Canadian Nursing and Genomics: An Engagement Initiative

Jacqueline Limoges PhD RN
Associate Professor, Athabasca University
Chair, Ontario Cancer Research Ethics Board

Lindsay Carlsson PhD (c) RN
Clinical Nurse Specialist, Princess Margaret Cancer Centre
PhD (c), University of Toronto

April Pike PhD RN
Associate Dean of Research, Memorial University Newfoundland

Sarah Dewell PhD RN
Assistant Professor, University of Northern British Columbia

Ann Meyer PhD
Advisor: Ontario Genomics

CANADIAN NURSING & GENOMICS

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We are speaking to you from the traditional land of the Mississaugas of the Credit, the Anishnabeg, the Chippewa, the Haudenosaunee and the Wendat peoples and from lands that are now home to many diverse First Nations, Inuit and Métis peoples We honour Indigenous history and culture and are committed to moving forward in the spirit of reconciliation and respect with all First Nation, Metis and Inuit people.

Please use the chat if you wish to make a land acknowledgement

Acknowledgements

Research Assistant: Rebecca Puddester MN RN PhD (student) at Memorial University

Objectives

- Map the landscape of genomics and nursing in Canada
- Discuss the **Canadian Nursing and Genomics** initiative.
- Explore ongoing strategies to accelerate the adoption of genomics in education, research and practice to support new pathways for enhanced health outcomes.

Nurses in Canada are mandated to provide safe, competent, compassionate and ethical care while promoting health and social justice.

Breakdown of Professional Roles (2019):

- 300,669 registered nurses
- 6,159 nurse practitioners
- 127,097 licensed practical nurses and registered practical nurses
- 6,050 registered psychiatric nurses
- 91% identify as female

Clinical Setting Breakdown:

58.5% - hospital
15.6% - community health
15.5% - nursing home/long-term care
10.5% - other employment settings

https://www.cna-aiic.ca/en/nursing-practice/the-practice-of-nursing/health-human-resources/nursing-statistics#sthash.n9bpKubv.dpuf

Current thinking

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All nurses need support to recognize the clinical utility and develop evidence base clinical practices in genomics

Consensus in scholarly literature that nurses require genomic literacy for safe, ethical, competent and compassionate practice
There is little Canadian nursing research in genomic - two studies revealed low literacy levels, little **formal education** in genetics and **low levels of confidence** in genetic care *(Dewell et al., 2020; Bottorff et al., 2005)*
Nurses' low genomic literacy is a worldwide challenge, yet many countries are actively engaged in strategies to address this *(Dagan et al., 2021; Murakami et al., 2020; Calzone et al., 2018; Morrow et al., 2018; Read & Ward, 2015)*
Need **global initiatives** to accelerate implementation of genetics and genomics into health care *(Green et al., 2020; Tonkin et al., 2020; Stark et al., 2019; Calzone et al., 2018 & 2010)*
Need **interprofessional collaboration and workforce diversity** to enhance the integration and clinical utility of genetics and genomics for population health *(Calzone et al., 2018; Green et al., 2020)*

Questions Patients Ask Nurses

Nurses with genomic literacy would feel confident in these situations

Are my children at risk of getting the same cancer as me?

I have my genetic test results, what should I do about screening and lifestyle change? What is my overall risk of developing cancer? How can I minimize this risk?

The doctor said I should get genetic testing. What do you think?

If I agree to genetic testing, can the results be used against me somehow?

The doctor just told me a have a genetic variant and I didn't understand what she said, can you explain it to me?

What is a polygenic risks score?

I am now in the palliative phase of cancer treatment; how can I get genetic testing so that my family can benefit?

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Questions Nurses ask:

Faculty and nurse educators with genomic literacy would feel confident in these situations

How can I use pharmacogenomics to make medication administration safer?

What are the ethical issues with genetic testing and genomics?

How can I enhance patient outcomes with genomics?

What is the nurses' role with genomics and precision healthcare?

Where can I find resources to learn and teach about genomics?

Why were genomics not covered in my education program?

Where is the nursing research to guide practice?

Vision of genomic literacy across the 5 Domains of Nursing Practice

Nurses with genomic literacy can address patient care needs, ethical issues and engage in interprofessional collaboration.

Point of Care:

Provide patient teaching and psychosocial support, enable predictive and preventative care to improve health and wellness.

Policy:

Support equitable access to genetic testing and the consideration of actionable findings in care plans.

Education:

Ensure genomics is built into nursing curriculum and continuing education initiatives for workforce development.

Research:

Support nurse-led and interprofessional research that informs the utility and impact of genomics to patient health outcomes.

Administration:

Offer leadership that supports clinical innovation, workforce development and interdisciplinary collaboration.

All Nurses:

Integrate knowledge of genomics with an understanding of social determinants of health to prevent discrimination and bias.

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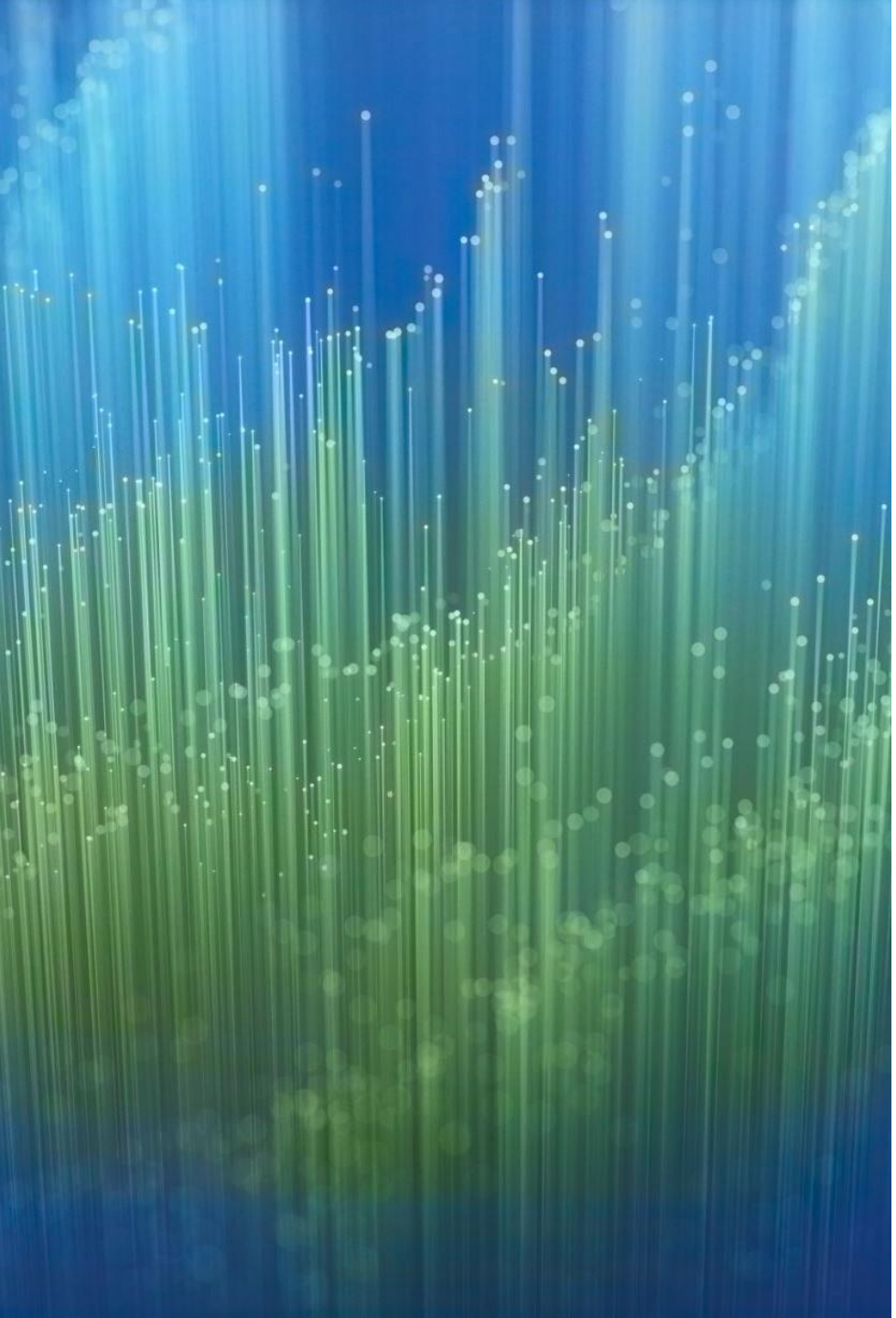

Nurses with genomic literacy can address equity issues associated with genomics and promote social justice

Nurses represent 40% of the healthcare workforce, with 91% of regulated Canadian nurses identifying as women, thus enhancing nurses' involvement in genomics and precision healthcare promotes gender and professional diversity.

Guard against disability discrimination, eugenic ideals, and fear associated with genetic testing.

Enable equitable access to genetic testing and counselling services for underrepresented groups, and address disparities driven by social or geographical barriers.

440,000 nurses will accelerate the impact of genomics on health, scientific, economic and social outcomes.

Bentley et al., 2017; Green et al., 2021

Why is it important for Canadian nurses to have genomic literacy?

Nurses with genomic literacy will be knowledgeable and able to incorporate genomics into health assessment, care coordination, health teaching and psychosocial support.

Role of the nurse	Nursing activity
Coordinator	Nurses can ensure access to testing is equitable and support patients to interpret the significance of test results.
Educator	Health teaching, screening recommendations, and care coordination are tailored to a person's family history and genetic risk.
Communicator	Nurses provide meaningful support and guidance to patients who worry that they have passed a genetic variant on to their children
Advocate	Nurses enhance health outcomes by taking into consideration the intersections of genetics and the social determinants of health.
Clinician	Nurses enhance medication safety and efficacy through pharmacogenomics.

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Supporting Genomic Literacy and Precision Healthcare

The aim of the Canadian Nursing and Genomics initiative is to support Canadian nurses from all five domains of practice to develop genomic literacy, integrate genomics into nursing practice, and fully participate in precision healthcare.

Steering Committee

- Jacqueline Limoges PhD RN – co-lead
- Lindsay Carlsson PhD (c) RN – co-lead
- April Pike PhD RN
- Sarah Dewell PhD RN
- Ann Meyer PhD

Research Assistant

Rebecca Puddester MN RN

Aims – understand and respond

- ↑ awareness
- ↑ infrastructure
- ↑ research
- ↑ collaboration
- ↑ clinical innovation

Step #1 = Create an engagement framework

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The geographic spread of Canada and the provincial system that regulates nurses, healthcare and nursing education require any solution to be contextualized by jurisdiction.

Three frameworks guide the CNG initiative

To develop sustainable solutions to complex challenges, such as the integration of genomics into nursing practice, a multi-faceted approach is required.

Nursing intra-professional collaboration across the domains of practice

Diffusion of innovation (Rogers, 2003)

Knowledge to Action Cycle (Graham et al., 2006)

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Supporting nurses to "think genomically" will require collaboration between nurses in all five domains of practice.

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POSITION STATEMENT

CANADIAN NURSES ASSOCIATION

INTRA-PROFESSIONAL COLLABORATION

CNA POSITION

- Regulated nurses must work together to achieve optimal intra-professional practice to serve the public interest.
- Regulated nurses must seek out and value each other, respecting and recognizing the important contributions that each nursing designation makes to patient care and the health system.
- Regulated nurses apply leadership principles that support collaborative practice models, including shared decision-making and accountability for one's own actions.
- Models of care must incorporate available evidence, enable optimal scopes of practice of all regulated nurses and be flexible enough to address ever-evolving changes to scopes of practice, while maintaining individual needs at the forefront.
- When determining the most appropriate nursing care for individuals, decisions must be based on the needs and safety of the person while recognizing the principles of evidence-informed decision-making.
- Appropriate resources and structural elements are essential for regulated nurses to achieve optimal intra-professional collaboration.

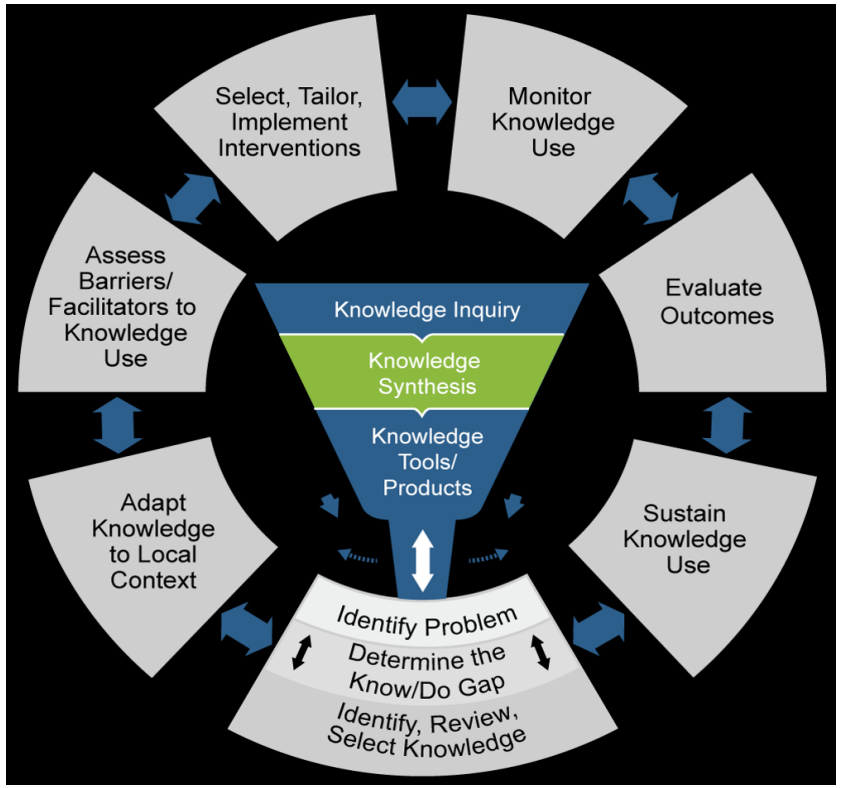
Five domains of practice:

1. Point of care
2. Education
3. Administration
4. Research
5. Policy

Theoretical Foundation

Knowledge to Action Cycle

(Graham et al., 2006)



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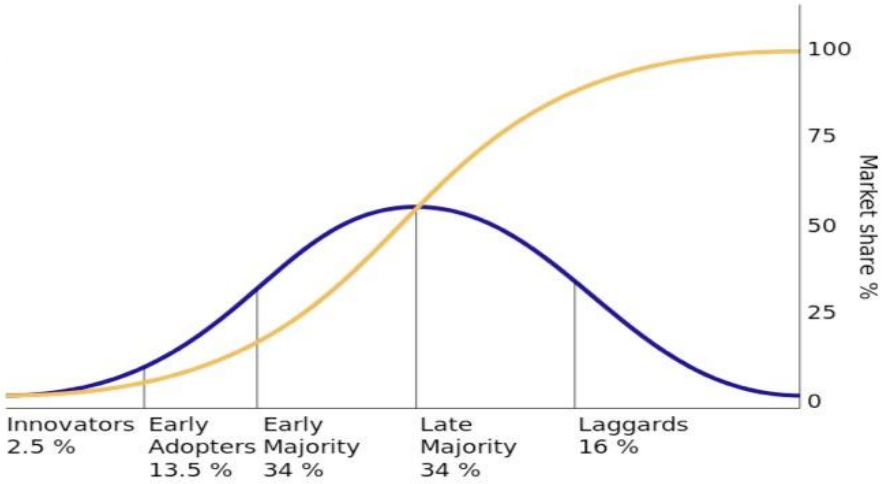
Diffusion of Innovation

(Rogers, 1962)



Stages of Diffusion:

*Knowledge or Awareness Stage**
*Persuasion or Interest Stage**
Decision or Evaluation Stage
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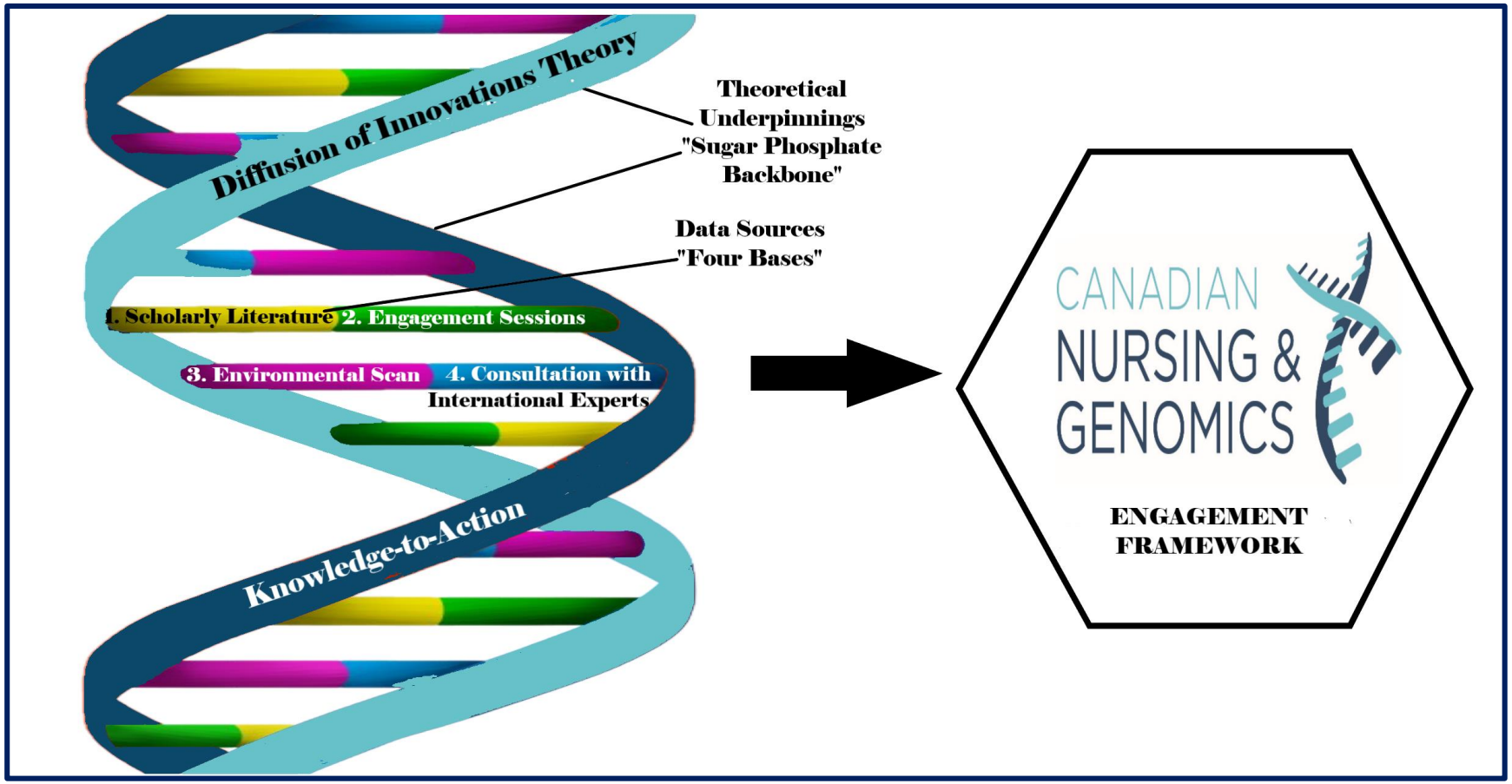
Creating the Engagement Framework

A theory and evidence-based framework generated by and with nurses will support sustainable initiatives that promote genomic literacy and health system transformation



Creating the Engagement Framework

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Raising nurses' awareness and understanding nurses' needs can support an effective response that accelerates in the integration of genomics into practice

Pre-Engagement Events	Engagement Activities	Post Engagement Activities
•Canadian Nurse Article •National conference (November 2020) •Networking nationally and internationally #strongertogether	• Public Accelerator Grant- Memorial University of Newfoundland MEMORIAL UNIVERSITY Public Engagement THE HARRIS CENTRE	• Research Incentive Grant – Athabasca University Athabasca University

Eight Strategies that Support Nurses to Engage with Genomics

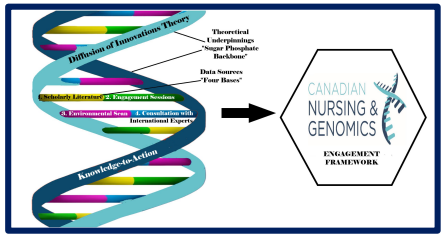
For over 20 years, the body of evidence has evolved on the effectiveness of strategies to support nurses' integration of genomics

1. Accelerating the adoption of genomics into healthcare and education requires leadership and concerted efforts (Tonkin et al., 2020b; Calzone, Kirk et al., 2018).

2. Identifying early adopters and opinion leaders in genetics could accelerate uptake of genomics into nursing practice (Leach et al. 2016)

3. Nurse leaders can use the ASIGN tool to evaluate their context (micro/meso/macro) and set strategic priorities for activity using the matrix. The ASIGN Tool (Tonkin et al., 2020a) includes six critical success factors known to support the integration of genomics.

4. Removing barriers such as lack of time and difficulty finding relevant education resources can support learning foundational knowledge in genomics (Saleh et al., 2019).



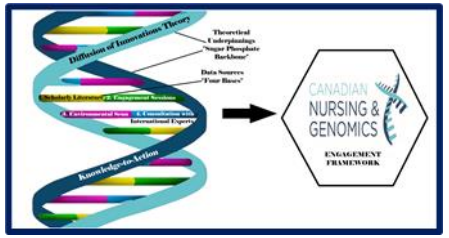
Eight Strategies that Support Nurses to Engage with Genomics

5. Assisting nursing faculty to understand the importance of genomic literacy and genomics informed nursing practice can motivate faculty to learn and make room for genetics/genomics into their courses/curriculum (Fangonil-Gagalang & Schultz, 2021; Daack-Hirsch et al. 2012; Calzone, Jenkins et al., 2018).

6. Engaging in dialogue can assist nurses to navigate the ethically complex challenges of genomics (Walker et al., 2020; Morrow et al., 2018).

7. The roadmap for strategic activity can be used to accelerate the integration of genomics across nursing (Tonkin et al., 2020b).

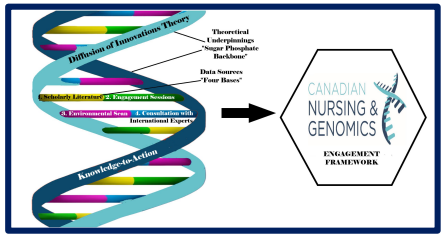
8. Ongoing education at all levels, from entry to practice to continuing education, and clinical integration are required to support the uptake of genomics into practice (Dagan et al., 2021; Zimani et al., 2021).



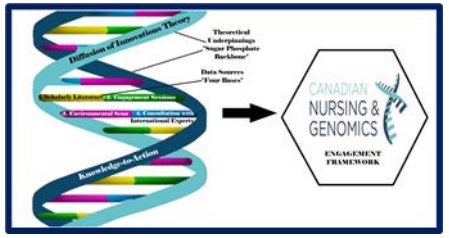
Building the Network to Hear Directly from Nurses

Intra-professional collaboration between nurses in the five domains of practice will accelerate the integration of genetics and genomics into practice

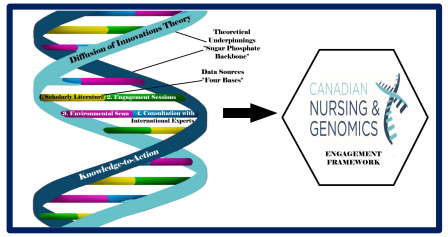
- Participants were invited to join one of four virtual sessions aimed at identifying:
  - Clinical questions (as a pre-research activity)
  - Knowledge needs (to understand education needs/strategies)
  - Interprofessional practice/research opportunities
  - Infrastructure requirements (clinical care initiatives/leadership/regulatory)
  - Network building amongst nurses interested in genetics and genomics



Canadian Nurses said:



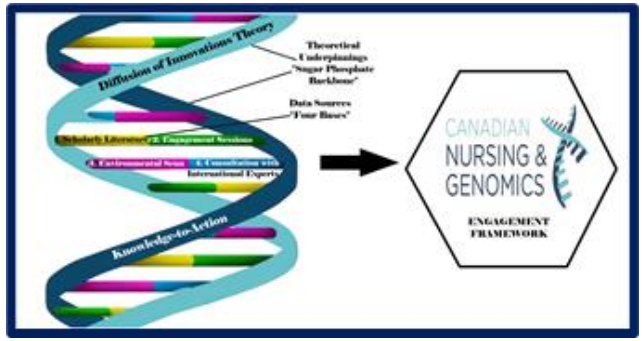
Raise awareness of the importance of genomics to nursing practice to get buy in.
Provide role clarity and define the required knowledge in genomics and precision healthcare for inter-professional and autonomous nursing practice
Conduct research to answer clinical questions and respond to knowledge gaps
Foster leadership to: **a) support inter and intra-professional collaborations** **b) address barriers and enablers to participation in genomics and precision healthcare** **c) develop infrastructure i.e. entry to practice competencies, new care pathways, practice guidelines and policies**



Scanning the Canadian Context

Nurses require infrastructure to support the knowledge acquisition and to have opportunities to use the knowledge in practice

Critical success factors (Tonkin 2020)	Canada	US or UK as example
Enhanced education and workforce development	Genetics is mentioned only once in the baccalaureate nursing entry-level competencies and in the CASN Baccalaureate education framework.	Core genomic nursing competencies established for undergraduate nursing curricula
Effective nursing practice	Few nurse scientists in Canada conducting research using genomic data	The US Omics Nursing Science and Education Network (ONSEN) supports training, collaboration and research
Infrastructure and resources that support incorporation of genomics in practice	No 'made in Canada' resources specifically for nurses No formal policies, position or competency statements or regulation to support genomics for nurses	The NHS in the UK offers many genomic learning resources tailored to nurses such as clinical support tools, workshops, online courses, reference, audiovisual materials
Interprofessional collaboration and communication	No embedded support for interprofessional collaboration in genomics	In the UK, genetic counsellors and genetic nurses have a complementary role (and share a professional society)
Family and community focused care	No formal evidence of this indicator among nurses in Canada	Nurse researchers in the US have co-created patient facing genetic resource materials; researchers/educators have focused on 'family nursing in the era of genomic health'
Health care transformed through policy and leadership	No evidence that nurses in Canada have been involved in the development of genomic health care policies	In the seven NHS Genomic Medicine Service (GMS) Alliances across England, nursing and midwifery are recognized as a key part of the genomics workforce. Nurses hold formal positions in genomics ie chief nurse, senior nurse and/or midwife.



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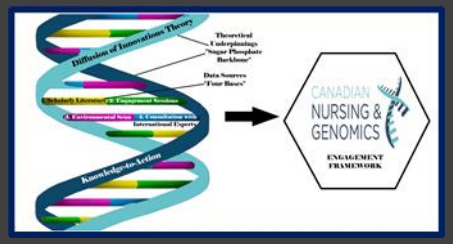
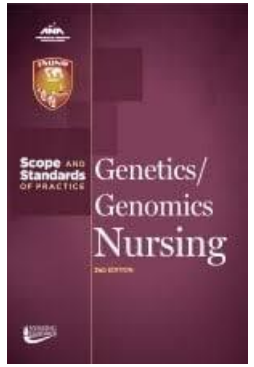


ISONG
INTERNATIONAL SOCIETY OF NURSES IN GENETICS



Contributions from International Experts

ONS®
Oncology Nursing Society

G2NA
GLOBAL GENOMICS NURSING ALLIANCE

Six Key Priorities to Support Genomic Literacy and Advance Nursing Practice in Canada

A framework to guide research, education and practice in genomics was created by connecting the knowledge sources.

Engage nurses to provide support and assistance to see clinical relevance

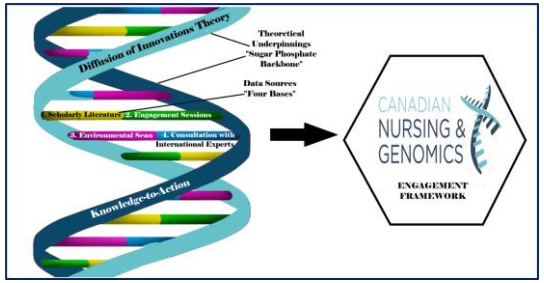
Clarify nurses' unique and overlapping role in genomics

Research to develop knowledge for nursing practice

Workforce development through education

Leadership and clinical innovation to integrate genomics to benefit patients

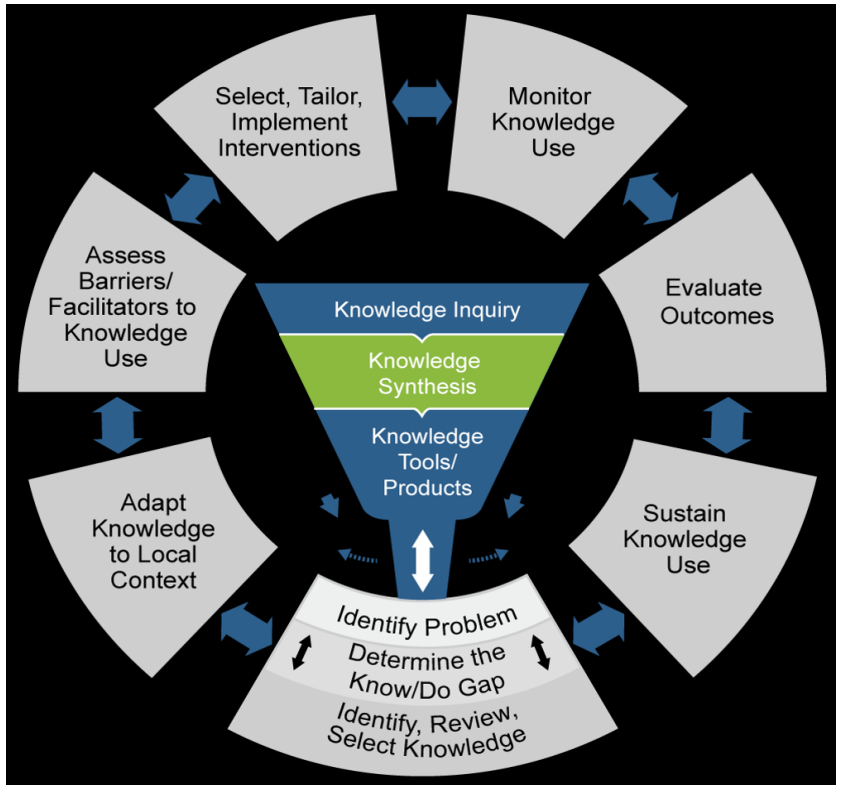
Enhance infrastructure to support professional practice in genomics



Theoretical Foundation

Knowledge to Action Cycle

(Graham et al., 2006)



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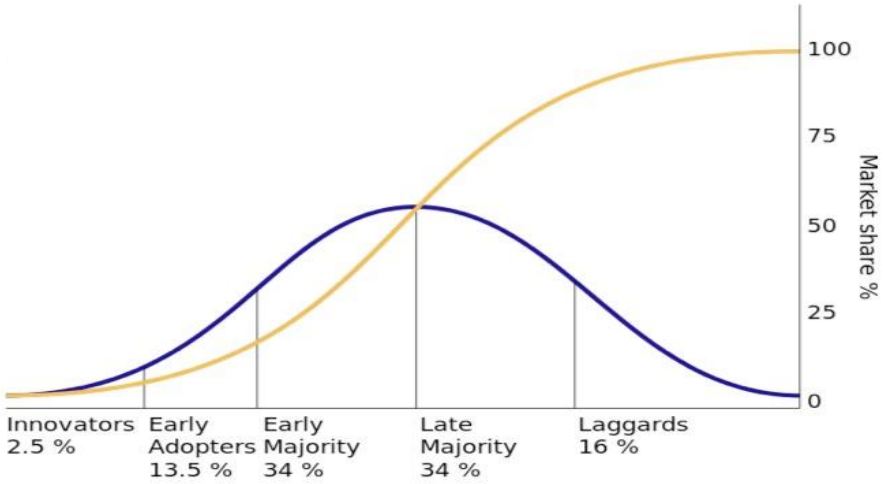

Stages of Diffusion:

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Lessons Learned

- A steering committee with geographical representation, shared goals, and distinct / complimentary backgrounds and areas of expertise facilitated the work.
- Early in the project, focus on getting **'buy in'** from a national nursing organization(s). This affiliation will help with ongoing partnerships and facilitate grant applications.
- Consider the requirements for your granting agencies early in the project, so that you can align your work accordingly and increase your chances of success in securing funds.
- Identify **early adopters** and **leadership support** for every step of the project. This will assist with motivation and help to build networks of collaboration.
- Formalize collaborations between nurses across the five domains and with members of the interdisciplinary team.
- Develop a strong social media presence.

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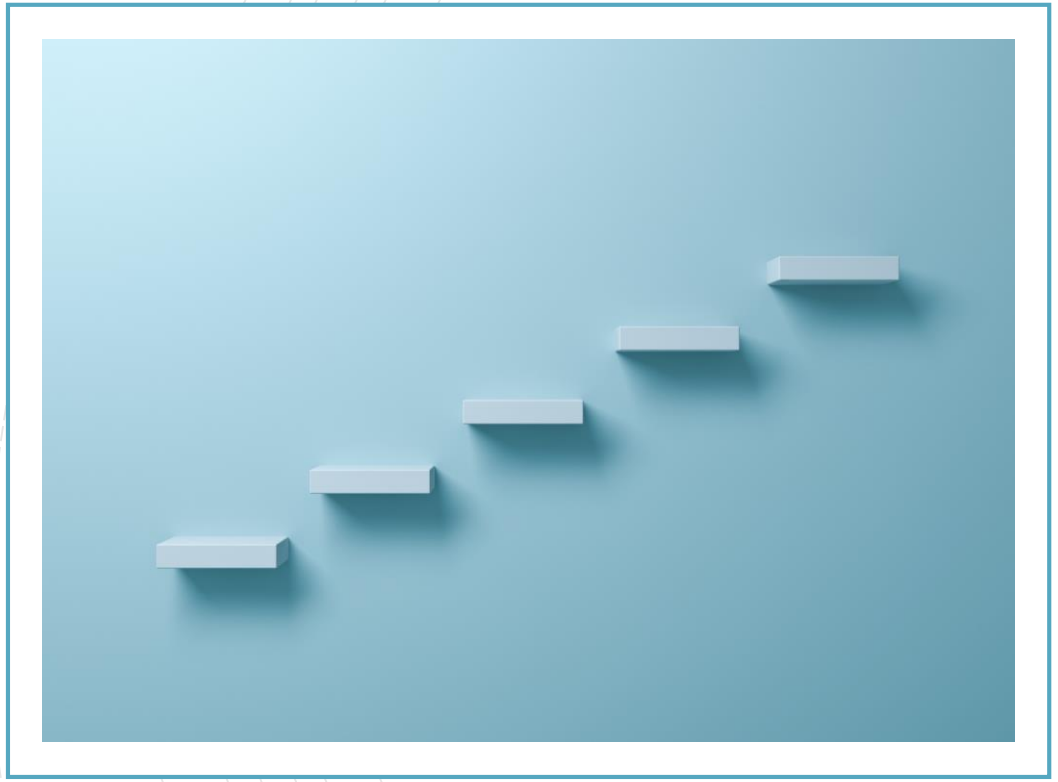
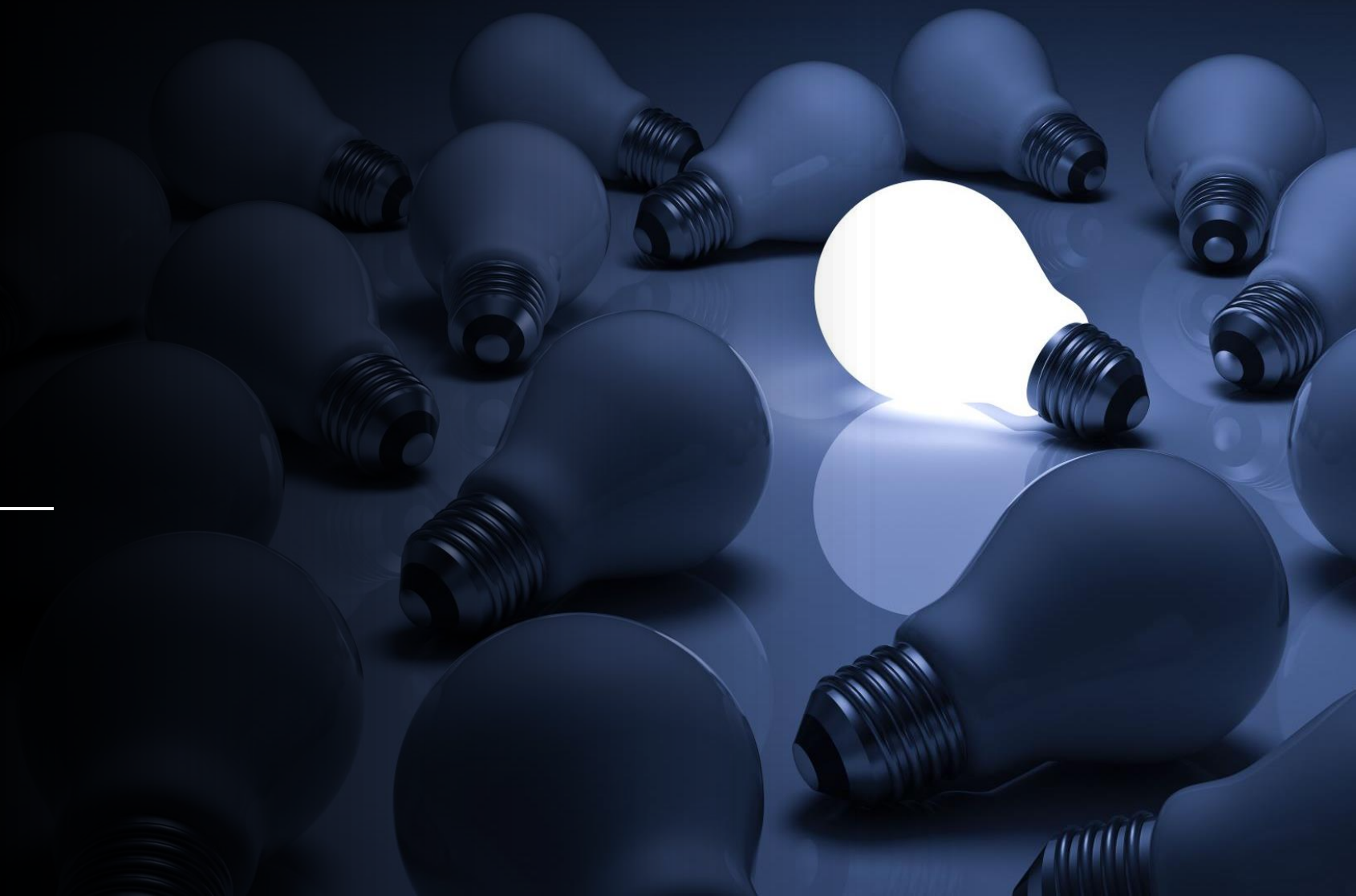
Next Steps for the CNG



- Promote our Engagement Framework and communicate the importance of nursing and genomics to patient outcomes, patient safety and health system transformation
- Strengthen nursing intra-professional collaboration
- Cross Sector and inter-professional collaboration
- Research to determine specific strategies to operationalize the six key priorities of the framework
- Develop resources to raise awareness and support learning
- Create Nursing and Genomics Research Ecosystem

The Future for Nursing in Genomics is Bright



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What Steps Can YOU Take?

I. Visit online resources to learn more and access available tools and webinars

II. Read an article about nursing and genomics

III. Engage with the Canadian Nursing and Genomics, G2NA and ISONG

IV. Advocate within your organization to support genomic literacy and genomics informed nursing practice

Questions?

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