

Health Services Researcher Pathway

This was developed as part of a commissioned research project by the Michael Smith Foundation for Health Research. This project was completed by the following Project Team in 2012-13:

Project Lead: Noreen Frisch Host institution: UVic	Director, School of Nursing, University of Victoria; Co-Leader, InspireNet nfrisch@uvic.ca
Co-lead: Sherry Hamilton	Chief Nursing & Liaison Officer, Provincial Health Services Authority
Elizabeth Borycki	Assistant Professor, School of Health Information Science, University of Victoria
Barb Lawrie	Executive Director, Clinical Education in Employee Engagement, Vancouver Coastal Health
Maura MacPhee	Associate Professor, School of Nursing, University of BC
Anastasia Mallidou	Assistant Professor, School of Nursing, University of Victoria
Grace Mickelson	Corporate Director, Academic Development, Provincial Health Services Authority
Monica Redekopp	Director, Professional Practice, Nursing & Allied Health, Richmond HSDA, Vancouver Coastal Health
Lynne Young	Professor, Associate Director Graduate Education, Coordinator PhD Program, School of Nursing, University of Victoria
Project Staff	
Pat Atherton	Project Manager, School of Nursing, University of Victoria
Mary Converse	Research Assistant, School of Nursing, University of Victoria
Gurprit Randhawa	Research Assistant, School of Health Information Science, University of Victoria

Contents

Preamble	3
Purpose	3
Pathway Development Process	3
Pathway Description	3
Uses of the Pathway	5
Practicing nurses	5
Organizations	5
Overview: Nurse Professional Development Tool - Research Competencies	5
Health Services Researcher Pathway.....	6
Criteria for Competencies, By Level.....	10

Preamble

Purpose

The Health Services Researcher Pathway (“Pathway”) articulates how nurses may progress throughout their careers in developing knowledge, skills and attitudes (that is, competencies) related to research and research use. The intent of the document is to describe nurses’ research competencies across their career and to support research utilization at point of care, where most nurses work.

Pathway Development Process

The Pathway was developed by a project team commissioned by the Michael Smith Foundation for Health Research. The team derived the Pathway from: (a) the published literature, both peer-reviewed and grey literature; and, (b) the voice of practice represented by stakeholders from various areas and levels of practice in British Columbia and a series of focus groups/interviews with nurses in practice.

As much as possible, the Pathway represents a consensus of what is known from published work and from practice.

Pathway Description

The Pathway includes 5 levels:

- **Level 1 Research User:**
The Nurse Learning About Research Use in Care Delivery Settings
- **Level 2 Research User:**
The Nurse Using Research in Care Delivery Settings
- **Level 3 Research User:**
The Nurse Facilitating and Leading Research Use in Care Delivery Settings
- **Level 4 Research Producer:**
The Nurse as a Beginning Researcher
- **Level 5 Research Producer:**
The Nurse as a Research Scientist Leading a Program of Research

The Pathway integrates 3 components of research:

1. Research Process
2. Data Analysis Literacy
3. Knowledge Translation

We present the pathway as levels of competency – not laddered steps. We have recognized, particularly through our interactions with nurses in focus groups, that competencies are actually a continuum and that nurses acquire knowledge, skills and attitudes in differing ways – professional development is neither a linear nor an ‘all or nothing’ process. The Pathway as a continuum provides a way of illustrating and documenting something in a fashion that we might experience as a whole or as a growing awareness.

Practicing nurses have indicated that they see themselves as:

- meeting competencies in more than one level and they often describe themselves as ‘between’ levels – meeting some competencies of one level (but not all) and also meeting some competences of other levels
- ‘more in one level than another,’ but very few indicate that they achieve all of one level before progressing to the next
- having learned material on research in school or elsewhere, but feeling that if they aren’t using the content, they lose ability to recall and use the content

The use of these levels is to be able to assess one’s competency and to describe placement based on a ‘best fit’.

Figure 1 below illustrates the Pathway

Health Services Researcher Pathway Figure



Figure 1: *Health Services Researcher Pathway*

Levels 1-5 in the Pathway are fluid, meaning that a nurse can move between levels or have competencies in more than one level at a time. All levels lead to achievement of the Pathway goal: Nursing health workforce development through nursing knowledge use and generation. Nurses’ abilities to take up research and develop competencies are supported by their academic/practice environment. In order to be successful, these environments include a: (a) supportive organizational culture; (b) foundation of academic-practice partnerships; (c) robust information and communication technology [ICT] platform; and, (d) strategy for sustainability,

promoting partners working together for ongoing development to support successful use of the Pathway.

Uses of the Pathway

The Pathway guides the education and professional development of nurses in the research domain and can be used in a number of ways.

Practicing nurses:

- Can use the Pathway and Professional Development Tool to:
 - assess their own learning needs related to research
 - prepare a professional development plan
 - identify learning resources

Organizations:

- Can use the Pathway as an adjunct to:
 - the professional practice standards published by nursing regulatory bodies
 - curriculum competencies adopted by schools of nursing
- Can embed components of the Pathway in:
 - already existing competency tools
 - professional development tools
 - job descriptions
- Can use the Pathway to support:
 - employee performance planning and development
 - professional development plans

Overview: Nurse Professional Development Tool - Research Competencies

The Pathway includes a comprehensive Nurse Professional Development Tool for nurses' research competencies. This has been designed for use as a self-assessment tool as well as for others supporting nurses such as educators/ managers to work with an individual to identify individual learning plans. Links to self-study resources are provided.

Health Services Researcher Pathway

			Level 5: Research Producer
		Level 4: Research Producer	<i>The Nurse as a Research Scientist Leading a Program of Research</i>
		Level 3: Research User	
Level 2: Research User	Level 1: Research User		
<i>The Nurse Using Research in Care Delivery Settings</i>	<i>The Nurse Learning About Research Use in Care Delivery Settings</i>		

1. Research Process

<i>Knowledge</i>	<ul style="list-style-type: none"> ▶ Defines evidence-based practice (EBP) ▶ Distinguishes between research and quality improvement (QI) ▶ Explains the importance of QI to safe care delivery 	<ul style="list-style-type: none"> ▶ Describes basic research knowledge (e.g. research ethics, research question, hypothesis, qualitative and quantitative data analyses methods) ▶ Describes how healthcare information and communication technologies support EBP ▶ Explains QI processes and models ▶ Describes own role and that of others in research and QI processes ▶ Understands the contributions of the patient/family perspective and varying disciplines to nursing and health services research 	<ul style="list-style-type: none"> ▶ Describes the research facilitation role and function ▶ Describes emerging knowledge and best practices in facilitation of research and knowledge translation ▶ Describes program and organizational priorities for research use in care delivery settings ▶ Describes organizational and other resources to support research learning ▶ Describes the role and benefits of research collaborations: <ul style="list-style-type: none"> - academic-practice - interdisciplinary / interprofessional 	<ul style="list-style-type: none"> ▶ Understands research designs (i.e. qualitative, quantitative, mixed-methods) ▶ Describes theoretical frameworks that underpin various research methods ▶ Describes the challenges of measurement in research (e.g. tool standardization, validity, reliability) ▶ Understands the methods of conducting knowledge syntheses ▶ Knows about the peer-review process 	<ul style="list-style-type: none"> ▶ Expertise in at least one identified research methodology ▶ Understands theories/conceptual models to explain phenomena in the health services sector ▶ Describes multiple methods of designing research projects ▶ Describes current information technology and communications (ICT) strategies to support own research program ▶ Understands various research program structures and approaches
------------------	---	--	--	---	---

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Skills</p>	<ul style="list-style-type: none"> ▶ Follows agency protocols and guidelines for practice to enact EBP ▶ Finds and reads research reports relevant to own practice area ▶ Accesses digital formats of clinical practice guidelines and agency-approved protocols ▶ Engages in activities related to quality improvement, such as filling out surveys, assisting with quality improvement campaigns (e.g. hand hygiene) ▶ Collaborates on QI activities with the interprofessional / interdisciplinary team, inclusive of patients/clients and families 	<ul style="list-style-type: none"> ▶ Interprets EBP protocols for relevancy in a particular context ▶ Conducts a literature review on a topic relevant to practice ▶ Collaborates effectively with a team of researchers ▶ Participates in policy development to guide quality improvement and delivery of care ▶ Integrates quality improvement principles and activities into nursing practice ▶ Works collaboratively with all participants, including patients/ clients/ families, to evaluate care and services 	<ul style="list-style-type: none"> ▶ Facilitates team identification of research and evaluation questions ▶ Suggests research approaches to health-related problems ▶ Establishes ongoing relationships with researchers to support practice-based research ▶ Facilitates quality improvement projects ▶ Interprets standards for quality improvement relative to a particular setting 	<ul style="list-style-type: none"> ▶ Develops appropriate curriculum vitae to support research proposals ▶ Designs evaluation or research protocols for specific contexts ▶ Manages a research project ▶ Collects quality quantitative and qualitative data ▶ Stores data in an appropriate format ▶ Uses reference management software (e.g. Refworks, EndNote) ▶ Develops logic models when needed to differentiate goals, objectives, process and outcomes ▶ Contributes to an interdisciplinary/ interprofessional research team ▶ Identifies and applies to eligible local and/or institutional research funding ▶ Participates in the peer-review process ▶ Consults with stakeholders to inform research project ▶ Precepts and mentors graduate students and staff for research ▶ Conducts various types of knowledge syntheses (e.g., scoping review, systematic review) ▶ Synthesizes knowledge and presents research evidence from disparate sources 	<ul style="list-style-type: none"> ▶ Leads a program of research ▶ Directs operations of a research unit: managing staff, finances, facilities, partnerships ▶ Develops partnerships with government, industry, academia and funders to support research endeavours ▶ Mentors new researchers ▶ Uses research findings to influence policy ▶ Participates in round tables as an expert ▶ Consults with stakeholders to inform research priorities ▶ Independently or within interdisciplinary teams designs, develops, implements and evaluates quality improvement and research projects studies ▶ Uses advanced data analysis techniques ▶ Commits to developing a research program ▶ Is committed to knowledge translation, diffusion, application and dissemination activities
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Attitude</p>	<ul style="list-style-type: none"> ▶ Curious and willing to learn about research 	<ul style="list-style-type: none"> ▶ Appreciates how practice can inform research and vice versa ▶ Values active engagement of front-line staff in quality improvement and research ▶ Embraces continued learning about new technologies to support practice 	<ul style="list-style-type: none"> ▶ Embraces using technology for quality improvement and research purposes ▶ Values the role of research and quality improvement mentors and support ▶ Committed to collaborations for quality improvement and research 	<ul style="list-style-type: none"> ▶ Committed to developing self as a researcher 	<ul style="list-style-type: none"> ▶ Values commitment to a research program as one’s primary professional work ▶ Committed to developing others as researchers

2. Data Analysis Literacy

Knowledge	<ul style="list-style-type: none"> ▶ Understands descriptive and inferential statistics ▶ Understands qualitative and quantitative data analyses methods 	<ul style="list-style-type: none"> ▶ Understands application of descriptive and inferential statistics found in research papers ▶ Understands the steps of each (or the main) qualitative method(s) data analysis 	<ul style="list-style-type: none"> ▶ Knows how to interpret qualitative and quantitative research reports 	<ul style="list-style-type: none"> ▶ Understands advanced statistical analysis techniques ▶ Understands various methods of data analysis 	<ul style="list-style-type: none"> ▶ Expert level in analysis methods relevant to own research program
Skills	<ul style="list-style-type: none"> ▶ Reads research reports, identifies descriptive, inferential statistics and understands qualitative and quantitative data analyses 	<ul style="list-style-type: none"> ▶ Collects, stores, retrieves and uses accurate data ▶ Uses basic statistics and qualitative techniques in nursing research 	<ul style="list-style-type: none"> ▶ Draws inferences from appropriate data ▶ Uses data management tools ▶ Demonstrates ability to conduct simple/basic qualitative and quantitative data analyses 	<ul style="list-style-type: none"> ▶ Critically and accurately analyzes research data within one's level of expertise 	<ul style="list-style-type: none"> ▶ Interprets data at an expert level ▶ Manages large datasets and supervises the data cleaning process ▶ Able to develop data sharing agreements ▶ Maintaining high standards of data integrity ▶ Analyzes data (and/or consults experts) related to own research program/projects
Attitude	<ul style="list-style-type: none"> ▶ Values the use of statistics and systematic data analysis methods ▶ Values the use of qualitative data analysis methods 	<ul style="list-style-type: none"> ▶ Appreciates the process of conducting qualitative and quantitative research 	<ul style="list-style-type: none"> ▶ Values data analysis in the workplace 	<ul style="list-style-type: none"> ▶ Values diverse sources of data to better inform practice ▶ Values continuing education to advance own knowledge and skills as a researcher 	<ul style="list-style-type: none"> ▶ Values rigorous and laborious data analysis techniques for qualitative, quantitative and mixed methods studies ▶ Values sharing data for public good

3. Knowledge Translation

<p>Knowledge</p>	<ul style="list-style-type: none"> ▶ Identifies credible and reliable sources of knowledge on which to build practice decisions relevant to own care delivery setting (e.g. publications, library, online information, knowledgeable professionals) ▶ Understands literature search methods and how to access searching tools 	<ul style="list-style-type: none"> ▶ Identifies unit and organizational opportunities (e.g. rounds, communities of practice, journal clubs) and resources to support knowledge sharing ▶ Distinguishes between single studies and synthesized knowledge ▶ Understands the concept of strength of evidence 	<ul style="list-style-type: none"> ▶ Describes best KT practices ▶ Describes theories and models to guide development of KT plans ▶ Understands workplace supports associated with effective KT activities 	<ul style="list-style-type: none"> ▶ Describes methods to evaluate the effectiveness of KT activities 	<ul style="list-style-type: none"> ▶ Understands how to build a KT function within a research program
<p>Skills</p>	<ul style="list-style-type: none"> ▶ Performs literature searches using health knowledge databases ▶ Integrates research findings with clinical expertise and patient needs for optimal care ▶ Identifies inconsistencies between research findings and expertise or patients' preferences in their practice environment 	<ul style="list-style-type: none"> ▶ Shares relevant research findings with the team ▶ Collaborates with the team to change practices in response to research findings ▶ Promotes and supports KT activities 	<ul style="list-style-type: none"> ▶ Implements a KT project within an organization ▶ Translates concrete research findings into a user-friendly form ▶ Uses research-based evidence to address a unit or organization-wide clinical problem 	<ul style="list-style-type: none"> ▶ Uses research findings as a persuasive or political tool to legitimate a position or practice (i.e. symbolic or persuasive research use) ▶ Develops, implements and evaluates theory-informed end-of-grant KT and integrated KT plans ▶ Builds ongoing relationships with research users to support KT activities 	<ul style="list-style-type: none"> ▶ Implements and evaluates KT strategy for own research program ▶ Builds capability within the research program team for successful KT strategies
<p>Attitude</p>	<ul style="list-style-type: none"> ▶ Intends to use research findings to advocate for practice improvements ▶ Expresses interest in learning about uses of evidence to improve practice 	<ul style="list-style-type: none"> ▶ Values staff awareness & involvement in of research activities ▶ Appreciates the importance of knowledge translation for practice innovation ▶ Values the development of ongoing research in the workplace ▶ Exhibits a willingness to take on leadership in knowledge translation activities 	<ul style="list-style-type: none"> ▶ Values the ongoing translation of new knowledge into practice ▶ Values a research culture in the workplace 	<ul style="list-style-type: none"> ▶ Appreciates research-practice interface as an essential part of own professional work 	<ul style="list-style-type: none"> ▶ Compelled to produce and disseminate knowledge for the public good

Health Services Researcher Pathway Criteria for Competencies, By Level

Criteria for Competencies

Level 1: *Research User*

The Nurse Learning About Research Use in Care Delivery Settings

Competencies

Criteria

1.1. Research Process

<i>Knowledge</i>	<ul style="list-style-type: none"> ▶ Defines evidence-based practice (EBP) ▶ Distinguishes between research and quality improvement (QI) ▶ Explains the importance of QI to safe care delivery 	<ul style="list-style-type: none"> ▶ Do you know what.... Direct research utilization is? The contribution of research in EBP is? The relationships between EBP and the research process are? QI is? The differences between research and QI are? The importance of QI process to ensure quality and safe care delivery is? The differences and similarities between EBP and EIP are?
<i>Skills</i>	<ul style="list-style-type: none"> ▶ Follows agency protocols and guidelines for practice to enact EBP ▶ Finds and reads research reports relevant to own practice area ▶ Accesses digital formats of clinical practice guidelines and agency-approved protocols ▶ Engages in activities related to quality improvement, such as filling out surveys, assisting with quality improvement campaigns (e.g. hand hygiene) ▶ Collaborates on QI activities with the interprofessional / interdisciplinary team, inclusive of patients/clients and families 	<ul style="list-style-type: none"> ▶ Do you usually/regularly... Follow agency protocols and guidelines for EBP? Read research reports and articles relevant to your own practice area? Double check research reports/identify sources used to inform protocols, guidelines, policies and procedures in your practice environment? Use simple computer programs to save time and improve practice based on evidence? Use social media to keep informed? Participate in activities related to QI (e.g., assisting with QI campaigns such as hand hygiene)? Involve/work with other researchers in an inter-professional/interdisciplinary team that includes patients and their families?
<i>Attitude</i>	<ul style="list-style-type: none"> ▶ Curious and willing to learn about research 	<ul style="list-style-type: none"> ▶ Do you usually/regularly... Wonder how you might apply research findings of a report into your practice environment? Compare nursing practice before and after research contribution to it? Feel enthusiastic and want to learn more about research initiatives in your own practice area? Attend in-service classes to learn the full use of institutional databases? Take classes to improve your skills and knowledge relevant to technology? Try to convince colleagues to follow your or others' positive attitude? Attend quality forums and other events to learn more about QI activities in your healthcare setting? Volunteer to represent nursing in interdisciplinary patient care conferences? Appreciate collaborative interdisciplinary research projects and look for opportunities to participate in studies? Remain eager to learn more about the research process from various perspectives/collaborators?

1.2. Data Analysis Literacy

<i>Knowledge</i>	<ul style="list-style-type: none"> ▶ Understands descriptive and inferential statistics ▶ Understands qualitative and quantitative data analyses methods ▶ Understands descriptive and inferential statistics 	<p>▶ Do you usually/regularly...</p> <p>Skip over the methods section including statistical analyses, when you read a research report?</p> <p>Understand the steps of statistical analyses in a research report and get a sense of the implications of each of them in the findings?</p> <p>Review the statistical analyses section to better understand the nature of a study?</p> <p>Hypothesize the expected outcomes and compare their relevance with the research question as you read a research report?</p> <p>Understand the strengths and weaknesses of the most common quantitative and qualitative data analyses methods?</p>
<i>Skills</i>	<ul style="list-style-type: none"> ▶ Reads research reports, identifies descriptive, inferential statistics and understands qualitative and quantitative data 	<p>▶ Do you know how to...</p> <p>Fill out incident reports, patient safety reports or other practice reports?</p> <p>Enter data into a database/check data, ensuring accuracy?</p> <p>Work through all steps in analyzing QL data?</p> <p>Identify descriptive statistics in a research report?</p> <p>Understand descriptive statistics in a research report?</p> <p>Identify inferential statistics in a research report?</p> <p>Understand inferential statistics in a research report?</p> <p>Understand the findings of a qualitative research report?</p> <p>Understand the findings of a quantitative research report?</p>
<i>Attitude</i>	<ul style="list-style-type: none"> ▶ Values the use of statistics and systematic data analysis methods ▶ Values the use of qualitative data analysis methods 	<p>▶ Do you usually/regularly...</p> <p>Value the use of statistics and systematic quantitative data analyses methods?</p> <p>Value the steps and laborious work of QL data analysis process?</p>

1.3. Knowledge Translation

<i>Knowledge</i>	<ul style="list-style-type: none"> ▶ Identifies credible and reliable sources of knowledge on which to build practice decisions relevant to own care delivery setting (e.g. publications, library, online information, knowledgeable professionals) ▶ Understands literature search methods and how to access searching tools 	<p>▶ Do you know...</p> <p>How to cite scholarly peer reviewed journals and reports that you regularly read to get insights for practice improvement?</p> <p>About KT activities to change practice in innovative ways?</p> <p>About the main use of knowledge synthesis activities and their role in changing practice based on evidence?</p> <p>How to regularly consult a librarian for credible and reliable sources when you are seeking to change your practice?</p> <p>That evidence includes research findings, clinical expertise, provider experience, and patients' needs and preferences within a local context?</p> <p>That EBP means integration of all types of evidence?</p>
<i>Skills</i>	<ul style="list-style-type: none"> ▶ Performs literature searches using health knowledge databases ▶ Integrates research findings with clinical expertise and patient needs for optimal care ▶ Identifies inconsistencies between research findings and expertise or patients' preferences in their practice environment 	<p>▶ Do you usually/regularly...</p> <p>Participate in rounds, safety huddles or other opportunities to discuss best practices with colleagues? Share with your colleagues what you 'took away from' attending a workshop or conference?</p> <p>Discuss with colleagues any inconsistencies between research findings and expertise or patients' preferences in your practice environment?</p>
<i>Attitude</i>	<ul style="list-style-type: none"> ▶ Intends to use research findings to advocate for practice improvements ▶ Expresses interest in learning about uses of evidence to improve practice 	<p>▶ Do you usually/regularly...</p> <p>Intend to use research findings from reports that you read for discussion with colleagues to improve your practice?</p> <p>Look (on your "own time") for conferences/workshops to attend in order to learn more in-depth practice knowledge?</p> <p>Express interest in learning more about EBP?</p> <p>Actively believe in the life-long learning process?</p>

Criteria for Competencies

Level 2: Research User

The Nurse Using Research in Care Delivery Settings

Competencies

Criteria

2.1. Research Process

Knowledge	<ul style="list-style-type: none"> ▶ Describes basic research knowledge (e.g. research ethics, research question, hypothesis, qualitative and quantitative data analyses methods) ▶ Describes how healthcare information and communication technologies support EBP ▶ Explains QI processes and models ▶ Describes own role and that of others in research and QI processes ▶ Understands the contributions of the patient/family perspective and varying disciplines to nursing and health services research 	<p>▶ Do you know...</p> <p>What the basic elements of a research report are? What a basic literature review includes? The components of the ethical review process? The relevance of protocols and guidelines to your own practice environment? The main steps in conducting a literature review? How to use technology in your own practice can be used to support EBP? How to orient new nurses to QI/quality assurance initiatives underway in your practice environment? ...the structure and each member's role (including yours) within your research team? How to collaborate on QI and research activities with inter-professional team members? The contribution of other disciplines to nursing and health services research? The composition and processes of an interdisciplinary research team?</p>
Skills	<ul style="list-style-type: none"> ▶ Interprets EBP protocols for relevancy in a particular context ▶ Conducts a literature review on a topic relevant to practice ▶ Collaborates effectively with a team of researchers ▶ Participates in policy development to guide quality improvement and delivery of care ▶ Integrates quality improvement principles and activities into nursing practice ▶ Works collaboratively with all participants, including patients/ clients/ families, to evaluate care and services 	<p>▶ Do you usually/regularly...</p> <p>Interpret EBP protocols for relevance to a particular context? Participate in conducting a literature review on a topic relevant to your practice area? Use interpersonal skills to effectively work within a research team? Appraise research reports relative to a specific nursing context? Know how and where to find evidence to support QI activities? Participate in the process of QI activities? Integrate QI principles and activities into nursing practice? Work collaboratively with all stakeholders (including patients and their families) to evaluate care, achieve common goals and enhance outcomes? Draw information from the healthcare system data using technology?</p>
Attitudes	<ul style="list-style-type: none"> ▶ Appreciates how practice can inform research and vice versa ▶ Values active engagement of front-line staff in quality improvement and research ▶ Embraces continued learning about new technologies to support practice 	<p>▶ Do you usually/regularly...</p> <p>Appreciate how practice can inform research and vice versa? Value nurses' active engagement in QI activities? Appreciate QI processes and activities within your practice environment? Value research activities that improve patient outcomes and develop new knowledge? Promote in-services workshops among your colleagues to improve your & their skills and knowledge? Advocate for innovative ways to improve care delivery? Appreciate diverse ways/approaches to answer research questions?</p>

2.2. Data Analysis Literacy

Knowledge	<ul style="list-style-type: none"> ▶ Understands application of descriptive and inferential statistics found in research papers ▶ Understands the steps of each (or the main) qualitative method(s) data analysis 	<ul style="list-style-type: none"> ▶ Do you usually/regularly... Understand application of descriptive and inferential statistics reported in research papers? Understand the main steps of each qualitative data analysis method? Articulate the meaning of descriptive and inferential statistics?
Skills	<ul style="list-style-type: none"> ▶ Collects, stores, retrieves and uses accurate data ▶ Uses basic statistics and qualitative techniques in nursing research 	<ul style="list-style-type: none"> ▶ Do you usually/regularly... Summarize a dataset (e.g., to describe a sample of participants) using descriptive statistics? Use the most appropriate descriptive statistic according to the level of measurement of the variable of interest? Participate in QL data analysis activities, such as data collection and analysis? Conduct basic QL data analyses?
Attitude	<ul style="list-style-type: none"> ▶ Appreciates the process of conducting qualitative and quantitative research 	<ul style="list-style-type: none"> ▶ Do you usually/regularly... Appreciate the process of conducting QL and QN research activities? Have a positive position in all research methodologies even if you are not skilled at conducting studies using all methodologies?

2.3. Knowledge Translation

Knowledge	<ul style="list-style-type: none"> ▶ Identifies unit and organizational opportunities (e.g. rounds, communities of practice, journal clubs) and resources to support knowledge sharing ▶ Distinguishes between single studies and synthesized knowledge ▶ Understands the concept of strength of evidence 	<ul style="list-style-type: none"> ▶ Do you know... How to transform research findings at your nursing unit level? Who is the most appropriate person to bring your concerns to first, as they relate to evidence?
Skills	<ul style="list-style-type: none"> ▶ Shares relevant research findings with the team ▶ Collaborates with the team to change practices in response to research findings ▶ Promotes and supports KT activities 	<ul style="list-style-type: none"> ▶ Do you usually/regularly... Develop plans to change your practice environment in response to reported research findings? Apply EBP in routine nursing activities? Develop in collaboration with your colleagues in-service programs to provide an overview of the latest research findings in a specific topic in your practice?
Attitude	<ul style="list-style-type: none"> ▶ Values staff awareness & involvement in of research activities ▶ Appreciates the importance of knowledge translation for practice innovation ▶ Values the development of ongoing research in the workplace ▶ Exhibits a willingness to take on leadership in knowledge translation activities 	<ul style="list-style-type: none"> ▶ Do you usually/regularly... Value staff awareness and involvement in research activities? Appreciate KT activities for practice innovation? Support staff accessibility to research findings? Appreciate the importance of a Research Day within your practice environment with presentations and guest speakers? Value your colleagues' initiatives in conducting research activities within your practice environment? Express your interest/willingness to lead KT activities in your practice environment?

Criteria for Competencies

Level 3: *Research User*

The Nurse Facilitating and Leading Research Use in Care Delivery Settings

	Competencies	Criteria
3.1. Research Process		
Knowledge	<ul style="list-style-type: none"> ▶ Describes the research facilitation role and function ▶ Describes emerging knowledge and best practices in facilitation of research and knowledge translation ▶ Describes program and organizational priorities for research use in care delivery settings ▶ Describes organizational and other resources to support research learning ▶ Describes the role and benefits of research collaborations in (a) academic-practice and (b) interdisciplinary / interprofessional 	<ul style="list-style-type: none"> ▶ Do you know... How to connect research questions with research strategies? How to critique the quality of a research report relevant to a clinical issue? How to mitigate the main types of biases in research reports (e.g., history bias: how has been addressed in the study under review)? The impediments in your unit/organization that hinders research use? How to organize a team of key stakeholders/experts in order to facilitate research or QI process involving novice (but interested) nurses?
Skills	<ul style="list-style-type: none"> ▶ Facilitates team identification of research and evaluation questions ▶ Suggests research approaches to health-related problems ▶ Establishes ongoing relationships with researchers to support practice-based research ▶ Facilitates quality improvement projects ▶ Interprets standards for quality improvement relative to a particular setting 	<ul style="list-style-type: none"> ▶ Do you usually/regularly... Perform basic literature reviews? Compose research and/or evaluation questions about a health-related topic of concern? Justify appropriate methods to answer your research/ evaluation questions? Facilitate QI projects? Suggest a research design and discuss it with other team members? Examine the literature with certain keywords /terms on a specific (clinical) topic?
Attitude	<ul style="list-style-type: none"> ▶ Embraces using technology for quality improvement and research purposes ▶ Values the role of research and quality improvement mentors and support ▶ Committed to collaborations for quality improvement and research 	<ul style="list-style-type: none"> ▶ Do you usually/regularly... Value research findings in improving your practice? Embrace technology for QI and research purposes? Value continuing learning on technology in order to support your practice? Value mentorship activities to improve research knowledge and skills?

3.2. Data Analysis Literacy

Knowledge	<ul style="list-style-type: none"> ▶ Knows how to interpret qualitative and quantitative research reports 	<ul style="list-style-type: none"> ▶ Do you know... How to calculate basic statistical analyses to answer a research question? How to make inferences to the target population based on a sample size data collection? The most common potential pitfalls in making inferences?
Skills	<ul style="list-style-type: none"> ▶ Draws inferences from appropriate data ▶ Uses data management tools ▶ Demonstrates ability to conduct simple/basic qualitative and quantitative data analyses 	<ul style="list-style-type: none"> ▶ Do you usually/regularly... Review published articles and discuss them with a group of peers (e.g., journal club)? Draw inferences using an appropriate dataset? Use data management tools? Participate in activities to “clean” a dataset? Conduct simple/basic QN and QL data analyses?
Attitude	<ul style="list-style-type: none"> ▶ Values data analysis in the workplace 	<ul style="list-style-type: none"> ▶ Do you usually/regularly... Value the use of data, such as nurse-sensitive adverse events data to identify gaps in nursing performance?

3.3. Knowledge Translation

Knowledge	<ul style="list-style-type: none"> ▶ Describes best KT practices ▶ Describes theories and models to guide development of KT plans ▶ Understands workplace supports associated with effective KT activities 	<ul style="list-style-type: none"> ▶ Do you know... The best KT practices? How your workplace can support effective KT activities?
Skills	<ul style="list-style-type: none"> ▶ Implements a KT project within an organization ▶ Translates concrete research findings into a user-friendly form ▶ Uses research-based evidence to address a unit or organization-wide clinical problem 	<ul style="list-style-type: none"> ▶ Do you usually/regularly... Implement a KT project within your practice environment? Translate research findings into a concrete and useable form for nursing practice? Use research-based evidence to address a unit-wide (clinical) problem?
Attitude	<ul style="list-style-type: none"> ▶ Values the ongoing translation of new knowledge into practice ▶ Values a research culture in the workplace 	<ul style="list-style-type: none"> ▶ Do you usually/regularly... Value new ways/suggestions for nursing care delivery? Value a research culture in your workplace?

Criteria for Competencies

Level 4: Research Producer

The Nurse as a Beginning Researcher

Competencies

Criteria

4.1. Research Process

Knowledge	<ul style="list-style-type: none"> ▶ Understands research designs (i.e. qualitative, quantitative, mixed-methods) ▶ Describes theoretical frameworks that underpin various research methods ▶ Describes the challenges of measurement in research (e.g. tool standardization, validity, reliability) ▶ Understands the methods of conducting knowledge syntheses ▶ Knows about the peer-review process 	<ul style="list-style-type: none"> ▶ Do you... Understand the differences and similarities among QN, QL and mixed method research designs? Describe theoretical frameworks that underpin various research designs? Know the challenges of measurement in QN studies? Know how to use spreadsheets, graphics, reference managements, and statistical analyses programs? Know a range of theories, theoretical frameworks and models in each research design? Know how to review a methodological publication (e.g., psychometric analysis of an instrument) and discuss the unclear areas with experts? Know how to conduct systematic and integrative literature reviews? Know the research funding process? Know sources of expertise in statistics and information technology? Know about copyright laws/rules and inform others to comply with them?
Skills	<ul style="list-style-type: none"> ▶ Develops appropriate curriculum vitae to support research proposals ▶ Designs evaluation or research protocols for specific contexts ▶ Manages a research project ▶ Collects quality quantitative and qualitative data ▶ Stores data in an appropriate format ▶ Uses reference management software (e.g. Refworks, EndNote) ▶ Develops logic models when needed to differentiate goals, objectives, process and outcomes ▶ Contributes to an interdisciplinary/ interprofessional research team ▶ Identifies and applies to eligible local and/or institutional research funding ▶ Participates in the peer-review process ▶ Consults with stakeholders to inform research project ▶ Precepts and mentors graduate students and staff for research ▶ Conducts various types of knowledge syntheses (e.g., scoping review, systematic review) ▶ Synthesizes knowledge and presents research evidence from disparate sources 	<ul style="list-style-type: none"> ▶ Do you usually/regularly... Read peer-reviewed articles of relevance to your practice? Identify research gaps, biases, and limitations (beyond those described by the authors) in research reports? Participate in writing an application for ethics approval? Collect data according to a study protocol as a research assistant? Develop a logic model to plan, implement and evaluate the development of a hospital-wide QI initiative?
Attitude	<ul style="list-style-type: none"> ▶ Committed to developing self as a researcher 	<ul style="list-style-type: none"> ▶ Do you usually/regularly... Appreciate the diversity of different disciplines' perspectives in inter-professional research teams? Value the commitment to developing yourself as a researcher? Value continuing education in improving research activities?

4.2. Data Analysis Literacy

Knowledge	<ul style="list-style-type: none"> ▶ Understands advanced statistical analysis techniques ▶ Understands various methods of data analysis 	<ul style="list-style-type: none"> ▶ Do you know... Advanced statistical techniques and methods for qualitative data analyses? How to present your research work in colleagues and/or experts in a conference to get feedback in order to correct your mistakes?
------------------	--	--

Skills	<ul style="list-style-type: none"> ▶ Critically and accurately analyzes research data within one's level of expertise 	<ul style="list-style-type: none"> ▶ Do you usually/regularly... Accurately analyze the collected data in your research projects?
Attitude	<ul style="list-style-type: none"> ▶ Values diverse sources of data to better inform practice ▶ Values continuing education to advance own knowledge and skills as a researcher 	<ul style="list-style-type: none"> ▶ Do you usually/regularly... Value good quality of research process? Appreciate the integrity of conducting research? Value continuing learning to advance skills and knowledge as a researcher?

4.3. Knowledge Translation

Knowledge	<ul style="list-style-type: none"> ▶ Describes methods to evaluate the effectiveness of KT activities 	<ul style="list-style-type: none"> ▶ Do you know... The requirements of research funders for implementation of KT activities within the research process? How to teach colleagues to integrate evidence into practice or to conduct high quality research projects? How to write a grant, its budget for KT funds, and to plan KT activities for the study findings?
Skills	<ul style="list-style-type: none"> ▶ Uses research findings as a persuasive or political tool to legitimate a position or practice (i.e. symbolic or persuasive research use) ▶ Develop and implement end-of-grant KT and integrated KT plans ▶ Builds ongoing relationships with research users to support KT 	<ul style="list-style-type: none"> ▶ Do you usually/regularly... Write research reports for presentations and publications? Collaborate with others to organize conferences? Collaborate with knowledge users to build relationships and networks to support KT activities?
Attitude	<ul style="list-style-type: none"> ▶ Appreciates research-practice interface as an essential part of own professional work 	<ul style="list-style-type: none"> ▶ Do you usually/regularly... Value committed researchers to integrate research and practice activities as part of their professional research work? Attend a KT conference and bring back ideas to share with your staff? Explore applications of new KT models for your organization and staff?

Criteria for Competencies

Level 5: *Research Producer*

The Nurse as a Research Scientist Leading a Program of Research

Competencies

Criteria

5.1. Research Process

Knowledge	<ul style="list-style-type: none"> ▶ Expertise in at least one identified research methodology ▶ Understands theories/conceptual models to explain phenomena in the health services sector ▶ Describes multiple methods of designing research projects ▶ Describes current information technology and communications (ICT) strategies to support own research program ▶ Understands various research program structures and approaches 	<ul style="list-style-type: none"> ▶ Do you know... How to synthesize research findings that can address practice issues? How to read and regularly critique empirical literature as a habit? How to focus on the Methods section to understand and justify authors' decisions? How to request experts' advice, if the methods used in a research report are not clear? How to independently develop a research proposal and seek funding for your research project? Software programs to analyze qualitative and quantitative data? How to present evaluation strategies to an interprofessional research team? How to describe current technological strategies to support your own research program?
Skills	<ul style="list-style-type: none"> ▶ Leads a program of research ▶ Directs operations of a research unit: managing staff, finances, facilities, partnerships ▶ Develops partnerships with government, industry, academia and funders to support research endeavours ▶ Mentors new researchers ▶ Uses research findings to influence policy ▶ Participates in round tables as an expert ▶ Consults with stakeholders to inform research priorities ▶ Independently or within interdisciplinary teams designs, develops, implements and evaluates quality improvement and research projects studies ▶ Uses advanced data analysis techniques ▶ Commits to developing a research program ▶ Is committed to knowledge translation, diffusion, application and dissemination activities 	<ul style="list-style-type: none"> ▶ Do you regularly/usually... Lead a research team or direct operations of a research unit? Independently develop a research proposal and/or QI protocols as a principal investigator or co-PI? Develop partnerships with various stakeholders (e.g., knowledge users, decision and policy makers) to support research projects? Supervise/coordinate, as a mentor, graduate students, clinical nurses and/or new researchers? Use research findings to influence policy and convince policy-makers or suggest application of research findings for practice improvement? Participate in teamwork as an expert to consult stakeholders? Synthesize research findings from various sources? Independently develop a research proposal or a QI project? Identify threats to ethics during the research process? Write academic papers for publication and present research findings in peer-reviewed conferences? Seek funding for research projects? Use various software programs to analyze qualitative and quantitative data? Seek advice/consultation of experts? Use technology to virtually meet with your research team on a regular basis?
Attitude	<ul style="list-style-type: none"> ▶ Values commitment to a research program as one's primary professional work ▶ Committed to developing others as researchers 	<ul style="list-style-type: none"> ▶ Do you usually/regularly... Appreciate research endeavors as a means to improve healthcare delivery and outcomes? Value ethical research process and advocate against fraud and deceit science?

5.2. Data Analysis Literacy

Knowledge	<ul style="list-style-type: none"> ▶ Expert level in analysis methods relevant to own research program 	<ul style="list-style-type: none"> ▶ Do you know... How to weigh the appropriateness of various ways of analyzing data generated from different research methods? How to explain each step of research publications that you read every day?
Skills	<ul style="list-style-type: none"> ▶ Interprets data at an expert level ▶ Manages large datasets and supervises the data cleaning process ▶ Able to develop data sharing agreements ▶ Maintains high standards of data integrity ▶ Analyzes data (and/or consults experts) related to own research program/projects 	<ul style="list-style-type: none"> ▶ Do you usually/regularly... Work with large datasets and supervise data cleaning processes? Interpret research findings as an expert? Share your data based on agreements? Maintain high standards of research integrity?
Attitude	<ul style="list-style-type: none"> ▶ Values rigorous and laborious data analysis techniques for qualitative, quantitative and mixed methods studies ▶ Values sharing data for public good 	<ul style="list-style-type: none"> ▶ Do you usually/regularly... Appreciate advanced statistical techniques and other (qualitative) methods to analyze data? Value open access data for public benefit?

5.3. Knowledge Translation

Knowledge	<ul style="list-style-type: none"> ▶ Understands how to build a KT function within a research program 	<ul style="list-style-type: none"> ▶ Do you know... How to incorporate a KT plan and exchange in a research program? How to disseminate, diffuse, and apply research findings in various contexts using KT models?
Skills	<ul style="list-style-type: none"> ▶ Implements and evaluates KT strategy for own research program ▶ Builds capability within the research program team for successful KT strategies 	<ul style="list-style-type: none"> ▶ Do you usually/regularly... Implement KT strategies in your own research program? Build capacity for successful KT activities? Exhibit advanced presentation skills to disseminate your research findings? Act as a mentor to support staff in KT endeavours (e.g. lead journal clubs, supervise research assistants, lead teams in the implementation of evidence-based findings)?
Attitude	<ul style="list-style-type: none"> ▶ Compelled to produce and disseminate knowledge for the public good 	<ul style="list-style-type: none"> ▶ Do you usually/regularly... Value research findings as a means to improve health outcomes and generally benefit the public? Appreciate teamwork in conducting research as a means to build capacity and disseminate findings in consultation with knowledge users?