *role clarity* regarding the multi-dimensional nature of APN roles is a central barrier to the optimal utilization of APNs (Bryant-Lukosius et al., 2004b).
• Innovative nursing practice requires APNs to have a *balance* between clinical and non-clinical activities (Bryant-Lukosius et al., 2004b).	• *Role confusion* occurs when titles such as nurse specialist are applied to different roles with varied educational preparation and scopes of practice (Bryant-Lukosius et al., 2004b).
• APNs value the *non-clinical aspects* (e.g. leadership, research, and education) of the role, thus contributing to role satisfaction (Carter et al., 2010; DiCenso & Bryant-Lukosis, 2010b).	• Regulators noted that *role clarity* is a bigger issue for CNSs vs. NPs due to the lack of protected titling and various dimensions of CNS practice (DiCenso & Bryant-Lukosis, 2010b).
• It is important to choose the *appropriate NP role* – based on the needs of the population, the fit the individual NP, the community and other stakeholders (Carter et al., 2010).	
• APN roles represent a *complementary* addition rather than a transfer of role functions (Bryant-Lukosius et al., 2004b).	

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Implementing an APN: The PEPPA Framework

From a knowledge translation perspective, Bryant-Lukosius et al. (2004b) suggest that by recognizing the challenges to introducing new APN roles, health care administrators consider a role implementation process that is evidence-based, systematic, and collaborative in order to:
a) Provide sufficient data to support the need for a clearly defined APN role,
b) Support the development of a strong nursing orientation for APN care,
c) Promote full utilization of APN knowledge, skills and expertise in role domains,
d) Create supportive environments that enhance APN role development in the health care team and practice setting, and
e) Provide ongoing and rigorous evaluation of APN roles and outcome-based goals (Bryant‐Lukosius et al., 2004b).

The Participatory, Evidence-Based, Patient-Focused, Process for Advanced Practice Nursing Role Development, Implementation and Evaluation (PEPPA) framework is a model and process that has been developed to guide the development and utilization of APN roles and overcome role implementation barriers (Bryant-Lukosius & DiCenso, 2004). The PEPPA framework is an adaptation of two previous frameworks and has been successfully utilized to implement NP roles in the acute, long-term, and primary health care settings (DiCenso & Bryant-Lukosis, 2010b; Martin-Misener, Reilly, & Vollman, 2010; McAiney et al., 2008; McNamara, Giguère, St‐Louis, & Boileau, 2009). This 9-step process (Appendix C) articulates and addresses the steps and strategies for APN role implementation that is relevant to their work environment (Bryant-Lukosius & DiCenso, 2004). McNamara et al. (2009) highlight that the PEPPA framework provided a “strategy and a structure to the process, as well as allowed the team to anticipate and plan for certain events” (p. 324). The framework promotes the optimal use of APN expertise while increases stakeholder understanding of APN roles (Bryant-Lukosius & DiCenso, 2004).

Conclusion

Home health care is at a critical juncture as patients are discharged earlier, with more complex care requirements and higher acuities. APNs have the ability to safely and effectively meet the increasing demands while positively impacting the patient, provider and health care system outcomes (DiCenso & Bryant-Lukosis, 2010b). By understanding the scope of practice and care activities of the CNS and NP, analyzing existing home care research, and discussing the barriers to APN implementation, nursing administrators can utilize frameworks such as PEPPA to successfully engage skillful and experienced APNs in the home care setting.

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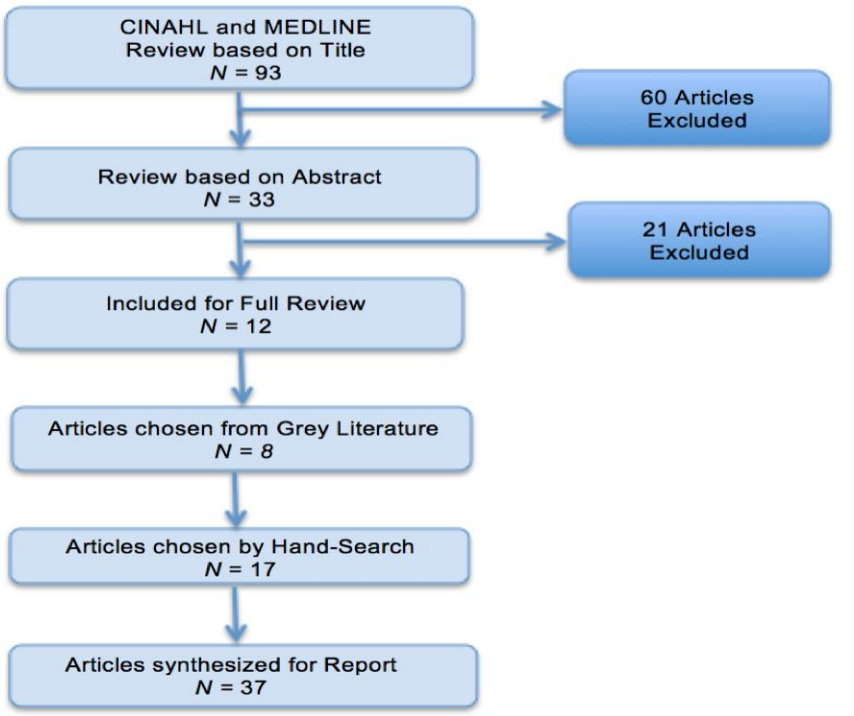
Appendix A: Methods

To identify relevant literature pertaining to the research question, CINAHL and MEDLINE databases were utilized. Search terms included *nurse practitioners,* OR *nurse clinicians,* OR *clinical nurse specialist,* OR *advanced practice nurse,* OR *advanced nursing practice,* AND *home health care,* OR *home visits,* OR *home-based intervention,* OR *in-home care*, *health care utilization,* OR *outcomes (health care),* OR *treatment outcomes.* The searchers were limited to English language and articles published from 2000 onwards.

A total of 93 articles were retrieved through the initial search in MEDLINE and CINAHL. Articles were included if; a) the population of interest received health care in the home, b) the care was delivered by an APN, c) and health care outcomes was examined in relation to APN care. Titles were reviewed according to relevancy and 60 articles were excluded and 33 abstracts were read. A total of 12 articles were read in full and included for full review. Subsequent grey literature was searched including the Canadian Nurses Association (CNA), the College of Nurses of Ontario (CNO), the Registered Nurses' Association of Ontario (RNAO), the Canadian Institute for Health Information (CIHI), and the Canadian Health Services Research Foundation (CHSRF). An additional 8 articles were reviewed and included. Reference lists of the selected articles were hand searched and 17 articles were included for full review. A total of 37 articles were synthesized for this report.



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Appendix B: Continuum of APN Roles

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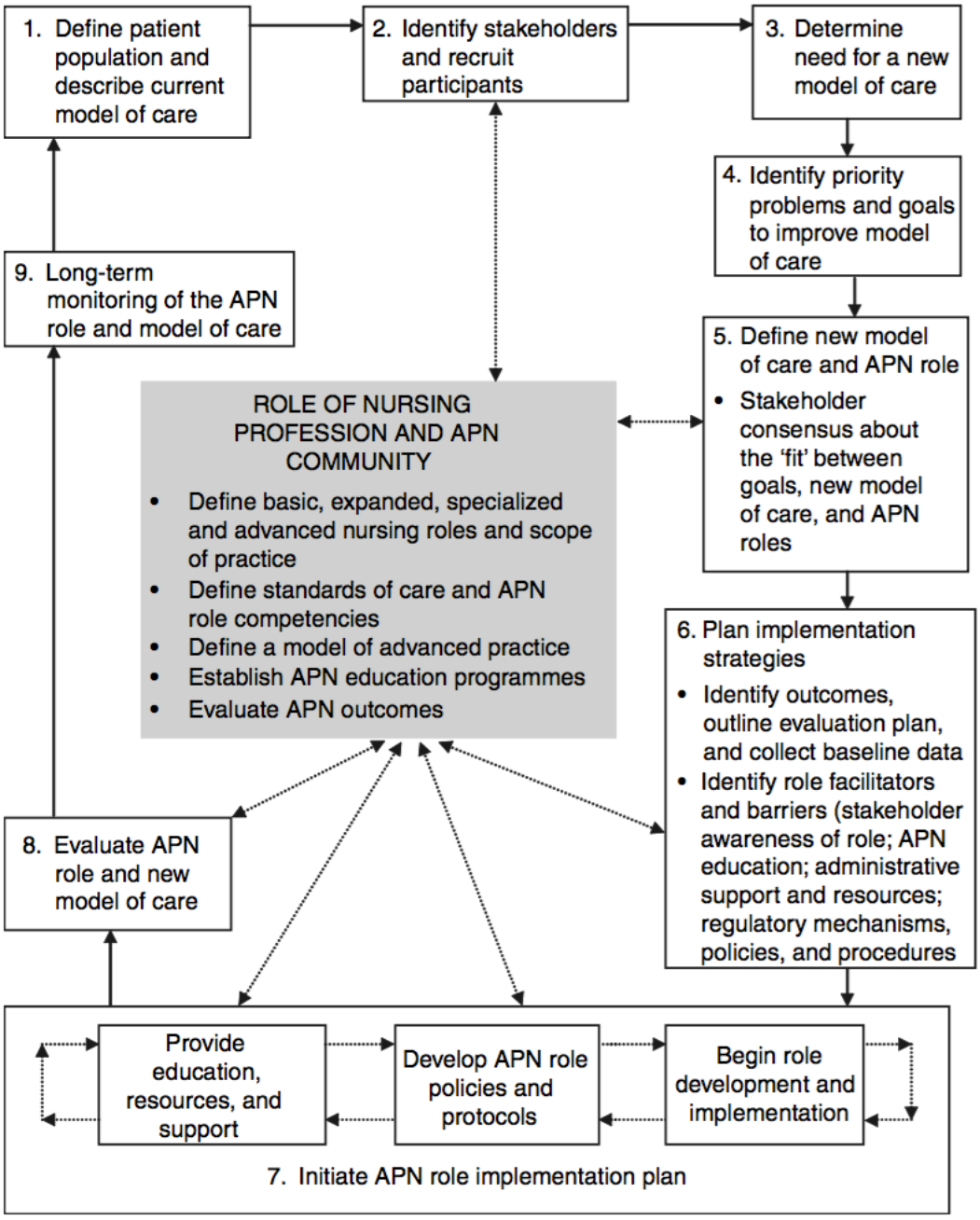
Appendix C: The PEPPA Framework



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