

Health Services Researcher Pathway

Nurse Professional Development Tool: Research Competencies

(version 4.0 updated August 2020)

This Tool was developed as part of the commissioned research project by the Michael Smith Foundation for Health Research entitled: *Health Services Researcher Pathway*. The research project was completed by the following Project Team in 2012-13:

| | |
|------------------------------------|---|
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Nurse Professional Development Tool Research Competencies


How to use this Tool



Following is a tool for self-assessment or for use in conjunction with a manager or educator. Each Level as described in the Pathway has its own assessment component. To assess yourself, reflect on each criterion and check your assessment of where you are at: Ask yourself “***Can I do this? Do I do this? How well can I do this?***”.

A set of suggested learning resources are included in the Tool to assist you in advancing along the Pathway’s levels; other resources can be identified through your own exploration. This assessment tool can be adapted or shortened, focused on *Skills*, as appropriate for the work environment.

1 Need learning and practice


This column reflects whether you know the concepts and skills required for effective performance of a particular action or attribute.

 If you have acquired this knowledge/skill through prior education or on-the-job learning, leave this blank.


 If you need further learning and practice, mark a  in this column

2 Knowledgeable, but need practice

This column reflects your ability to apply your knowledge/skill in changing practice situations.

- If you have the background knowledge, and have had several opportunities to successfully apply your knowledge or demonstrate this attribute in your role, leave this one blank.
- If you have the knowledge, but need more practice and would like to receive feedback to feel confident and competent, mark a  in this column.

3 Competent

- This column applies to you if you have the required knowledge/skill and have had several opportunities to successfully apply it in your role or practice. You consistently demonstrate or perform this attribute.
- If you can demonstrate a particular action independently and effectively in a variety of situations, mark a  in this column.

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4 Expert: can teach others

- This column is used when you are able to act as a teacher for others and facilitate learning of this skill/attribute/knowledge.
- If you have thorough knowledge and are competent, confident and effective in performing a particular action in complex situations, mark a 4 in this column.

Permission to adapt the Competence Assessment Planning and Evaluation (CAPE) Tool granted by Learning and Development Department, BC Children's Hospital and BC Women's Hospital and Health Centre, Agencies of the Provincial Health Services Authority, November 1, 2013.

NURSE PROFESSIONAL DEVELOPMENT TOOL, VERSION 4.0
(Updated August 2020 by A. Mallidou)

Level 1 Nurse Professional Development Tool Research Competencies

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| Professional Standards Met? | | Competency stage | | | | | | |
|---|--|----------------------------|------------------------------------|-------------|----------------------------|--|-------------------|---------------------------|
| | | 1 Need learning & practice | 2 Knowledgeable, but need practice | 3 Competent | 4 Expert: can teach others | | | |
| ↓ | | | | | | | | |
| Level 1 Research User: <i>The Nurse Learning About Research Use in Care Delivery Settings</i> | | | | | | | | |
| Check | Criteria | 1 | 2 | 3 | 4 | Recommended Learning Activities & Resources | Have I done this? | Learning Goals Met Date |
| ✓ | Research Process: Knowledge Criteria ▶ Can you describe...? Direct research utilization Research contribution in EBP Relationships between EBP and the research process Differences between research and QI QI processes to ensure quality and safe care delivery Differences and similarities between EBP and EiP | | | | | Research Process Resources <ul style="list-style-type: none">• Introduction to nursing research by Killman https://www.youtube.com/watch?v=UA0-RMPi7qE• Critical appraisal of intervention studies (CIHR online course) https://cihr-irsc.gc.ca/e/45235.html• The conceptual structure of research utilization by Estabrooks, C.A. (1999). <i>Research in Nursing and Health</i>, 22(3), 203-216. doi:<a href="https://doi.org/10.1002/(sici)1098-240x(199906)22:3<203::aid-nur3>3.0.co;2-9">10.1002/(sici)1098-240x(199906)22:3<203::aid-nur3>3.0.co;2-9 | | |
| | Research Process: Skills Criteria ▶ Do you usually/regularly...? Follow agency protocols/ guidelines for EBP Conduct literature searches and read research reports Use electronic resources to keep informed on research findings (e.g. sign up for journal alerts and social media applications) Participate in QI activities (e.g., filling out surveys, assisting with QI campaigns such as hand hygiene) Collaborate on QI activities with the interprofessional/ interdisciplinary team, including patients and their families | | | | | <ul style="list-style-type: none">• Evidence-based practice by CNA https://www.cna-aiic.ca/en/nursing-practice/evidence-based-practice• Evidence-based practice and nursing research by Chien, L-Y (2019). <i>Journal of Nursing Research</i>, 27(4), e29. doi: 10.1097/jnr.0000000000000346• Research and quality improvement by the University of Ottawa https://rb.gy/vkqps9• Differentiating between research and quality improvement by Gregory K.E. (2015). <i>Journal of Perinatal and Neonatal Nursing</i>, 29(2), 100-102. doi: 10.1097/JPN.0000000000000107• EBP and evidence-informed practice by Woodbury M.G., & Kuhnke, J.L. (2014). <i>Wound Care Canada</i>, 12(1), 26-29. https://rb.gy/xcejei | | |
| | Research Process: Attitude Criteria ▶ Are you usually/regularly...? Curious about how you might apply research findings of a report into your practice environment Enthusiastic and wanting to learn more about research initiatives in your own practice area | | | | | | | |

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| Level 1 Research User: <i>The Nurse Learning About Research Use in Care Delivery Settings</i> | | | | | | | | |
|---|--|---|---|---|---|---|--|--|
| Check | Criteria | 1 | 2 | 3 | 4 | <div>Recommended Learning Activities & Resources</div> <div>Have I done this?</div> <div>Learning Goals Met Date</div> | | |
| | <div><i>Data Analysis Literacy: Knowledge</i></div> <div><i>Criteria ► Do you usually/regularly...?</i></div> <div>Skim or skip the methods section including statistical analyses, when you read a research report</div> <div>Understand the steps of statistical analyses in a research report and their implications in the findings</div> <div>Hypothesize the expected outcomes and compare their relevance to the research question as you read a research report</div> <div>Understand the strengths and weaknesses of the most common quantitative/qualitative data analyses methods</div> | | | | | <div><i>Data Analysis Literacy Resources</i></div> <div><ul style="list-style-type: none">• Introduction to medical statistics https://www.youtube.com/watch?v=x8one-B_Y1w• Quantitative vs qualitative data https://www.youtube.com/watch?v=EcKrT_legoU• Data analysis in qualitative research by S. Thorne, S. (2000). EBN Notebook, 3, 68-70. https://ebn.bmj.com/content/ebnurs/3/3/68.full.pdf• Finding and using health statistics (National Library of Medicine) http://www.nlm.nih.gov/nichsr/usestats/index.htm• What researchers mean by...(Institute for Work and Health) http://www.iwh.on.ca/what-researchers-mean-by</div> | | |
| | <div><i>Data Analysis Literacy: Skills</i></div> <div><i>Criteria ► Do you know how to...?</i></div> <div>Enter data into a database accurately/check data for accuracy</div> <div>Work through all steps in analyzing qualitative data</div> <div>Identify and understand descriptive and inferential statistics as well as the findings of qualitative and quantitative research reports</div> | | | | | | | |

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Nurse Professional Development Tool: Research Competencies

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| Level 1 Research User: <i>The Nurse Learning About Research Use in Care Delivery Settings</i> | | | | | | |
|---|--|---|---|---|---|------------------------------|
| Check | Criteria | 1 | 2 | 3 | 4 | Learning Goals Met Date |
| | <p>Knowledge Translation: Knowledge</p> <p>Criteria ► Can you describe...?</p> <p>Credible and reliable sources of knowledge that you can use to inform practice decisions</p> <p>Literature search methods and how to access search tools</p> <p>How to cite scholarly peer reviewed journals</p> <p>KT activities to change practice in innovative ways</p> <p>Systematic reviews and their role in changing practice based on evidence</p> | | | | | |
| | <p>Knowledge Translation: Skills</p> <p>Criteria ► Do you usually/regularly...?</p> <p>Consult a librarian for credible and reliable sources when you are seeking to change your practice</p> <p>Integrate research findings with other types of evidence such as patients' needs/clinical expertise to improve quality of care</p> <p>Share with your colleagues what you 'took away' from attending a conference</p> <p>Identify inconsistencies between research findings and expertise or patients' preferences in your practice environment</p> | | | | | |

Knowledge Translation Resources

- **Defining knowledge translation** by Straus, S.E. et al. (2009). Canadian Medical Association Journal, 181(3-4), 165-168. doi:[10.1503/cmaj.081229](https://doi.org/10.1503/cmaj.081229)
- **Knowledge translation at CIHR** <https://cihr-irsc.gc.ca/e/29418.html>
- **Knowledge translation in health care: Moving from evidence to practice** by Graham, I. et al. (2011). <https://cihr-irsc.gc.ca/e/40618.html>
- **Core KT competencies: A scoping review** by Mallidou, A.A et al. (2018). *BMC Health Services Research*, 18(1), 502. doi:[10.1186/s12913-018-3314-4](https://doi.org/10.1186/s12913-018-3314-4) and <https://dspace.library.uvic.ca/handle/1828/9463>

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| | | | | | | | |
| | <p><i>Knowledge Translation: Attitude</i> <i>Criteria ► Are you usually...?</i> Intending to use research findings to advocate for practice improvements Expressing interest in learning more about EBP</p> | | | | | | |

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| Examples that demonstrate competence | |
| Areas to learn and develop/ improve | |

Level 2 Nurse Professional Development Tool Research Competencies

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Professional Standards Met?

Competency stage

1 Need learning & practice

2 Knowledgeable, but need practice

3 Competent

4 Expert: can teach others

Level 2 Research User: The Nurse Using Research in Care Delivery Settings

| Check | Criteria | 1 | 2 | 3 | 4 | Recommended Learning Activities & Resources | Have I done this? | Learning Goals Met Date |
|-------|--|---|---|---|---|---|-------------------|---------------------------|
| | <div>Research Process: Knowledge Criteria</div> <div>► Can you describe...?</div> <div>Basic elements of a research report & steps of a literature review</div> <div>Components of the ethical review process</div> <div>How healthcare information & communication technologies (ICT) support EBP</div> <div>QI processes and models</div> <div>Your role and that of others in research and QI</div> <div>Contributions of the patient/family perspective and varying disciplines to nursing and health services research</div> | | | | | <div>Research Process Resources</div> <ul style="list-style-type: none"> <div>A nurses’ guide to the critical reading of research</div> <div>by Ingham-Broomfield, R. (2008). Australian Journal of Advanced Nursing, 26(1), 102-109.</div> <div>http://www.ajan.com.au/Vol26/26-1v2_Ingham-Broomfield.pdf and https://www.ajan.com.au/archive/Vol32/Issue1/5Ingham-Broomfield.pdf</div> <div>Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans</div> <div>(Government of Canada) http://www.pre.ethics.gc.ca/eng/policy-politique/initiatives/tcps2-eptc2/Default/</div> <div>Building skills in data collection and understanding variation</div> <div>(Institute for Healthcare Improvement) https://www.youtube.com/watch?v=ZK1Zy7G1w34</div> <div>Research methods guide: Research design & method</div> <div>(Virginia Tech University Libraries). https://guides.lib.vt.edu/researchmethods/design-method</div> <div>Understanding different research perspectives</div> <div>(Open University). shorturl.at/gjnCF</div> <div>Florence Nightingale: Founder of modern nursing and hospital epidemiology</div> <div>by Winkelstein, Warren Jr. (2009). Epidemiology, 20(2), 311. doi:10.1097/EDE.0b013e3181935ad6</div> <div>Florence Nightingale: 200 years since her birth and we are still making the same errors with data</div> <div>by Bradshaw, N-A. (2020). Mathematics TODAY, April 2020, 65-68. shorturl.at/higtu</div> <div>Mapping the landscape of knowledge synthesis</div> <div>by Mallidou, A.A. (2014). Nursing Management (Harrow, London, England), 21(5), 30-39. doi:10.7748/nm.21.5.30.e1242</div> | | |
| | <div>Research Process: Skills Criteria</div> <div>► Do you usually/regularly...?</div> <div>Interpret EBP protocols for relevance to a care context</div> <div>Participate in conducting literature reviews</div> <div>Appraise research reports relative to a specific care delivery context</div> <div>Integrate QI principles and activities into nursing practice</div> <div>Work collaboratively with the team, including patients and their families, to enhance outcomes</div> <div>Draw information from the healthcare system data using technology</div> | | | | | | | |
| | <div>Research Process: Attitude Criteria</div> <div>► Do you usually/regularly...?</div> <div>Appreciate how practice can inform research and vice versa</div> <div>Value nurses’ active engagement in QI and research activities</div> <div>Appreciate diverse ways/ approaches to answer research questions</div> | | | | | | | 10 |

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| Level 2 Research User: <i>The Nurse Using Research in Care Delivery Settings</i> | | | | | | | | |
|--|--|---|---|---|---|--|-------------------|---------------------------|
| Check | Criteria | 1 | 2 | 3 | 4 | Recommended Learning Activities & Resources | Have I done this? | Learning Goals Met Date |
| | Data Analysis Literacy: Knowledge Criteria ▶ Do you usually/regularly...? Understand the 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 | | | | | Data Analysis Literacy Resources <ul style="list-style-type: none">• Statistics and probability (Khan Academy). https://www.khanacademy.org/math/statistics-probability• Understanding statistical significance by Hayat, M.J. (2010). <i>Nursing Research</i>, 59(3), 219-223. doi:10.1097/NNR.0b013e3181dbb2cc ⓘ• The joy of stats by Hans Rosling (2010). https://www.youtube.com/watch?v=jbkSRLYSojo• Battling bad science by Ben Goldacre (TED Talk) http://www.ted.com/talks/ben_goldacre_battling_bad_science.html• Why most published research findings are false by Ioannidis, J.P.A. (2005). <i>PLoS Med</i>, 2(8), e124. doi:10.1371/journal.pmed.0020124 | | |
| | Data Analysis Literacy: Skills Criteria ▶ Do you usually/regularly...? Summarize a dataset for a reason (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 qualitative data analysis activities Conduct basic qualitative data analyses | | | | | | | |

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| | <p>Data Analysis Literacy: Attitude</p> <p>Criteria ► Do you usually/regularly...?</p> <p>Have a positive position in all research methodologies even if you are not skilled at conducting studies using all methodologies</p> | | | | | | | |
|--|---|--|--|--|--|--|--|--|

| Level 2 Research User: <i>The Nurse Using Research in Care Delivery Settings</i> | | | | | | | | |
|--|---|---|---|---|---|---|-------------------|------------------------------|
| Check | Criteria | 1 | 2 | 3 | 4 | Recommended Learning Activities & Resources | Have I done this? | Learning Goals Met Date |
| | <p>Knowledge Translation: Knowledge Criteria</p> <p>► Do you know...?</p> <p>How to transform research findings at your unit level</p> <p>Who in your practice environment is the most appropriate person to bring your concerns to first, as they relate to evidence</p> | | | | | <p>Knowledge Translation Resources</p> <ul style="list-style-type: none"> • Knowledge translation in health care: Moving from evidence to practice by Graham, I. et al. (2011). https://cihr-irsc.gc.ca/e/40618.html • Knowledge translation at CIHR https://cihr-irsc.gc.ca/e/29418.html • Essential KT readings (MSFHR) https://www.msfhr.org/ourwork/activities/knowledge-translation/kt-resources | | |
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| | <p><i>Knowledge Translation: Skills</i></p> <p><i>Criteria ► Do you usually/regularly...?</i></p> <p>Develop plans to change your practice environment in response to reported research findings</p> <p>Apply EBP in routine nursing activities</p> <p>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</p> | | | <ul style="list-style-type: none"> • AJN’s evidence-based practice series: Step by step (Arizona State University College of Nursing & Health Innovation's Center for the Advancement of EBP) http://www.nursingcenter.com/evidencebasedpracticenetwork/Home/Tools-Resources/Collections/AJN-EBP-Series.aspx • Does the workplace influence nurses' use of research? By Cummings, G.G. et al. (2004). Journal of Wound, Ostomy, and Continence Nursing, 31(3), 106107. doi:00152192-200405000-00003 | | |
| | <p><i>Knowledge Translation: Attitude</i></p> <p><i>Criteria ► Do you usually/regularly...?</i></p> <p>Appreciate KT activities for practice innovation</p> <p>Support staff accessibility to research findings</p> <p>Appreciate the importance of a Research Day within your practice environment with presentations and guest speakers</p> <p>Express your interest/willingness to lead KT activities in your practice environment</p> | | | | | |

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| Examples that demonstrate competence | |
| Areas to learn and develop/ improve | |

Level 3 Nurse Professional Development Tool Research Competencies

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Professional
Standards Met?

Competency stage

1 Need learning & practice 2 Knowledgeable, but need practice 3 Competent 4 Expert: can teach others

Level 3 Research User: *The Nurse Facilitating and Leading Research Use in Care Delivery Settings*

| Check | Criteria | 1 | 2 | 3 | 4 | Recommended Learning Activities & Resources | Have I done this? | Learning Goals Met Date |
|-------|--|---|---|---|---|--|-------------------|---------------------------|
| | Research Process: Knowledge Criteria ► Can you describe...? Research facilitation role/function Emerging knowledge and best practices in facilitation of research and KT Copyright laws and inform others to comply with them Program/ organizational priorities for research use Organizational and other resources to support research learning and KT Role and benefits of research collaborations in a) academic-practice? b) interdisciplinary/interprofessional Common barriers to research use in your unit/organization Engagement strategies for novice and interested nurses in research and QI | | | | | Research Process Resources <ul style="list-style-type: none"> • The role of the nurse research facilitator in building research capacity in the clinical setting by Jamerson, P.A., & Vermeersch, P. (2012). <i>Journal of Nursing Administration</i>, 42(1), 21-27. doi:10.1097/NNA.0b013e31823c180e • Step-by-step guide to critiquing research. Part 1: Quantitative research by Coughian, M. et al. (2007). <i>British Journal of Nursing</i>, 16(11), 658-663. https://www.unm.edu/~unmvclib/cascade/handouts/critiquingresearchpart1.pdf • Step-by-step guide to critiquing research. Part 1: Qualitative research by Ryan, F. et al. (2007). <i>British Journal of Nursing</i>, 16(12), 738-744. http://medical.coe.uh.edu/download/Step_by_step_guide_to_critique_qual_research.pdf • A guide for using statistics for evidence-based policy (Australian Bureau of Statistics). http://www.abs.gov.au/ausstats/abs@.nsf/mf/1500.0 • Introduction to methods for health services research and evaluation (Johns Hopkins University, online course originally offered in Spring 2007). http://ocw.jhsph.edu/index.cfm/go/viewCourse/course/HSRE/coursePage/index/ | | |
| | Research Process: Skills Criteria ► Do you usually/regularly...? Facilitate team identification of research and evaluation questions Perform basic literature reviews and share results Facilitate QI projects Suggest a research design and discuss it with other research team members Establish ongoing relationships with researchers to support practice-based research | | | | | | | |
| | Research Process: Attitude Criteria ► Are you usually/regularly...? Embracing technology for QI and research purposes Valuing mentorship activities to improve research competencies Committed to collaborations for QI and research | | | | | | | |



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| Level 3 Research User: <i>The Nurse Facilitating and Leading Research Use in Care Delivery Settings</i> | | | | | | | |
|---|---|---|---|---|---|--|--|
| Check | Criteria | 1 | 2 | 3 | 4 | Recommended Learning Activities & Resources | Learning Goals Met Have I done this? Date |
| | Data Analysis Literacy: Knowledge Criteria ► 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 data collection The most common potential pitfalls in making inferences | | | | | Data Analysis Literacy Resources <ul style="list-style-type: none"> • Statistics for clinical nursing practice: An introduction by Rickard, C.M. (2008). Australian Critical Care, 21(4), 216-219. doi:10.1016/j.aucc.2008.08.004 • Choosing which statistical test to use (Statistics Learning Centre). http://www.youtube.com/watch?v=rullUANOU3w • Basic statistical tools in research and data analysis by Ali, Z., & Bhaskar, S. (2016). Indian Journal of Anaesthesia, 60(9), 662-669. doi:10.4103/00195049.190623 | |
| | Data Analysis Literacy: Skills Criteria ► Do you usually/regularly...? Draw inferences using an appropriate dataset Use data management tools Conduct simple/basic quantitative and qualitative data analyses | | | | | | |
| | Data Analysis Literacy: Attitude Criteria ► Do you usually/regularly...? Value the use of nurse-sensitive data to identify gaps in nursing performance | | | | | | |



| Learning Goals Met | | | | | | | | | |
|------------------------|----------|---|---|---|---|--|-------------------|------|--|
| Check | Criteria | 1 | 2 | 3 | 4 | Recommended Learning Activities & Resources | Have I done this? | Date | |
| ▶ Can you describe...? | | | | | | | | | |
| | | | | | | <p>❓ The TCPS 2 tutorial course on research ethics (CORE) (Government of Canada): https://ethics.gc.ca/eng/education_tutorial-didacticiel.html</p> <p>Theoretical frameworks that underpin research methods</p> <p>❓ Guiding good research: Biomedical research ethics and ethics review: Challenges of measurement in quantitative studies</p> <p>Observatory on Health Research Systems by Shergold, M. (2008). How to use spreadsheets, graphics, reference management, and statistical analyses programs</p> <p>❓ The art of writing a CIHR application (CIHR): http://www.cihr-irsc.gc.ca/e/45281.html</p> <p>How to review methodological publications (e.g., psychometric instrument) and discuss unclear areas with experts</p> <p>❓ The art of grantsmanship by Kraicer, J. shorturl.at/knl47</p> <p>How to conduct integrative and systematic literature reviews?</p> <p>❓ Demystifying the dissertation proposal (Chronicle of Higher Education): https://www.chronicle.com/article/demystifying-the-dissertation-proposal/</p> | | | |
| | | | | | | <p>The research funding process</p> <p>Sources of expertise in statistics and information technology</p> <p>Research Process: Skills Criteria</p> <p>▶ Do you usually/regularly...?</p> <p>Read at least one peer-reviewed article per day and identify gaps, (AHRQ): biases, and limitations (beyond those described by the authors) https://effectivehealthcare.ahrq.gov/products/stakeholders-engagement-others/slides</p> <p>Develop/update your CV to support research proposals</p> <p>Participate in writing applications for ethics approval</p> | | | |
| | | | | | | <p>❓ Qualitative research guidelines project - Using qualitative methods in healthcare research (Robert Wood Johnson Foundation): http://www.qualres.org/</p> <p>❓ Community-based participatory research: Lessons for stakeholder engagement in patient-centered outcomes research</p> | | | |

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Collect data according to a study protocol as a research assistant **Focus On: Logic model—A planning and evaluation tool**

(Public Health **Develop** logic models to plan, implement, and evaluate hospital- Ontario) by Abdi, S. (2016):

[https://www.publichealthontario.ca/-](https://www.publichealthontario.ca/-/media/documents/F/2016/focus-on-logic-model.pdf?la=en)

wide QI initiatives </media/documents/F/2016/focus-on-logic-model.pdf?la=en> **Developing and using a logic model**

(Division for Heart Disease and Stroke

Research Process: Attitude Criteria

Prevention): https://www.cdc.gov/dhds/docs/logic_model.pdf

► Do you usually/regularly...?

Limitations are not properly acknowledged in the scientific literature by



Appreciate the diversity of various disciplines' perspectives in interprofessional research teams

Ioannidis, J.P.A. (2007). Journal of Clinical Epidemiology, 60(4), 324-329.

doi:[10.1016/j.jclinepi.2006.09.011](https://doi.org/10.1016/j.jclinepi.2006.09.011)

Commit to develop yourself as a researcher

Value continuing education in improving research activities

| Level 4 Research Producer: <i>The Nurse as a Beginning Researcher</i> | | | | | | | | |
|---|--|---|---|---|---|--|-------------------|---------------------------|
| Check | Criteria | 1 | 2 | 3 | 4 | Recommended Learning Activities & Resources | Have I done this? | Learning Goals Met Date |
| | <i>Data Analysis Literacy: Knowledge Criteria ► Do you know...?</i> 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 | | | | | <i>Data Analysis Literacy Resources</i> <ul style="list-style-type: none">• Grounded Theory by Gibbs, G.R. (2010). Qualitative Data Analysis on the Web University of Huddersfield. https://www.youtube.com/user/GrahamRGibbs  Statistics courses online (edX): https://www.edx.org/learn/statistics  Probability and statistics (online course, Coursera): | | |

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| | <p>Data Analysis Literacy: Skills Criteria</p> <p>► Do you usually/regularly...?</p> <p>Accurately analyze the collected data in your research projects</p> | | | | <p>https://www.coursera.org/browse/data-science/probability-andstatistics?languages=en</p> <ul style="list-style-type: none"> • What have we (not) learnt from millions of scientific papers with p values? By Ioannidis, J.P.A. (2019). The American Statistician, 73(sup 1), 20-25. doi:10.1080/00031305.2018.1447512 • Evolution of reporting p values in the biomedical literature by Chavalarias, D. et al. (2016). 1990-2015. JAMA, 315(11), 1141-1148. doi:10.1001/jama.2016.1952 | | |
| | <p>Data Analysis Literacy: Attitude Criteria ► Do you usually/regularly...?</p> <p>Value good quality of a research process</p> <p>Appreciate the integrity of conducting research</p> <p>Value continuing learning to advance skills and knowledge as a researcher</p> | | | | | | |

Level 4 Research Producer: The Nurse as a Beginning Researcher

| Check | Criteria | 1 | 2 | 3 | 4 | Recommended Learning Activities & Resources | Have I done this? | Learning Goals Met Date |
|-------|--|---|---|---|---|---|-------------------|---------------------------|
| | Knowledge Translation: Knowledge Criteria | | | | | | | |

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| | <p>► Can you describe...?</p> <p>The requirements of research funders for implementation of KT activities within the research process</p> <p>How to teach colleagues to integrate evidence into practice or to conduct high quality research projects</p> <p>How to write a grant, its budget for KT funds, and to plan KT activities for the study findings</p> <p>Methods to evaluate the effectiveness of KT activities</p> | | | <p><i>Knowledge Translation Resources</i></p> <ul style="list-style-type: none">• Guide to knowledge translation planning at CIHR: Integrated and end-ofgrant approaches (CIHR): https://cihr-irsc.gc.ca/e/45321.html• From research to practice: A knowledge transfer planning guide (IWH): https://www.iwh.on.ca/sites/iwh/files/iwh/tools/iwh_kte_planning_guide_2006b.pdf• How to write a good abstract for a scientific paper or conference presentation by Andrade, C. (2011). Indian Journal of Psychiatry, 53(2), 172-175. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3136027/ <p>🔗 How to write a good scientific paper? By Moussavi, Z. (U of Manitoba): http://umanitoba.ca/biomedical_engineering/media/pdf/SciPaperWritingFeb21.pdf</p> | | |
| | <p><i>Knowledge Translation: Skills</i></p> <p><i>Criteria</i> ► Do you usually/regularly...?</p> <p>Write research reports for presentations and publications</p> <p>Collaborate with others to organize conferences</p> <p>Collaborate with knowledge users to build relationships and networks to support KT activities</p> <p>Implement and evaluate theory-informed KT plans</p> | | | | | |

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| Examples that demonstrate competence | |
| Areas to learn and develop/improve | |

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|-----------------------------|----------------------------|------------------------------------|-------------|----------------------------|
| Professional Standards Met? | Competency stage | | | |
| | 1 Need learning & practice | 2 Knowledgeable, but need practice | 3 Competent | 4 Expert: can teach others |

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| Level 5 Research Producer: The Nurse as a Research Scientist Leading a Program of Research | | | | | | | | | |
|--|---|---|---|---|---|---|-------------------|---------------------------|--|
| Check | Criteria | 1 | 2 | 3 | 4 | Recommended Learning Activities & Resources | Have I done this? | Learning Goals Met Date | |
| | <p>Research Process: Knowledge Criteria</p> <p>► Do you know...?</p> <p>How to synthesize research findings that can address practice issues</p> <p>How to read and regularly critique empirical literature as a habit</p> <p>How to focus on the Methods section to understand and justify authors’ decisions</p> <p>How to request experts’ advice, if the methods used in a research report are not clear</p> <p>How to independently develop a research proposal</p> <p>How to seek funding for your research project</p> <p>Software programs to analyze qualitative and quantitative data</p> <p>How to present evaluation strategies to an inter-professional research team</p> <p>How to describe current technological strategies to support your own research program</p> | | | | | <p>Research Process Resources</p> <ul style="list-style-type: none">• Canada’s strategy for patient-oriented research (CIHR): https://cihr-irsc.gc.ca/e/44000.html• Grant-writing advice and sample applications (Center for Complementary and Integrative Health): https://www.nccih.nih.gov/grants/grant-writing-advice-and-sample-applications• Models of mentoring (Indiana University, School of Medicine): https://faculty.medicine.iu.edu/let-us-help/mentoring/mentoring-matters/models-of-mentoring/• Transformational mentorship models for nurse educators by Sheri L. Jacobson, S.L., & Sherrod, D.R. (2012). Nursing Science Quarterly, 25(3), 279-284. https://journals.sagepub.com/doi/pdf/10.1177/0894318412447565• How are evidence generation partnerships between researchers and policy-makers enacted in practice? A qualitative interview study by Williamson, A. et al. (2019). Health Research Policy and Systems, 17(1), 41. doi:10.1186/s12961-019-0441-2 | | | |
| | <p>Research Process: Skills Criteria</p> <p>► Do you regularly/usually...?</p> <p>Lead a research team and direct operations of a research unit</p> <p>Independently develop a research proposal and/or QI protocols as a principal investigator or co-PI and seek funding</p> <p>Develop partnerships with various stakeholders (e.g., knowledge users, policy makers) to support research projects</p> <p>Supervise/coordinate (mentor) graduate students, clinical nurses and/or new researchers</p> <p>Use research findings to influence policy and policy-makers</p> <p>Participate in teamwork as an expert to consult stakeholders</p> <p>Synthesize research findings from various sources</p> <p>Identify threats to ethics during the research process</p> <p>Write scholar papers and present research findings in conferences</p> | | | | | | | | |

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| Level 5 <i>Research Producer: The Nurse as a Research Scientist Leading a Program of Research</i> | | | | | | | | |
|---|---|---|---|---|---|--|-------------------|---------------------------|
| Check | Criteria | 1 | 2 | 3 | 4 | Recommended Learning Activities & Resources | Have I done this? | Learning Goals Met Date |
| | 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 | | | | | | | |
| | <i>Research Process: Attitude Criteria</i> ► Do you usually/regularly...? Appreciate research endeavors as a means to improve healthcare delivery and outcomes Value ethical review process and advocate against fraud and deceit science | | | | | | | |
| | <i>Data Analysis Literacy: Knowledge Criteria</i> ► 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 | | | | | <i>Data Analysis Literacy Resources</i> <ul style="list-style-type: none">• DBMS: An intro to database management systems by Raza, M. (2018). https://www.bmc.com/blogs/dbms-database-management-systems/• Global research integrity training by Steneck, N.H. (2013). Science, 340(6132), 552-553. doi:10.1126/science.1236373• The Singapore statement on research integrity by Resnik, D.B. (2011). Accountability in Research Policies and Quality Assurance, 18(2), 71-75. | | |

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| | | | | https://www.tandfonline.com/doi/full/10.1080/08989621.2011.557296 ² What is open access? (UNESCO): shorturl.at/ejpG3 ² What is open data? (York University): https://www.library.yorku.ca/web/open/overview/open-data/ | | |
| | Data Analysis Literacy: Skills Criteria ► 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 | | | <ul style="list-style-type: none"> • A strategic methodology to the use of advanced statistical quality improvement techniques by Antony, J. et al. (1998). The TQM Magazine, 10(3), 169-176. https://www.emerald.com/insight/content/doi/10.1108/09544789810214765/full/pdf | | |
| | Data Analysis Literacy: Attitude Criteria ► Do you usually/regularly...? Appreciate advanced statistical techniques and other (qualitative) methods to analyze data Value open access data for public benefit | | | | | |
| Level 5 Research Producer: <i>The Nurse as a Research Scientist Leading a Program of Research</i> | | | | | | |

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| Check | Criteria | 1 | | | | Recommended Learning Activities & Resources | Have I done this? | Learning Goals Met Date |
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| | | 2 | 3 | 4 | | | | |
| | <p>Knowledge Translation: Knowledge Criteria ► Do you know...?</p> <p>How to incorporate a KT plan and exchange in a research program</p> <p>How to disseminate, diffuse, and apply research findings in various contexts using KT models</p> | | | | | <p>Knowledge Translation Resources</p> <ul style="list-style-type: none"> Engaging policy-makers, health system managers, and policy analysts in the knowledge synthesis process: a scoping review by Tricco, A.C. et al. (2018). Implementation Science, 13(1), 31. doi:10.1186/s13012-018-0717-x Enhancing the uptake of systematic reviews of effects: What is the best format for health care managers and policy-makers? A mixed-methods study by Marquez, C. et al. (2018). Implementation Science, 13(1), 84. doi:10.1186/s13012-018-0779-9 A scoping review of indirect comparison methods and applications using individual patient data by Veroniki, A.A. et al. (2016). BMC Medical Research Methodology, 16(1), 1-14. doi:10.1186/s12874-016-0146-y Implementation science at a glance - A guide for cancer control practitioners (US Department of Health and Human Services- NIH): https://cancercontrol.cancer.gov/IS/docs/NCI-ISaaG-Workbook.pdf ? Disseminating the research findings (WHO, 2014): https://www.who.int/tdr/publications/year/2014/participantworkbook5_030414.pdf?ua=1 Research toolkit for health research in partnership with practices and communities http://www.researchtoolkit.org/index.php/disseminating-andclosing-research | | |
| | <p>Knowledge Translation: Skills Criteria ► Do you usually/regularly...?</p> <p>Implement KT strategies in your own research program</p> <p>Build capacity for successful KT activities</p> <p>Exhibit advanced presentation skills to disseminate your research findings</p> <p>Act as a mentor to support staff (e.g., leads journal clubs, supervises research assistants, leads teams in implementation of evidence-based findings)</p> | | | | | | | |
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| | <p><i>Knowledge Translation:</i> <i>Attitude Criteria</i> ► Do you usually/regularly...?</p> <p>Value research findings as a means to improve health outcomes and generally benefit the public</p> <p>Appreciate teamwork in conducting research as a means to build capacity and disseminate findings in consultation with knowledge users</p> | | | |
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| Examples that demonstrate competence | |
| Areas to learn and develop/ improve | |