

Evaluating APN Role Outcomes: Current Evidence and New Approaches

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Denise Bryant-Lukosius, RN PhD
Associate Professor, School of Nursing & Dept of Oncology
Co-Director, Canadian Centre for APN Research (CCAPNR)
McMaster University
Hamilton, Ontario, Canada



Yukon

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Northwest Territories

Great Bear Lake

Great Slave Lake

Yellowknife

Nunavut

Iqaluit

British Columbia

Victoria

Alberta

Lake Athabasca

Edmonton

Saskatchewan

Regina

Manitoba

Lake Winnipeg

Winnipeg

Ontario

Lake Superior

Lake Huron

Toronto

Lake Ontario

Lake Erie

Lake Michigan

Quebec

Quebec

Ottawa

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St. John's

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Prince Edward Island

New Brunswick

Halifax

Nova Scotia

Explore the Beauty of Hamilton's Waterfalls



Canadian Centre for APN Research

Co-Directors: Denise Bryant-Lukosius (McMaster), Ruth Martin-Misener (Dalhousie)

Faculty:

- Nancy Carter, Alba DiCenso, Patti Harbman, Diana Sherifali, Ruta Valaitis (McMaster University)
- Faith Donald (Ryerson University)
- Kelley Kilpatrick (University of Montreal)
- Joan Tranmer (Queen's University)

Research Trainees:

Krista Jokiniemi (Post Doctoral Fellow, U. of Eastern Finland)
Linda Brousseau (PhD Student)

Staff: Rose Vonau, Sarah Riekoetter

What are your thoughts?

Evaluating the outcomes of advanced practice nursing roles is.....

Objectives

- Summarize the current evidence, quality, and scope of research evaluating the outcomes of advanced practice nursing (APN) roles
- Identify new approaches and resources for conducting meaningful evaluations of APN roles
- Highlight the importance of communicating the findings of APN outcome studies to health care decision-makers

Advanced Practice Nurse (ICN, 2002 & 2009)

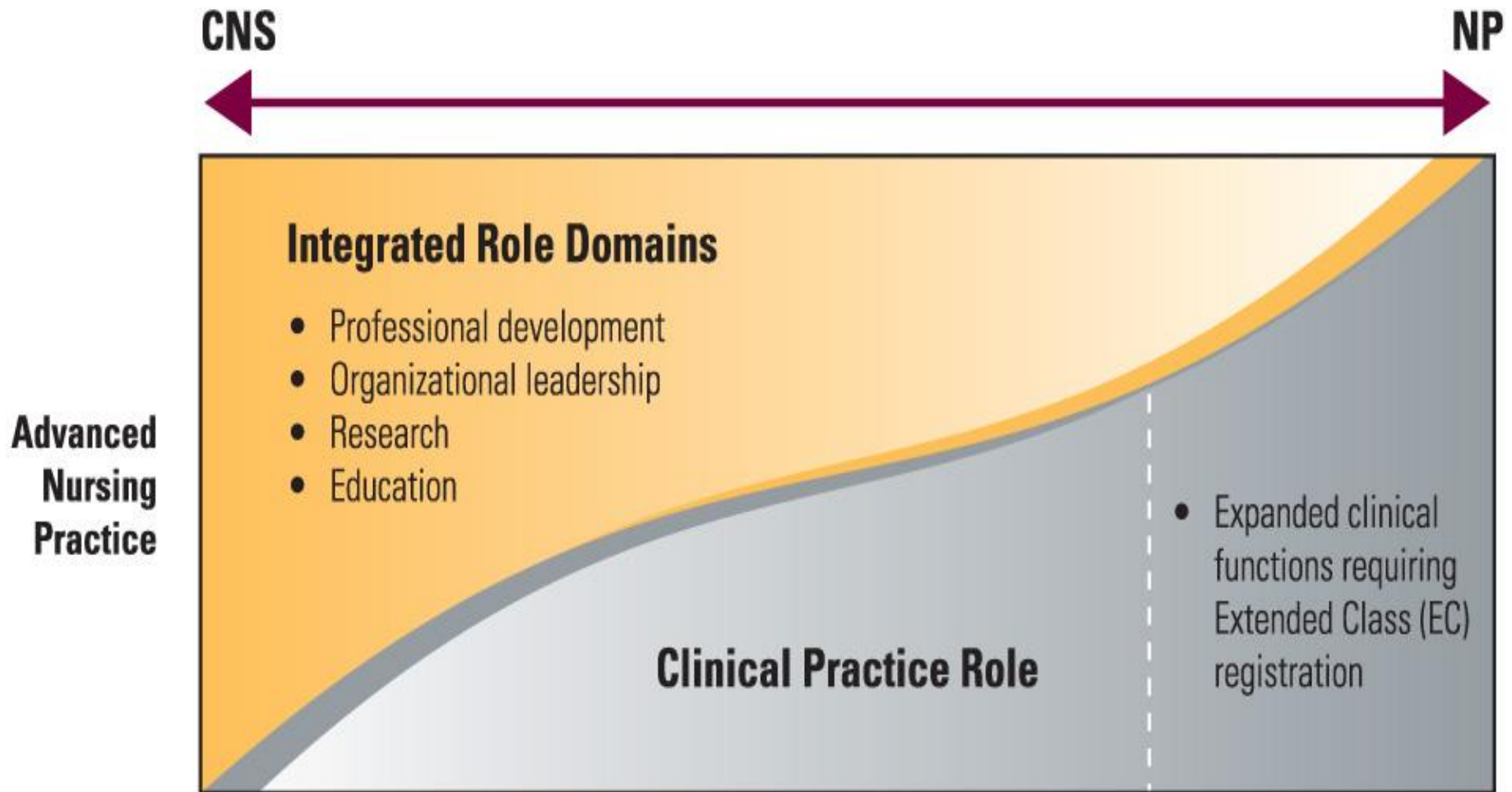
- Registered nurse with the expert knowledge base, complex decision-making skills, and clinical competencies for expanded practice
- Role characteristics are shaped by the context and/or country where the APN works
- A master's degree is recommended for entry level

Types of APN Roles

- There is high worldwide variability in APN education, scope of practice, role titles, regulation, and credentialing.
- 14+ role titles (Pulcini, 2010)
- Common roles:
 - Clinical Nurse Specialist*
 - Nurse Consultant
 - Nurse Practitioner*
 - Nurse Midwife
 - Nurse Anesthetist
- CNS and NP are the most common (Heale & Rieck-Buckley, 2015)



Continuum of APN Roles



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

Aims for Introducing APN Roles

- **Complementary roles**

- Addition to usual care
- To improve patient health outcomes and quality of care and/or reduce health service use and costs

- **Alternative roles**

- Substitute or replace another provider role
- To address workload issues or shortages of providers and at a minimum maintain equivalent outcomes

Evaluating APN Roles as a Health Care Intervention (Spitzer, 1978)

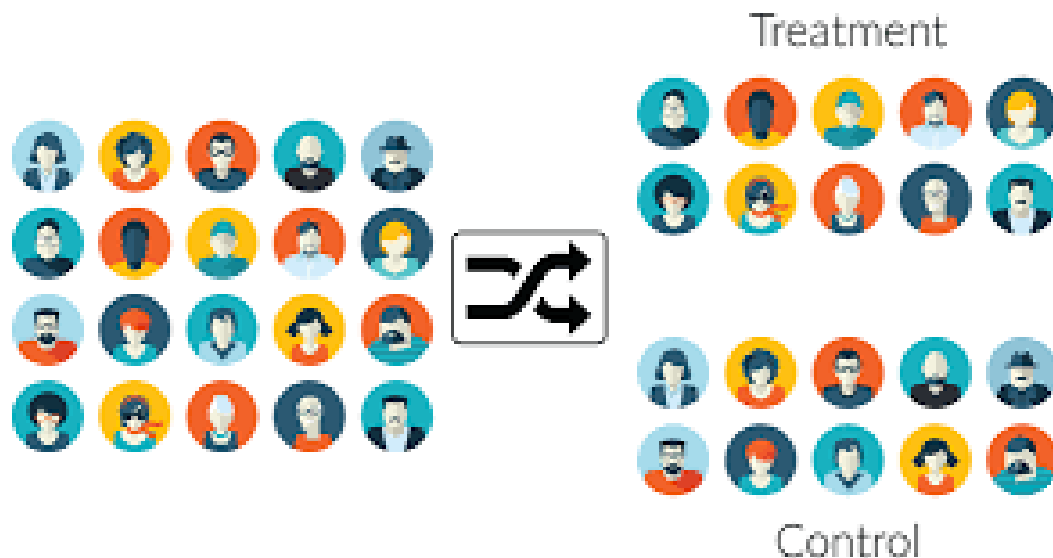
“Proof” about effectiveness in achieving specific outcomes

- safety
- efficacy
- efficiency
- quality of care
- acceptance and satisfaction
- extent of role transfer
- long-term integration

Aims of Randomized Controlled Trials (RCTs) of APN Roles

To make predictions and generalize results to inform decisions about the introduction of APN roles for other similar patient populations and practice settings

Are APN roles more cost-effective compared to other alternatives?



Why Evaluate APN Roles?

- Accountability in health care
 - Demonstrating the value of what has been achieved or gained
 - Value = quality/costs
 - Expectations to provide the highest quality of care for the lowest cost

(Byers & Brunell, 1998; Ingersoll et al., 2000; Sidani & Irvine, 1999)

Recent Systematic Reviews of RCTs of APN Roles

- **APN roles long-term care**
(Donald et al., 2014; Morilla-Herrera et al., 2016)
- **CNS, NP, and Nurse Midwife roles in the United States**
(Newhouse et al., 2011; Stanki-Hutt et al., 2013)
- **APN roles primary health care** (Swan et al., 2015)

Systematic Review of APNs in Long-Term Care

(Donald et al., 2014, Morilla-Herrera, 2016)

- Improvements in
 - rates of depression, urinary incontinence, pressure ulcers, restraint use, and aggressive behaviours
 - meeting personal goals
 - patient and family caregiver satisfaction
 - provision of staff education and consultation to support improvements in resident outcomes
 - reduced hospital readmissions

Outcomes of Well-Designed APN Roles

- ✓ Improved patient satisfaction
- ✓ Increased patient and provider adherence to best practices
- ✓ Better patient health: morbidity, mortality, HRQL, functional capacity and self-care
- ✓ Improved quality of care
- ✓ Improved continuity and coordination of care
- ✓ Reduced acute care service use and costs
- ✓ Increased use of outpatient/home/community services that best meet patient needs

SR of the Cost-Effectiveness of CNS and NP Roles (Donald et al., 2014)

- International literature 1980 to 2012
- Confirmation studies met APN criteria
 - CNSs were master's prepared
 - NPs were graduates of NP specific education program – post baccalaureate or graduate level, and/or licensed as an NP
 - Autonomous role
- APN roles could be isolated from team



SR of the Cost-Effectiveness of CNS and NP Roles (Donald et al, 2014)

- **Primary outcomes of interest:**
 - length of stay
 - re-hospitalization
 - costs of healthcare (e.g., hospital, professional, family costs)
 - health resource use (e.g., diagnostic tests, prescriptions)
- **Secondary outcomes of interest:**
 - Patient: mortality, morbidity, quality of life, satisfaction with care
 - Provider: quality of care, job satisfaction

SR of the Cost-Effectiveness of CNS and NP Roles

(DiCenso, Donald, Bryant-Lukosius et al., 2014)

- **Quality Assessments**
 - Cochrane Risk of Bias
 - Quality of Health Economic Studies
- **Meta-analysis**
 - Where appropriate the results of similar studies were combined and analyzed
- **GRADE criteria**
 - were applied to each outcome within a study to formulate recommendations



Publications of SR Results

(Bryant-Lukosius et al., 2015; Donald et al., 2014 & 2015; Kilpatrick et al., 2014 & 2015; Martin-Misener et al., 2015; Marshall et al., 2015)

NPs

- Hospital to community transitional care by NPs
- Ambulatory Care

CNSs

- Hospital to home transitional care
- Outpatient roles

CNSs and NPs in inpatient roles

Quality of the evidence and economic evaluations of CNSs and NPs

SR of the Cost-Effectiveness of CNS and NP Roles (Donald et al., 2014)

- 43 papers involving 28 studies
- 15 studies reported in multiple papers
- 65% of studies occurred after 2000
- Country of origin
 - US – 70%
 - UK – 14%
 - Netherlands – 9%
 - Canada – 5%
 - Other – 2%



SR of the Cost-Effectiveness of CNS and NP Roles

(Donald et al., 2014; Marshall et al., 2015)

■ Risk of Bias

- **Low (greater certainty/confidence in results) - 41.3%**
- Moderate (less certainty about results) – 41.3%
- High (uncertain, limited confidence in results) – 17.4%

■ Quality of Economic Analyses

- Poor/extremely poor – 87%
- Fair – 6.5%
- **High quality – 3 of 43 studies (6.5%)**



SR of the Cost-Effectiveness of CNS and NP Roles (Donald et al., 2014)

- **Sources of Bias/study limitations due to:**
 - Inadequate reporting of important study methods necessary to assess the validity of the results
 - 57% of studies evaluated only 1 or 2 CNSs or NPs
 - Evaluation of the role or the individual in the role?
 - Inadequate description of the intervention
 - APN role, education, training & experience of the CNS/NP
 - Only 54% of studies evaluated experienced NPs or CNSs

Nurse Practitioners (n=18 RCTs)

	Health Status	Quality of Life	Quality of Care	Patient Satisfaction	Rehospitalization	Cost	Length of Stay
Improved	3	1	4	8	1	3	
Decline						2	
No Difference	13	8	2	4	4	5	5

NP Summary Results

Alternative NP Community/Outpatient Roles

- Moderate to high quality evidence that NPs are effective in providing outpatient primary care and some types of secondary care
- Some evidence of cost effectiveness

Complementary NP Community/Outpatient Roles

- Inconclusive results

Transitional NP roles Alternative & Complementary

- Low quality evidence of equivalent or improved outcomes

Inpatient Alternative NP Role

- Low quality evidence of equivalent patient outcomes, resource use and costs

Clinical Nurse Specialists (n=25 RCTs)

	Health Status	Quality of Life	Quality of Care	Patient Satisfaction	Rehospitalization	Cost	Length of Stay
Improved	7	2	1	6	6	7	6
Decline	1			1			
No Difference	14	9	2	3	5	9	9

CNS Summary Results

Complementary CNS Transition Roles

Low to moderate quality evidence that CNSs

- Reduce mortality rates and improve health outcomes for post-surgical cancer patients
- Achieve equivalent or improved patient outcomes related to heart failure, high risk pregnancy and low birth weight infants despite earlier hospital discharge
- Improve health system outcomes related to lower hospital lengths of stay, readmissions, hospital costs



CNS Summary Results

CNS Outpatient Roles: Alternative & Complementary

- Low to moderate quality evidence of equivalent or better patient and health system outcomes
- High quality evidence in 2 studies of alternative CNS roles related to cost-effectiveness and cost utility
- Weaker evidence about the cost-effectiveness of complementary CNS roles



Cost-Effectiveness

- Only 3/43 studies linked costs to outcomes
- NP Case Management cost \$26 per mg/dL reduction and \$39 for every 1% reduction in cholesterol (Paez et al., 2006)
- NP care saved €925 per one point less in infant quality of life and saved €751 per one point more in satisfaction (Schuttelaar et al., 2011)
- CNS outpatient care for rheumatoid arthritis found equivalent quality of life and utility at lower costs to society of €5400 (Van den Hout et al., 2003)

Conclusions

- **CNS and NP roles are safe and effective**
 - Consistent pattern of result demonstrating equal or improved outcomes across varied types of APN roles, patient populations and practice settings
 - Very few studies report negative effects or consequences of APN roles
- **Uncertainty in some areas about which patient populations and settings APNs have the greatest impact**
 - Many studies reporting improved outcomes favoring APNs
 - Many more reporting no differences in APN outcomes

Conclusions – Evidence Gaps

Need for research on CNS and NP roles related to:

- low and middle income countries
- acute care settings or those caring for pediatric populations
- health care provider outcomes
(e.g., satisfaction with APN role, recruitment, retention, team function)
- non-clinical role activities related to education, research, professional development, and leadership
- cost-effectiveness
- "how" role activities impact on outcomes



Methodological Issues

- Inadequate reporting of methods for randomized controlled trials resulting in risk of bias
- Small sample sizes related to the number of participating APNs and patients resulting in inadequate power to detect small but clinically important differences in outcomes.
- Insufficient details about the APN role which makes it difficult to assess intervention fidelity and generalizability.

Methodological Issues:

Bias in selection and measurement of outcomes

- Emphasis on MD replacement role
- Assume MD benchmarks are the same for APNs
- Outcomes not linked to and thus sensitive to APN interventions



Gaps in APN Role Evaluation:

Lack of a relevant evaluation *framework* resulting in:

- **Lack of role clarity or conceptual understanding of the APN** role and its activities will lead to certain outcomes
- **Lack of attention to the APN dose** or the timing, frequency and intensity of APN-patient interactions
- **Focus on assessing outcomes only** which may have limited benefit for APN roles that are not yet fully developed or implemented



Gaps in APN Role Evaluation:

Lack of an *evaluation framework* with failure to:

- **Determine factors impacting on outcome achievement** and to modify the role/role supports to improve outcomes
- **Distinguish unique APN contributions** within a team
- **Collect baseline data prior to role introduction** for future comparisons



Moving Forward: APN Evaluations

Must....

- Address the complexity of APN roles and health systems
- Generate meaningful information for decision-making about the effective use of the roles to:
 - Address health needs that matter the most to patients
 - Improve access to sustainable and high quality health services
 - Facilitate health human resource planning and appropriate skill mix
 - Improve understanding about the contribution of APN roles
 - Address barriers to successful APN role implementation

Moving Forward in APN Role Evaluations

- Focus on models of interprofessional care vs health provider roles:
 - Models of care with/without an APN
 - Models of APN care
 - APN interventions
- Determine impact on targeted health needs and goals to improve care for specific populations
- Understanding how APN roles and interventions impact on outcomes
 - Synergist effect of clinical and non-clinical role activities

Reframe APN Role Evaluations

The question to be asked is NOT:

“Are APN roles safe and effective?”, but

“How and under what conditions and for which patient populations are APNs most effective for improving patient, health provider, and health systems outcomes?”

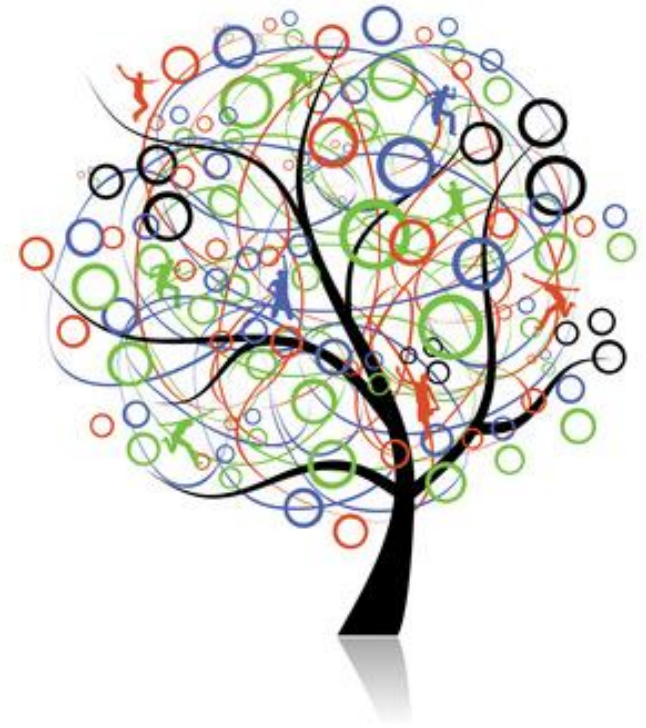
OR.....

“Is the APN role being implemented as planned and making progress in achieving expected outcomes?”

APN Roles: A Complex Healthcare Intervention

(Bryant-Lukosius et al., 2013)

- **Multiple interacting components:** clinical, education, research, leadership, consultation and collaboration
- **Address difficult problems at multi levels**
 - Improve outcomes for patients, families, nurses, other providers, organizations, systems
- **Flexible and responsive** to the dynamic needs and contexts of patient populations served and the environments and practice settings in which they work
(Research Council Craig et al., 2008)



APN Roles: A Complex Healthcare Intervention

(Bryant-Lukosius et al., 2013)

Application of Medical Research Council Guidelines (Craig et al., 2008)

1. Define and understand the problem(s) the ANP role will address
2. Establish stakeholder consensus on desired outcomes
3. Integrate best practices to design the role and determine activities most likely to achieve outcomes
 - What is our understanding or hypotheses about how the role and its varied dimensions will work to achieve specific outcomes?
4. Determine the purpose of the evaluation
5. Selection appropriate methods



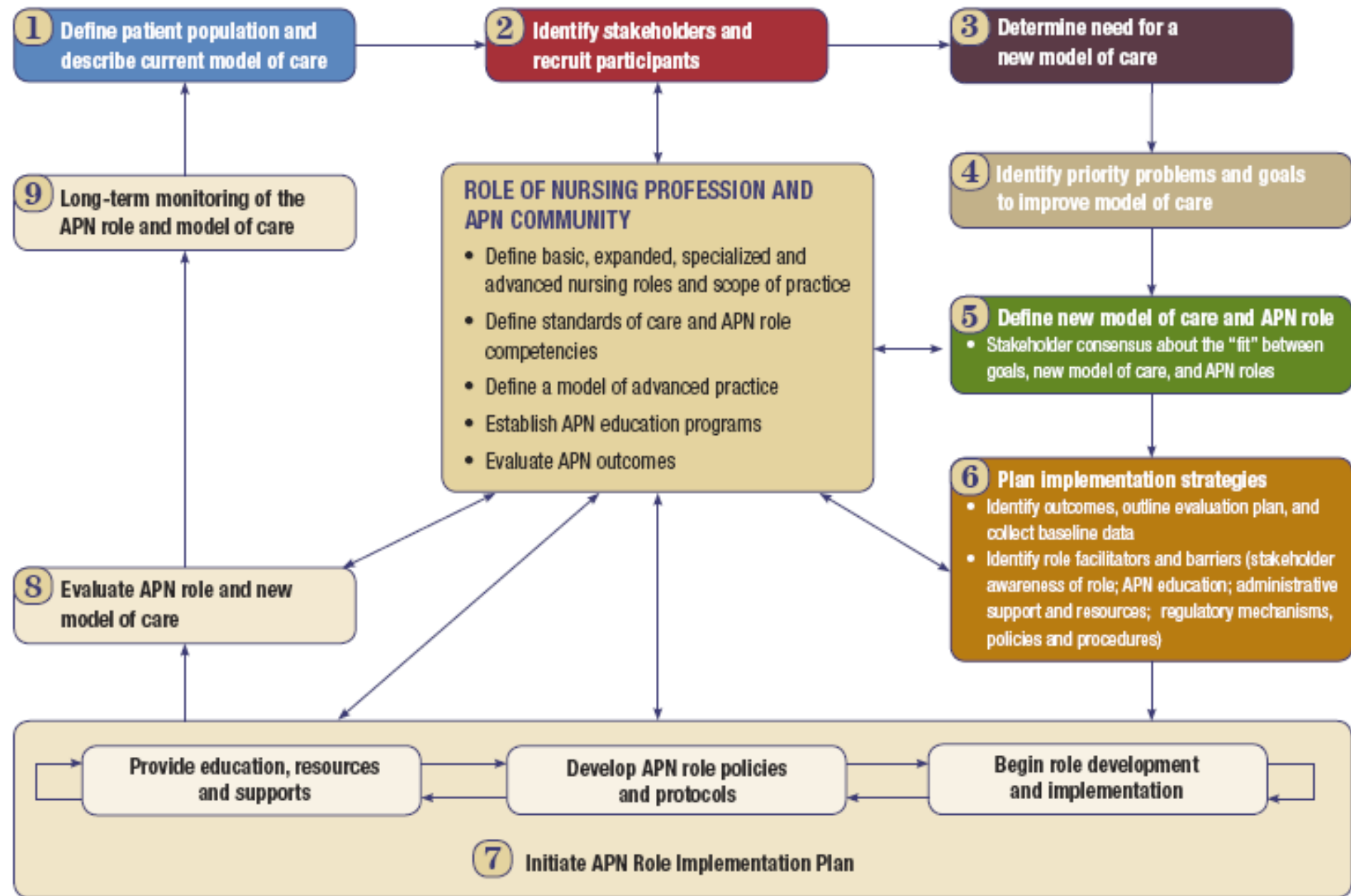
PEPPA-Plus: Enhanced Framework for APN Role Evaluation

(Bryant-Lukosius et al., 2016)



- 3 year project with Swiss colleagues
- Review of the literature on APN outcomes and evaluation frameworks
- Builds on the PEPPA Framework for developing, implementing and evaluating APN roles
- Workshops and stakeholder input on evaluation needs and priorities
- Consensus strategies for framework development
- External peer review for feedback

The PEPPA Framework



Framework Goal

- To promote optimal health outcomes for patients and families and to deliver high quality, patient-centred and cost-efficient care through evidence-informed decision-making about the effective development and use of APN roles in varied practice settings and models of care delivery

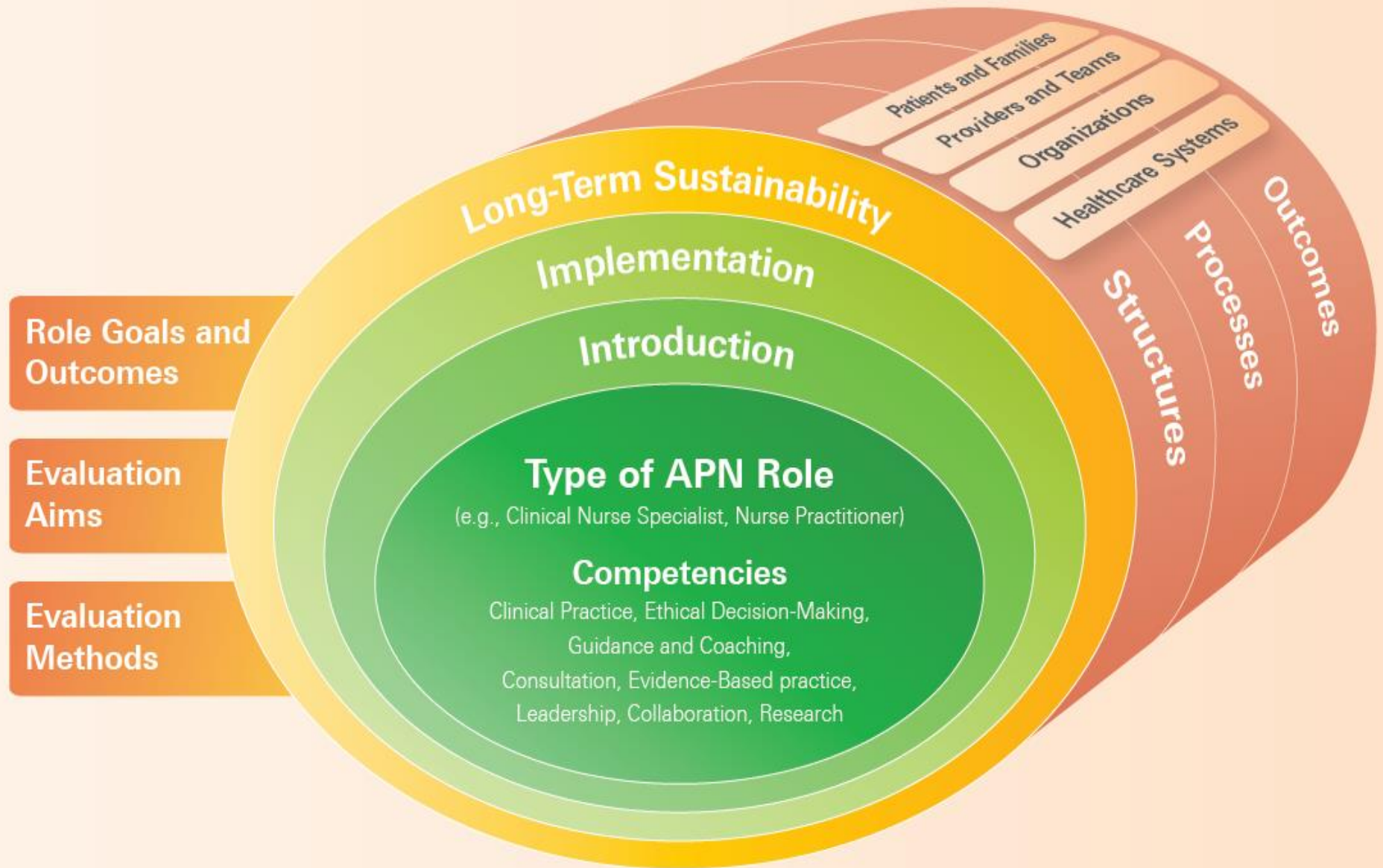
Framework Objectives

- Provide guidance about the sequential steps and systematic approaches for APN role evaluation necessary to produce timely, high quality data
- Identify important information and decision-making needs relevant to different stages of APN role development
- Conduct evaluations that identify and are appropriate for different types of current, emerging and future APN roles
- Integrate the perspectives of relevant stakeholders in the planning, implementation and reporting of APN role evaluations

Target Users

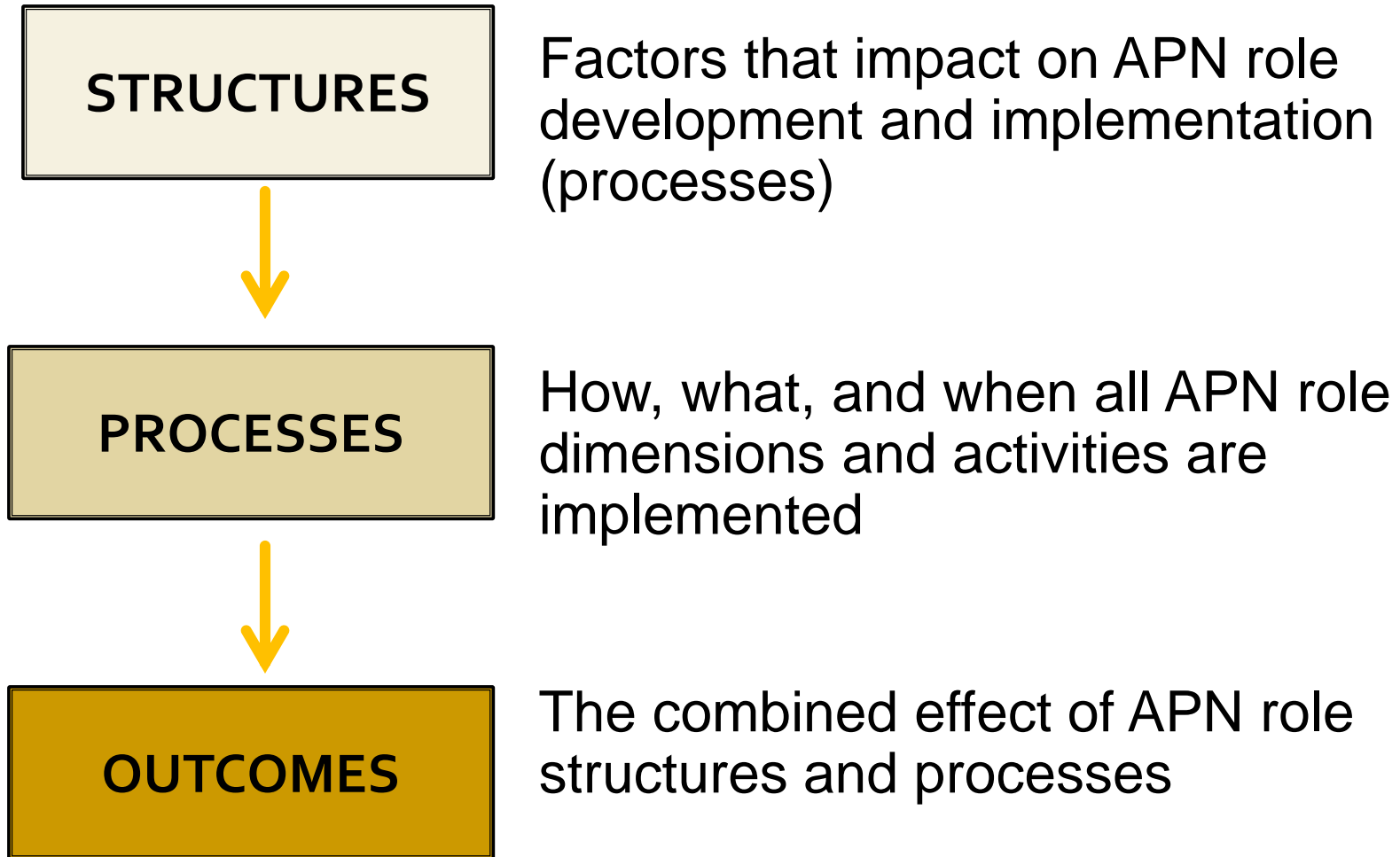
- Government policy makers, healthcare funders, healthcare administrators, nursing associations/leaders
- Researchers, healthcare planners, advanced practice nurses, APN role educators

Evaluation Framework Matrix – Key Concepts for Evaluating Advanced Nursing (APN) Roles



Essential Elements of High Quality Health Care

(Donebedian, 1988)



Use a Variety of Methodological Approaches

- **Evaluation Approach:**
 - Mixed method designs incorporating rigorously controlled methods and other complementary qualitative and quantitative methods
 - Quality improvement initiatives to monitor performance and extent to which acceptable levels of performance or benchmarks are obtained and sustained
 - Use of existing sources of administrative data
 - Include measures of structures, processes and outcomes
 - Strengths in one measure will offset weaknesses in others
 - Aids in interpretation of results
 - Availability, accessibility and quality of data will impact on the quality of evaluation results

Introduction Objectives

- To determine patient, family, healthcare provider/team, organization and health system needs that can be met by APN roles in varied practice settings and models of care delivery.
- To promote APN role clarity among stakeholders by ensuring a good match between identified needs and the type of APN role, role competencies, and scope of practice.

Implementation Objectives

- To ensure that appropriate professional, educational, organizational, and healthcare system policies, funding and resources are in place to support the introduction of varied APN roles in different practice settings and models of care delivery.
- To improve understanding about how APN roles impact patient, family, healthcare provider/team, organization, and health system outcomes.
- To promote optimal utilization and implementation of APN roles and achievement of expected outcomes by monitoring trends in practice patterns including deployment, retention, role activities, and barriers and facilitators to role implementation.

Long-Term Sustainability Objectives

- To demonstrate the long-term benefits and impact of APN roles for healthcare consumers, providers, organizations and the overall healthcare systems.
- To ensure APN roles meet the long-term needs of healthcare systems by identifying ongoing developments, trends and needs for role revision and support.

Framework Application Tools

For each of the 3 role development stages:

- Examples of structures, processes and outcomes
- Evaluation questions

Evaluation plan template

Case study demonstrating
framework application across
the 3 stages



Designing

Innovative Cancer
Services and Advanced
Practice Nursing Roles:

Toolkit



ADVANCED PRACTICE NURSING (APN) Data Collection Toolkit



CHSRF/CIHR Chair in
Advanced Practice Nursing

A compendium of common instruments to measure dimensions of APN for policy makers, managers, researchers, APNs and graduate students involved in APN role development, implementation and evaluation

WHAT IS IT?

A compendium of research instruments or tools used in APN related research. Since searching for instruments using electronic databases can be time consuming, we have developed a web-listing that gives you quick access to APN related data collection tools. The tools are organized to inform development, implementation, and evaluation of advanced practice nursing based on the PEPPA framework¹.

HOW MIGHT THIS TOOLKIT HELP ME?

The APN Toolkit provides tools to support every step of the APN role implementation process: 1) needs assessments to determine the need for the APN role, 2) surveys to plan for implementation, 3) practice pattern instruments to assess role implementation, 4) outcome measures to evaluate patient satisfaction, health provider satisfaction, health status, quality of life, quality of care, health systems outcomes, costs and others.

WHAT INFORMATION IS LISTED FOR EACH TOOL?

Along with the name and reference of the tool, we have listed all available information about the psychometric properties of the instrument and how it is administered. Also listed are other APN studies that have used the tool as well as author contact information, price and availability. Where authors have granted permission, there is a PDF of the instrument available. Additionally, if the full-text of the article is available for free on the web, we have included a link to it.

WHERE CAN I FIND THE TOOLKIT?

Via the APN Nursing Chair website,
<http://www.apnnursingchair.mcmaster.ca>
Look for the red button that says "Click here to enter the APN Toolkit".

WHO CAN I CONTACT FOR MORE INFORMATION?

Julie Vohra, Program Coordinator
CHSRF/CIHR Chair Program in Advanced Practice Nursing
School of Nursing, McMaster University
Health Sciences Centre, Office 3N25M
1200 Main Street West
Hamilton, ON L8N 3Z5
Phone (905) 525-9140 ext. 21286
Fax (905) 524-5199
vohraju@mcmaster.ca

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¹ Bryant-Lukosius, D., & DiCenso, A. (2004). A framework for the introduction and evaluation of advanced practice nurse roles. *Journal of Advanced Nursing*, 48(5), 530-540.

EXAMPLE OF A TOOL AS SUMMARIZED IN THE APN TOOLKIT

Misener Nurse Practitioner Job Satisfaction Scale (MNPJSS)

Original citation: Misener, T. R.,

Scale format: 44 items, each measured using a 6-point Likert scale. Response options: "Very Satisfied" = 6; "Satisfied" = 5;

Factors and Norms: 6 factors, determined by factor analysis:
1) Intrapractice partnership/collegiality; 2) Challenge/autonomy;

Strengths: Easy to administer and score; covers a wide variety of previously published factors associated with job satisfaction.

Disseminating Evaluation Results

- Health care decision-makers often do not have a good understanding of APN roles and their outcomes (Andregard & Jangland, 2014; DiCenso et al., 2010; Schober, Gerrish, & McDonnell, 2016; Wisur-Hokkanen et al., 2015).
- Important to disseminate and translate study findings into formats that facilitate decision-maker understanding and uptake of the results
- They may prefer electronic receipt of concise summaries with key messages, such as in a 1 page briefing note or guideline (Carter et al., 2014; Kilpatrick et al., 2015)

Effective Use of **Advanced Practice Nurses** in Adult Cancer Services

D. Bryant-Lukosius^{1,2}; R. Cosby²; D. Bakker³; C. Earle⁴; B. Fitzgerald¹; V. Burkoski⁵

¹Juravinski Hospital and Cancer Centre; ²McMaster University; ³Laurentian University; ⁴Odette Cancer Centre;

⁵London Health Sciences



THE ISSUE

Sustainable and cost-effective models of care that optimize the expertise of all healthcare team members are needed to meet rising demands for cancer care. In Canada, **advanced practice nursing** (APN) roles are an important and yet underutilized resource for improving **access to timely, high quality, patient-centred care**.

THE PURPOSE

To make evidence-based recommendations about APN roles (i.e., Clinical Nurse Specialist [CNS], Nurse Practitioner [NP]) for optimizing patient, provider, and health system outcomes across the cancer journey.

Patients are similarly satisfied or more satisfied with CNS or NP care compared to standard care.

Better Health for Populations

Compared to usual care, CNSs and NPs had similar or improved health outcomes for quality of life, physical

Following breast cancer treatment, menopausal symptoms may be reduced for women receiving a complementary assessment and intervention program provided by an NP.

For palliative care, the complementary

THE CLINICAL NURSE SPECIALIST

Getting a Good Return on Healthcare Investment



THE ISSUE

Clinical Nurse Specialists (CNSs) contribute to three important aims for transforming the Canadian healthcare system – **better care** for individuals, **better health** for populations and **lower healthcare costs** through their ability to initiate, implement and support innovation to improve the delivery of nursing and healthcare services.

BACKGROUND

and manage risks and complications, plan and coordinate care, monitor and evaluate, and to advocate for health and social

mortality, better quality of life, lower complication rates, and improved physical, functional, and psychological well-being.

THE NURSE PRACTITIONER

A Strategy for Healthcare System Improvement



THE ISSUE

Nurse Practitioners (NPs) can be better utilized to improve healthcare system efficiency, access and quality. NPs contribute to **better care** for individuals, **better health** for populations and **lower healthcare costs**.

BACKGROUND

- ▶ NPs are registered nurses who are licensed in all provinces and territories to autonomously

KEY MESSAGES

Better Care for Individuals

- NPs increase access to high quality care in primary healthcare clinics, reduce wait times

management for chronic but stable conditions like diabetes or high blood pressure and improved patient outcomes.

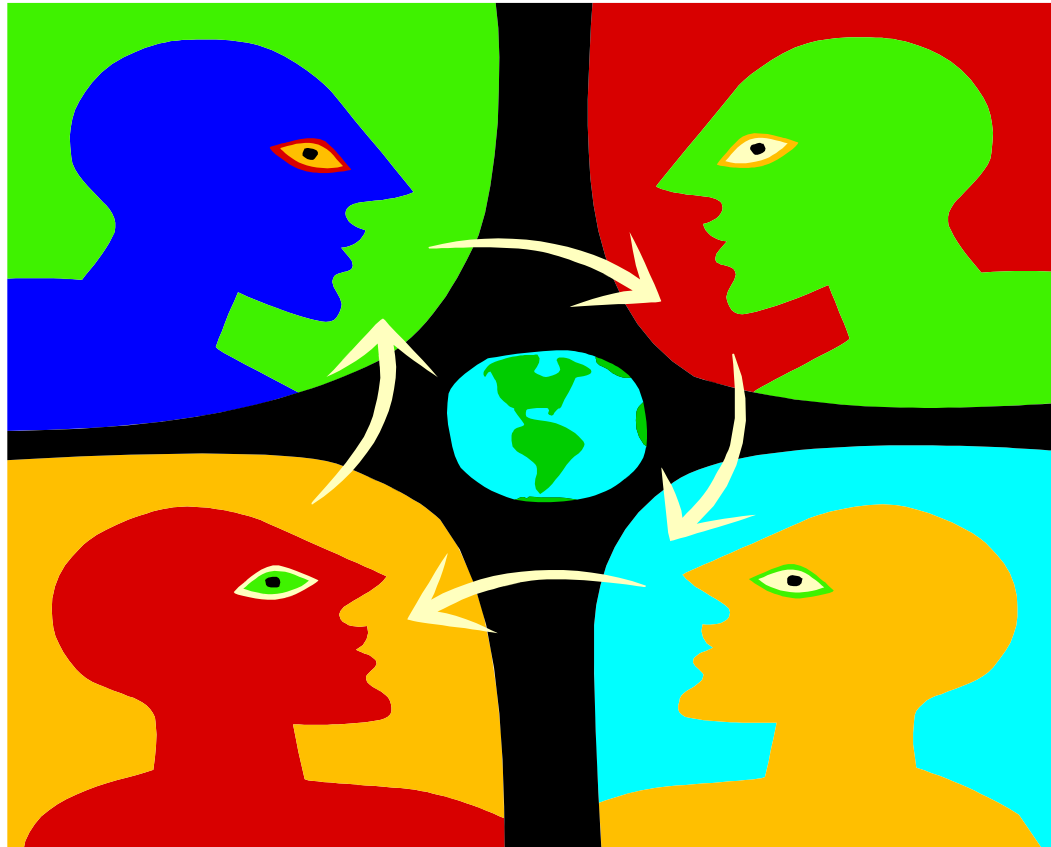
- NPs increase access to primary

Take Away Messages

Meaningful APN role evaluations:

- ✓ Consider role development and implementation factors by linking role structures, processes and outcomes
- ✓ Promote role clarity
- ✓ Reflect stakeholder consensus on priority role goals and expected outcomes
- ✓ Assess a comprehensive package of advanced practice nursing services (clinical practice, education, research, leadership)
- ✓ Inform strategies and decisions to improve the model of care and APN role

Questions and Discussion



Thank You.....

Contact: bryantl@mcmaster.ca