Seniors Health Innovations Hub (SHIH) Framework

A Nurse Practitioner-Led Solution for Ottawa's Unattached Seniors Population

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EXECUTIVE SUMMARY

It is generally true that an aging population is accompanied with an increase in the proportion of individuals living with complex health conditions (Statistics Canada, 2018; WHO, 2017). These conditions (e.g., diabetes, cardiovascular disease, dementia) require special attention to chronic disease monitoring, case management and social supports. Ensuring primary care access and integrated care for older adults living with complex health and social requirements is a responsibility of our health system (Araujo de Carvalho et al., 2017; Canadian Medical Association [CMA], 2016).

Senior Watch of Old Ottawa South (SWOOS), a committee of the Old Ottawa South Community Association (OSCA) is a volunteer-led not-for-profit organization which is committed to meet the needs of seniors in Central Ottawa. In response to the June 2023 Ontario Health Expression of Interest, SWOOS, in partnership with Perley Health and the Centretown Community Health Centre, submitted a proposal requesting funding for two full-time nurse practitioners to act as most responsible provider (MRP) and to offer comprehensive primary care to unattached seniors. At scale (six nurse practitioners) the clinic could serve most of the approximately 7700 seniors without secure attachment to primary care. The proposal suggested that the nurse practitioner clinic would be housed within a new structure, a form of living lab, to be called the Seniors Health Innovations Hub (SHIH). The proposed group of seniors offered care would be over the age of 65, without a primary care provider, and live in the central Ottawa area. The number of seniors in Central Ottawa has increased by 1200 people since 2022 reflecting an aging population who will have increased demands for primary health care (INSPIRE, 2022).

It is well documented that seniors experience interconnected health and social system barriers that negatively impact their access to quality care and equitable health outcomes (Beard et al., 2016). It is estimated that over the next 20 years Canada's seniors' population is expected to grow by 68% (see Figure 1) (Canadian Institute for Health Information [CIHI], 2017). SWOOS has further recognized that the lack of access to primary care has additional significant implications for seniors in the region. This document will explore the primary care crisis across the province for the general population, the barriers that seniors in Ottawa face in obtaining consistent primary care, the greater implications for seniors, and factors that have contributed to this situation. The following Framework and business plan will outline the

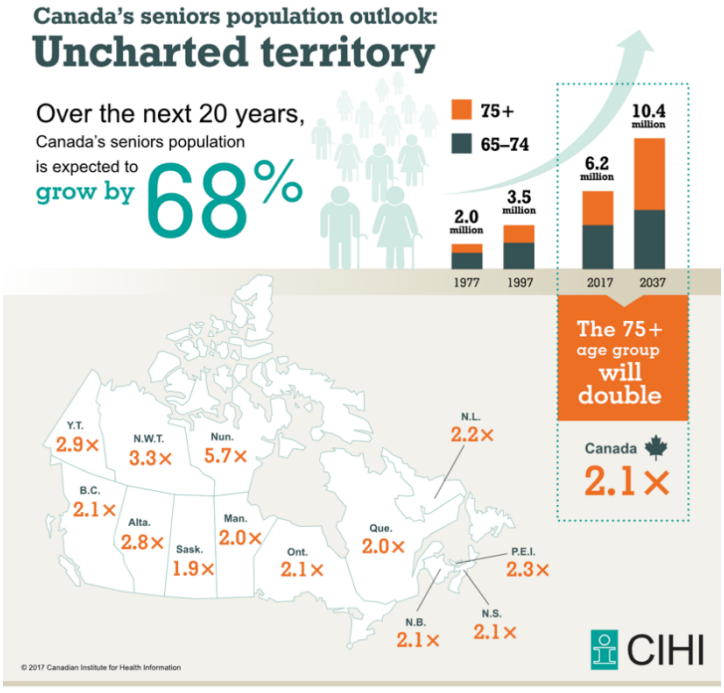


Figure 1. Canadian Institute for Health Information (2017)

strategies and steps to efficiently utilize nurse practitioners as primary care providers for the senior population.

The information provided by CIHI highlights some key demographic trends of the aging population in Canada.

1. In 2015, Canadians aged 65 and over began to outnumber children under the age of 15. This is often referred to as an aging population or demographic aging and it has important implications for healthcare, social services and the economy.
2. From 1920-2020, the life expectancy for Canadians increased significantly, from around 60 years of age to over 82 years of age. This increase in life expectancy can be attributed to improvements in healthcare, living conditions and lifestyle factors.
3. By 2036, Canada is projected to experience further demographic shifts:
    - There will be an estimated 10.4 million Canadians aged 65 and over, reflecting a significant increase in the elderly population.
    - 1:4 citizens will be a senior, underlining the continued growth of the elderly demographic
    - Older adults (those aged 65 and over) will outnumber youths (those under 15) in the country, further emphasizing the growing trend and its associated challenges.

1.0 DEFINING THE PROBLEM

Ottawa is facing a primary care crisis that has been further exacerbated by the COVID-19 Pandemic. A recent report by Ottawa Public Health estimates that 122,000 people in the Champlain region (and 56,000 people within the catchment area of the Ottawa Health Team – Équipe Santé Ottawa (OHT-ÉSO) are not rostered to a primary care provider (Ottawa Public Health, 2022). This is 14% of the population of Ottawa. By 2030, older adults aged 65 and over, are estimated to account for 20% of the population (CIHI, 2017). As our population ages, health needs evolve and increase, and this shift in demographics has significant implications for health resource planning. Comprehensively addressing the health needs of our aging population is a complex problem that requires system collaboration and team-based care approaches to primary care.

Primary care is often the first point of contact for individuals seeking health care services and for seniors with multiple health issues, primary care has the important role of care coordination. The health needs of seniors are best met using a holistic approach to comprehensive care, which incorporates evidenced-based prevention strategies, and care is delivered collaboratively within a team of health care professionals. A senior who is denied access to primary care is also vulnerable to being denied access to other forms of care, with serious consequences.

The role of nurse practitioners in primary care is dynamic and multifaceted, with the ability to lead a primary care team and contribute significantly to improving the accessibility and quality of healthcare services for seniors. However, unlike physicians, nurse practitioners are unable to

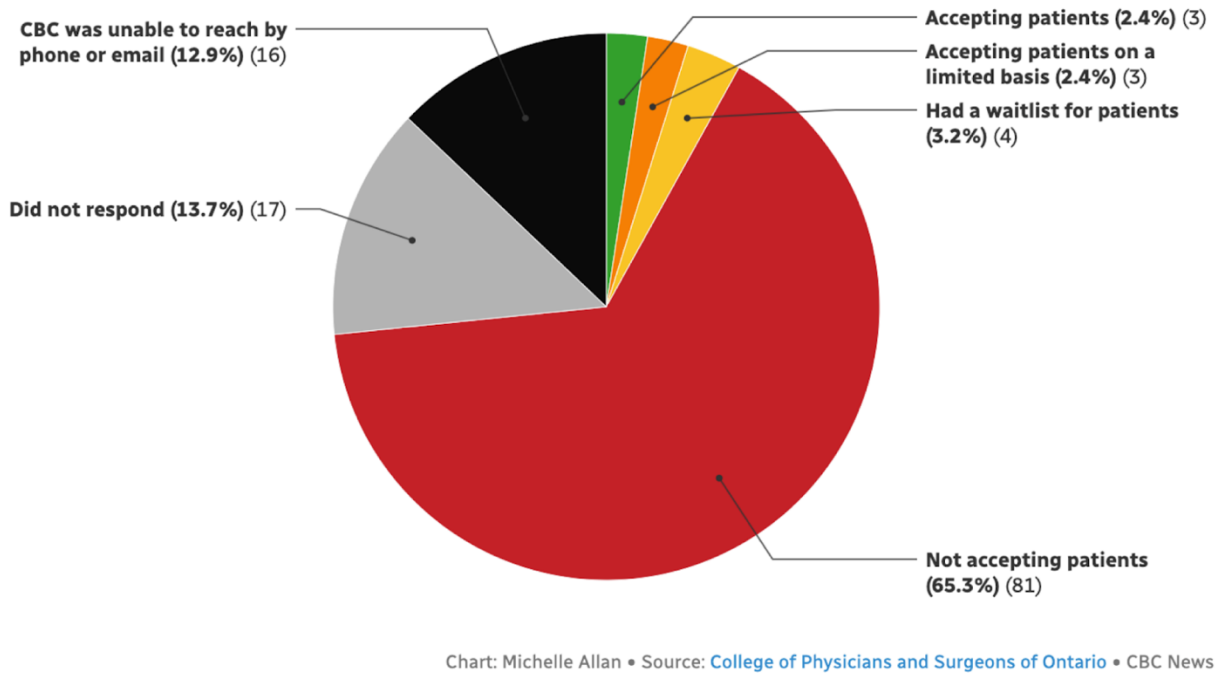
bill the provincial insurance plan, and ministerial funding needs to be secured to build a nurse practitioner-led clinic to serve the needs of seniors in Ottawa.

1.1 Historical Exclusive Reliance on Physicians as Primary Care Providers

The pool of primary care providers is shrinking. Family physicians, currently the largest provider of primary care in Ottawa, are leaving their practices resulting in orphaned patients without access to primary care. Similar to other urban centres, central Ottawa has seen high rates of retiring physicians, resulting in a disproportionate number of seniors left feeling vulnerable and without access to a primary care provider. The primary care crisis is worsened by the low number of physicians currently choosing to enter the field of family medicine, further restricting the ability of seniors to access care.

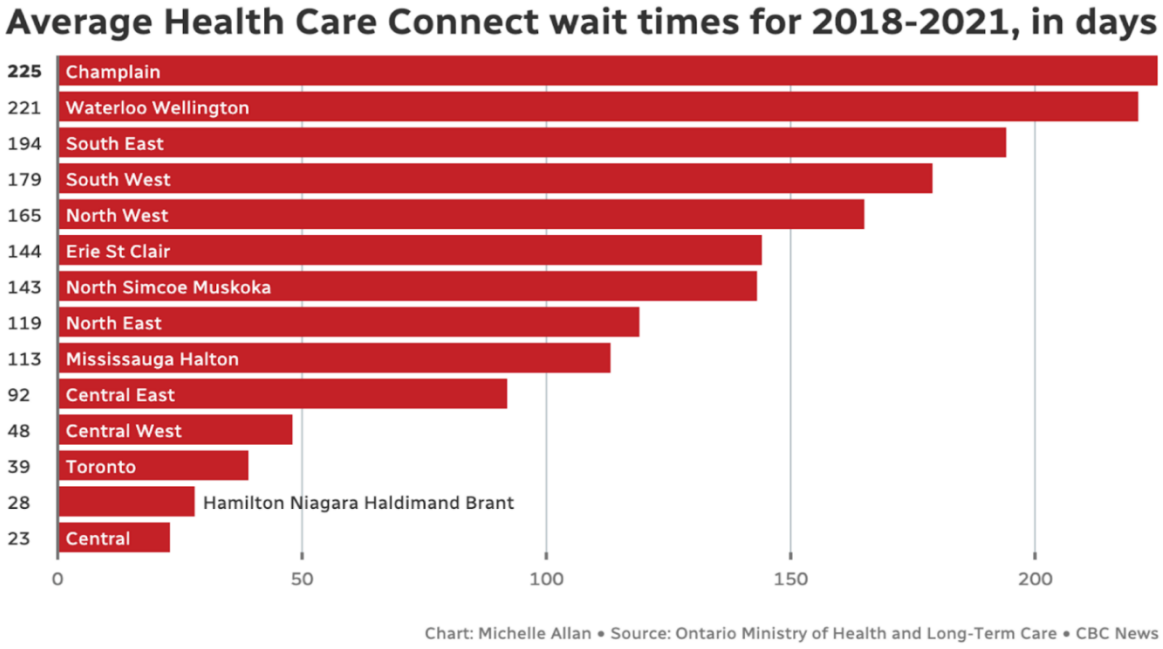
According to a CBC investigative report, 124 family medicine practices in Ottawa were identified, based on CPSO data, including 584 doctors (Allen, 2022). Only three clinics had a single doctor accepting new clients at that time (Figure 2).

Figure 2
Ottawa Practices Accepting New Patients



An indicator of the shortage of primary care is the average wait time spent on the Health Care Connect waitlist before being matched with a primary care clinician. The provincial data (Figure 3) shows that the Champlain region (Ottawa and surrounding area) has the longest wait times in the province with an average of 225 days (Allan 2022).

Figure 3 *Ottawa Wait Times Health Care Connect*



1.2 Insufficient Investment in Team-Based Care

As a community there are even fewer primary care providers accepting new patients into team practices. Seniors' care requires special attention to chronic disease monitoring, case management and social support. Primary care delivery methods that are not team-based do not afford the primary care provider time to manage these complexities and thus leave this population even more vulnerable. Current primary care practices based on fee-for-service remuneration models are often not conducive to dealing with people living with multiple comorbidities such as chronic disease conditions, frailty and social isolation.

Access to a high-quality health care system is a social determinant of health and a basic human right (Raphael et al., 2020). According to an international survey, older adults are most likely to have a primary care provider (CIHI, 2022). However, that has not been the experience in Ottawa. Ontario Health data for Ottawa suggests that approximately 122,000 people in the region (and over 56,000 in the OHT-ÉSO catchment area) are not attached to a primary care provider (INSPIRE, 2022) – a number greater than the total population of the City of Kingston. The 7700 seniors uncertainly attached is above the national average (Statistics Canada, 2020) and that percentage is increasing rapidly as physicians retire. Further, it is becoming

increasingly difficult for Canadian seniors to get a same- or next-day appointment (CIHI, 2022), a further threat to their often-complex health concerns.

2.0 THE VISION

The initiative being proposed for the Seniors Health Innovation Hub (SHIH) is to have:

a) A model of care that strengthens the overall primary care system in Ottawa, with a focus on supporting seniors with the greatest frailty, social isolation and barriers to accessing care. The longer-term goals are **prolonged independence, improved quality of life** and **reduced pressure on institutional care**.

b) Primary health care provided by nurse practitioners (NPs) as most responsible provider (MRP) in order to ensure access to long-term primary care for uncertainly attached seniors living in the central Ottawa area. The proposed model proposes to roster between 1600-2000 **uncertainly attached seniors** in the first two years of operation and can scale up to 6000 patients in subsequent years with additional funding.

3.0 THE SOLUTION

Senior Watch of Old Ottawa South (SWOOS) proposes a new model of primary care for uncertainly-attached seniors who are aging independently in the community. The objective of this care model would be to keep seniors healthy, independent and aging in their own homes with a focus on enhanced quality of life, but also to reduce financial and human resource pressures on the health care system.

The proposed model would be a seniors-focused nurse practitioner-led clinic (NPLC) co-located with a Seniors Health Innovations Hub (SHIH). The hub would also offer socially-based seniors initiatives separate from the NPLC proposal.

3.1 A Nurse Practitioner-Led Clinic

Nurse practitioner-led clinics (NPLC) are an innovative model for delivery of comprehensive primary health care in Ontario and Canada. In this model, nurse practitioners work together in a team-based approach to enable timely access to primary care. One of the unique aspects of the model is the incorporation of nursing leadership within an interprofessional team.

Cost effective: Calculations by Dr. Tammy O'Rourke, a leader in establishing NPLCs in multiple provinces, has indicated that the NP Led model costs the healthcare system $400-575/year/patient (T. O'Rourke, personal communication, January 23, 2023). Nurse practitioners

must be funded on a salary-based model of care, and there are no additional hidden costs to the health care system from billing.

High quality of care: NPLCs were implemented in 2007 to enhance access to primary care. NPLCs achieve higher than average rates of same- and next-day access, hospital discharge follow-up, client engagement and cancer screening rates (HQO, 2018). NPs improve the quality of care through enhanced health promotion, disease prevention, primary mental health care and chronic disease management, as well as improve care coordination and navigation of the health care system. Engaging patients as full partners in their care plan is an important aspect of the underlying philosophy of NPs.

Proven model of care: Currently there are 25 nurse practitioner-led clinics in Ontario serving more than 80 000 Ontarians (MOHLTC). There are no NPLCs in Ottawa. NPLCs are primary health care organizations that provide comprehensive, accessible, person centered and coordinated primary care services to people of all ages and stages in over 20 communities across Ontario.

3.2 Nurse Practitioner as Seniors' Care Providers

Primary care is the foundation of an efficient health care system. Nurse practitioners (NPs) are already on the frontlines of health care delivery, providing high-quality care and managing complex health conditions. Nurse practitioners are ideally positioned to provide care to seniors. Several studies have shown that a greater reliance on nurse practitioners can alleviate pressures on primary healthcare systems, such as those caused by demographic changes (Chouinard et al., 2017; Martin-Misener, 2009).

There are approximately 200 NPs working in the long-term care sector, with more positions being funded (Gov't of Ontario 2022). This indicates an expertise and interest by nurse practitioners to work with seniors and provide care that recognizes the unique health challenges that can be faced during the aging process. A Cochrane review noted the demand for primary care services has increased in part due to population aging, at the same time as the supply of physicians being constrained (Laurent et al., 2005). The authors examined doctor-nurse substitution in primary care on patient outcomes, and found that appropriately trained nurses can produce as high a quality of care as primary care doctors and achieve as good health outcomes for patients.

Nurse Practitioner Core Competencies. The care provided by nurse practitioners aims to reorient our illness-cure system to a health care system with a focus on health promotion, disease prevention and increase in overall quality of life. The Canadian Nurses Association provides a detailed framework of the core competencies of the nurse practitioner (CNA, 2010). Nurse practitioners are autonomous health professionals with advanced education and training. They provide essential health services grounded in professional, ethical and legal standards. Nurse practitioners integrate their in-depth knowledge of advanced nursing practice and theory, health management, health promotion, disease/injury prevention, and other relevant

biomedical and psychosocial theories to provide comprehensive health services. Nurse practitioners work in collaboration with their clients and other health-care providers in the provision of high-quality, patient-centred care. They work with diverse client populations in a variety of contexts and practice settings.

NPs have the competence to provide comprehensive health assessments, to independently diagnose health/illness conditions, and to treat and manage acute and chronic illness. Nurse practitioners order and interpret screening and diagnostic tests, perform procedures and prescribe medications, while integrating the principles of resource allocation and cost-effectiveness. NPs can also admit and discharge patients from hospital and treat patients in tertiary care as well as long-term settings.

Nurse practitioners are accountable for their own practice and communicate with clients about health assessment findings and diagnoses, further required testing and referral to other health-care professionals; they are also responsible for client follow-up. Nurse practitioners counsel clients on symptom management, health maintenance, pharmacotherapy, alternative therapies, rehabilitation strategies and other health programs.

Nurse practitioners have the knowledge to assess population health trends and patterns and to design services that promote healthy living. They provide leadership in the development, implementation and evaluation of strategies to promote health and prevent illness and injury, and they work with interprofessional teams, other health-care providers and sectors and community members. Nurse practitioners collaborate in the development of policy to influence health services and healthy public policy.

4.0 PROGRAM MEASUREMENT GOALS

A critical component of the Framework is the identification of indicators and measures that will help guide evaluation, performance management and improvement. These questions arise from the NPLC model of service delivery for older adults and are aligned to the **Quintuple Aim** which were adopted recently by Ontario Health.

The NPLC has committed to increasing patient attachment for seniors who are uncertainly attached. The longer-term goals are **prolonged independence, improved quality of life** and **reduced pressure on institutional care** for the primary care patients receiving care at the NPLC.

Nurse practitioners are an invaluable resource in our health care system and are a viable solution to the lack of primary health care to Ottawa's senior population. The nurse practitioner expertise, focus on prevention, and patient-centered approach contribute to better health outcomes, improved quality of life, and enhanced access to health care services.

In this initiative, we have implemented various strategies designed to achieve both individual and systemic outcomes. The evidence supporting several of these outcomes is discussed in the

next section of this Framework as well as in the performance indicator chart in section 9.1. The measurements we have in place will serve as indicators of improved overall health and well-being among our clients in the community and are in keeping with the Quintuple Aim. These measurements encompass:

1. **Access:** has a broad definition that includes hours of operation/after-hours care, home care but also will ensure that care is equitable, respectful and tailored to ensure people that often experience barriers to care are actively engaged and supported through the primary care model. The NPLC will measure all aspects of access.

2. **High Quality Primary Health Care:** will be measured using validated primary care frameworks and specific attention will be given to measures that are most meaningful for improvement and health system goals. Measures related to outcomes, patient experience and population health will be included.

3. **Diversity and Equity:** will be operationalized within the data entry guidelines and all indicators will be equity-stratified to inform tailored care and ensure health equity is being achieved.

4. **Reduce Emergency Room Usage:** decrease the frequency of unnecessary emergency room visits by offering ongoing chronic disease monitoring as well as same-day appointments.

5. **Enhanced Medication Adherence:** providing better support and education results in an increase in medication adherence, reducing the risk of complications and hospitalizations associated with non-compliance

6. **Mitigation of Polypharmacy:** strategies include careful medication management and de-prescribing to limit polypharmacy, ensuring that patients receive only necessary medications to optimize their health.

7. **Increased Immunization Uptake:** aim to boost immunization uptake, particularly for influenza and pneumococcal vaccinations, to enhance the immunity and overall health.

8. **Appropriate Cancer Screening:** facilitate timely and appropriate cancer screening, improving early detection and treatment outcomes.

9. **Enhanced Client, Family and Provider Satisfaction:** increase in satisfaction among both clients, families and healthcare providers, reflecting the improved quality of care and patient experience.

10. **Better Quality of Life:** ultimately, initiatives are geared towards enhancing the quality of life of seniors, fostering well-being, and promoting independence.

11. **Continuity of Care:** a coordinated patient-centred approach will result in better continuity of care, ensuring that consistent and appropriate health care services are received.

12. **Culture of Learning and Improvement:** ensuring a culture to foster a cycle of continuous improvement will result in higher quality, safer and more efficient care for patients, and better professional satisfaction for healthcare providers. All NPLC partners are committed to work with the MOH/OH to develop and implement continuous improvement and initiate a Quality Improvement Plan (QIP) and participate in the Collaborative QIP. The data entry framework will accommodate all QIP measures as well as ongoing performance metrics.

5.0 PROPOSED SENIORS-FOCUSED NPLC

These outcomes collectively demonstrate the positive impact of nurse practitioner care on the health and well-being of this priority population.

From the literature, a range of benefits have been found in relation to the effectiveness of nurse practitioners (Mattison & Wilson, 2018) including:

- **Increased adherence to guidelines in primary care;**
- **Improved overall quality of care in emergency departments;**
- **Improved health outcomes (including a reduction in pain) in long-term care;**
- **Improved communication and collaboration within health teams; and**
- **Improved medication adherence;**
- **Increased cost savings to the health system (NPs in primary care, specialty care long-term care);**
- **Improved patient satisfaction for care provided by nurse practitioners**

5.1 Economic Benefit

Over the past five decades it has become evident that both doctors and nurse practitioners both can, and need to, provide primary care for patients. It is important to specifically consider the economic and practical feasibility of nurse practitioners. Nurse practitioners' added value is often mentioned in publications, but there is no consensus on what value is being added, and context is needed to better understand the impact of the nurse practitioner role (Savard, Al & Kirkpatrick, 2023). Nurse practitioners as MRP for seniors has the potential to improve accessibility to primary care services without lowering quality of care or patient satisfaction levels (RNAO, 2021).

Lower Cost of Care. In a large American study where the authors analyzed Medicare insurance payments, the authors found the cost of NPs was 18% less for office visits compared to physicians, and confirmed that increasing access to NP primary care will not increase insurance costs (Perloff et al., 2016). Similarly in another American study reviewing costs billed through veteran's affairs, compared to MD-assigned patients, NP-assigned patients were less likely to use primary care and specialty care services and incurred fewer total and ambulatory care sensitive hospitalizations (Liu, 2020). In fact, the authors found that use of NPs and PAs as primary care providers for complex patients with diabetes was associated with less use of acute care services and lower total costs (Morgan, 2019). In looking at the effectiveness of nurse practitioners in long-term care, the authors noted that although advanced practice nurses were associated with improvements in several measures of health status and behaviours of older adults and in family satisfaction, the study highlighted the importance of recognizing that cost-savings was attributed to lower salary in the profession (Donald et al., 2013).

Emergency Diversion. NPs are keeping Ontarians out of expensive ERs by reducing transfers and decreasing hospital length of stay (Lacny et al., 2016). The Canadian Institute for Health Information (CIHI) examined the costs of emergency department (ED) visits, which have increased between 2005 and 2022 by over 100% (CIHI, 2023). The authors note that an ED visit almost always involves many hospital resources in addition to physician billing, such as diagnostic imaging, housekeeping and administration resulting in an even greater cost per patient (CIHI, 2020). Nurse practitioners providing comprehensive primary care will help to keep seniors healthy, independent and aging in their own homes with an enhanced quality of life, resulting in less frequent, costly visits to the hospital.

Sustainable Health Human Resource Investment. Nurse practitioners are prepared and equipped to take action to help meet seniors' primary care needs now and ongoing. The Canadian Nurses Association reported a growth of the NP profession by 10.7% since 2020, the largest increase of all the nursing designations (CNA, 2021). In fact, NPs became one of the fastest-growing professions in health care. The College of Nurses (CNO) July 2022 data reports that Ontario has 4,352 NPs, 448 of which are in Ottawa (CNO, 2022). Data from the University of Ottawa indicates 77% of Ottawa nurse practitioner graduates remain in Ontario and continue

to work in primary care Al Hadad, 2022). A nurse practitioner-led clinic co-located with a seniors' hub is a sound investment in sustainable health care provision.

Reduction in Polypharmacy. Polypharmacy in advancing age frequently results in drug therapy problems related to interactions, drug toxicity, falls with an injury, delirium, and nonadherence. Polypharmacy can be defined as the use of multiple medications (five or more prescribed drugs per day) and/or the administration of more medications than are clinically indicated, representing unnecessary drug use (Hajjar, Cafiero & Hanlon, 2007). Polypharmacy is associated with increased hospitalizations and higher costs of care for individuals and health care systems. One study looked at decreasing polypharmacy, examining the effect of a multidisciplinary care team on medication use among at-risk patients (using the medication appropriateness index) (Fletcher et al., 2012). The findings suggest a significant improvement in inappropriate medication use, and thus health sequelae, if care is provided using a team-based approach, including care provided by nurse practitioners. Similarly, in an American study looking at potentially inappropriate medication (PIM) prescribing, the authors found that the rate of PIM prescriptions was lower among NPs than among primary care physicians (Tzeng et al., 2022).

Improved Patient/Client Satisfaction. Improved satisfaction can translate into economic value. The authors of a systematic review found that while there were no significant differences between nurse practitioners and doctors in health outcomes and health status, and patients were more satisfied with care by a nurse practitioner (Horrocks, Anderson & Salisbury, 2002). The Organization for Economic Cooperation and Development (OECD) provided a synthesis of advanced nursing roles in primary care in 37 OECD-designated countries and found that task-shifting from physicians to nurse practitioners resulted in equivalent or improved quality of care (Directorate for Employment, 2010). Furthermore, the authors reported nurse practitioner-led care resulted in higher patient satisfaction, a finding most likely attributed to greater information provision and counselling in nurse practitioner-led care compared to physician-led care.

The transition from hospital care poses a potential challenge for patients and families, and the management of care in this period is essential. Measures of anxiety reduction and patient satisfaction were improved in models of nurse-practitioner care (Donald et al., 2015). Nurse-practitioner care was also superior to usual care in terms of reduction of re-hospitalization.

Improved health with team-based care. It is well documented that older persons experience interconnected health and social system barriers that negatively impact their access to quality care and equitable health outcomes (Beard et al., 2016). Improving the care of older adults in our healthcare system involves teams working together (Bhattacharya et al., 2021). Nurse practitioners who work as part of a team in primary care practices reported favorable teamwork, and that teamwork affects clinician job satisfaction and intent to leave as well as perceived quality of care in their practices (Poghosyan et al., 2020). A team-based model of care for seniors led by NPs is in keeping with Ontario's strategy to re-design health systems in ways that strengthen connections across the continuum of care at system, organizational, and

person levels in order to integrate care for older persons living with complex health and social requirements in Ontario (Horgan et al., 2021).

6.0 FEASIBILITY AND LIMITATIONS of NP INTEGRATION

Research on the economics and feasibility of nurse practitioners (NPs) in healthcare has been conducted, but there may still be gaps in our understanding of this topic. Numerous barriers inhibit the integration of full role components of nurse practitioners (NPs) into our health care system. These include:

Studies demonstrate great improvement in access to primary care when nurse practitioners are utilized.

Nurse practitioners are capable of handling 82.6 percent of patient care, with the remainder requiring physician referral. Nurse practitioners can manage 80 to 90 percent of what primary care physicians can do without the need for consultation or referral.

1. Regulatory Barriers: In many places, laws and regulations limit the scope of practice for nurse practitioners. These restrictions can both prevent NPs from providing the full range of services nurse practitioners are trained to deliver, as well as impact NP economic viability. In looking at the policies to help integrate NPs into existing primary care structures, there have been suggestions to have policy adjustments to enable NPs to access different funding agreements, and to allow NPs to have greater input into how their role is utilized (Black, Fadaak & Leslie 2020).

2. Remuneration Models: Currently, NPs cannot bill the Ontario Health Insurance Plan (OHIP) directly for visits, and therefore must be funded on a salary-based model. Payment and reimbursement policies can affect the ability to evaluate the economic feasibility of NPs. NPs are not reimbursed at the same rate as physicians for providing similar services. Furthermore, this discrepancy in funding can create financial challenges for organizations that employ NPs. For example, because NPs are not permitted to bill OHIP for healthcare services, NPs are often funded through a salary-based model or through their participation in collaborative practices. Some healthcare organizations may contract physicians to provide services that NPs are qualified to deliver. This could be due to various reasons, including administrative complexities which include the fact that physicians are able to bill OHIP for services as opposed to remunerating NPs from the organization's funding envelope. It is important to note that, this redirection of service delivery may not translate into provincial fiscal responsibility, but rather a measure to preserve independent organizational funds while inadvertently dipping into the public purse. NP funding models need to be flexible, modern, affordable, responsive to the needs of a wide range of patient populations and support the work of health care leaders, funders, and policymakers in sustaining NP practice models (Marceau et al., 2021).

3. Lack of Full Autonomy: Despite the expansion of NP scope of practice, in some settings, NPs may still be required to work under the supervision of a physician. This can unnecessarily limit their independence and decision-making authority. Furthermore, this limitation in practicing full scope affects overall efficiency, ability to fully contribute to the health care team and

potentially impacts the measurement of their economic value. Despite the capabilities of NPs and the noted benefits, they are continually underutilized in the Canadian health care system El Hussein & Ha, 2022). Changes to system-level factors such as policies, clinical procedures and guidelines, incentives, education, and licensing will ensure workplace satisfaction and contribute to retention and stabilization of the NP workforce.

4. Data Collection and Analysis: There is limited data on the long-term economic and healthcare outcomes associated with NP-led care, making it difficult to assess their economic impact comprehensively. While key informants noted that the Ministry of Health and Long-Term Care has robust systems to track physicians (e.g., OHIP billing), the Nurse Practitioner Access Reporting system does not collect the same level of data on nurse practitioners, which significantly limits the monitoring capabilities. Similarly, within hospital data systems there is not a common database to capture data specific to care delivered by nurse practitioners. Research into these barriers and the economic impact of nurse practitioners in healthcare is ongoing. Addressing these barriers and maximizing the contributions of NPs in healthcare delivery can lead to a more efficient and cost-effective system.

5. Health Workforce: The number of trained NPs is limited but growing. In 2022, 7,113 NPs were employed in direct patient care in Canada with an annual growth rate of 10% (CIHI, 2023). The number of NPs in Ontario has increased substantially over the past decade, with nearly 5000 nurse practitioners registered in the province (CNO, 2023)[1]. However, the contributions made by NPs to client care and the health system are undervalued and insufficiently recognized.

7.0 EVALUATION FRAMEWORK

There is a growing demand for better accountability, ongoing evaluation and continued improvement in primary health care. Health care organizations need a meaningful way to demonstrate the value of programs and services to their stakeholders and have ongoing data available for learning and improvement. This requires a common approach to describing the services an organization provides and a performance measurement framework that will accommodate multiple objectives.

The SHIH Nurse Practitioner-Led Clinic (NPLC) evaluation plan has been designed using the Quintuple Aim as the framework. This framework has evolved from the Institute of Healthcare Improvement Triple Aim (improving population health, enhancing the care experience, reducing costs) beyond the Quadruple Aim (address clinician wellbeing) to “quintuple aim that includes advancing health equity (Nundy, Cooper & Mate 2021).

This document provides an overview of the measurement framework as well as a proposed data collection plan. This evaluation tool is intended to ensure on-going iterative improvement within the organization, enable funder accountability and report on metrics required for the Quality Improvement Plans. The Evaluation Framework (the Framework) is intended to support

ongoing assessment and evaluation of services and be generic enough to apply broadly across all providers and services and be used for ongoing reporting and improvement activities. The framework contains a series of discrete but associated components that can be used to evaluate the programs and services of the NPLC and also will provide the necessary framework for an ongoing learning and improvement culture.

Importantly, the Ministry of Health (MOH) and Ontario Health (OH) may have additional reporting requirements such as patient enrollment that can easily be included with this Framework.

The Framework is divided into three sections:

1. Program Description, objectives, broad activities and outcomes (see Section 8)
2. Evaluation questions, indicators (process, outcome and future-state system measures) (see Section 9)
3. Data Collection Plan (see Section 10)

Principles/Assumptions

1. Enter data once, use many times

2. Data will be standardized, when possible, to enable administrative data linkage and comparability throughout primary care

3. All clinicians and interprofessional team members will record their interactions in a shared primary care EMR that is certified by Ontario MD (or an equivalent certification) to ensure all of the primary care and team-based care can be included in performance measures, improvement metrics and analytics

4. We are taking a developmental approach. It is assumed that the Framework and its various components will undergo on-going modifications and improvements to adapt to emerging contexts as it relates to older persons and primary health care but the data entry guidelines should accommodate for this. We recognize that metrics should inform ongoing learning and improvement and will evolve over time.

The development of the Framework (and its component parts) is informed by models of primary care, nurse practitioner led care, empirical evidence, and grey literature that have identified measures relevant to primary care for an older population. In addition, quality improvement and current accountability measures mandated for Ontario team-based primary care organizations have been included. Together, the components form a comprehensive toolkit from which to improve care delivery, enable ongoing administrative and practice performance metrics as well as ongoing quality improvement and learning.

8.0 PROGRAM DESCRIPTION

The Seniors Health Innovation Hub is developing a NPLC model of primary health care for seniors 65+ who are aging independently in the community and are uncertainly attached to primary care. Key partners in this project include Perley Health and the Centretown Community Health Centre. Additional resources will be available to all NPLC patients through these collaborations.

Program Measurement Goals

A critical component of the Framework is the identification of indicators and measures that will help guide evaluation, performance management and improvement. These questions arise from the NPLC model of service delivery for older adults and are aligned to the Quintuple Aim.

The NPLC has committed to increasing patient attachment for seniors who are uncertainly attached. The longer-term goals are prolonged independence, improved quality of life and reduced pressure on institutional care for the primary care patients receiving care at the NPLC.

The proposed model has planned to roster between 1600-2000 uncertainly attached patients in the first two years of operation and can scale up to 6000 patients in subsequent years with additional funding.

Access has been defined using a broad definition that includes hours of operation/after-hours care, home care but also will ensure that care is equitable, respectful and tailored to ensure people that often experience barriers to care are actively engaged and supported through the primary care model. The NPLC will measure all aspects of access.

High quality primary health care will be measured using validated primary care frameworks and specific attention will be given to measures that are most meaningful for improvement and health system goals. Measures related to outcomes, patient experience and population health will be included.

Diversity and equity will be operationalized within the data entry guidelines and all indicators will be equity stratified to inform tailored care and ensure health equity is being achieved. It is well documented that older persons experience interconnected health and social system barriers that negatively impact their access to quality care and equitable health outcomes (Beard et al. 2016).

We are committed to ensure a culture of learning and improvement. This cycle of continuous improvement will result in higher quality, safer and more efficient care for patients, and better professional satisfaction for healthcare providers.

All NPLC partners are committed to work with the MOH/OH to develop and implement continuous improvement and initiate a Quality Improvement Plan (QIP) and participate in the

Collaborative QIP. The data collection plan will accommodate all QIP measures as well as ongoing performance metrics.

Process Evaluation Measures

Process evaluation examines the extent to which program implementation has taken place, the nature of the people being served and the degree to which the program operates as expected. Basic outputs will be measured and will include primary care, health promotion and disease prevention as well as curative, rehabilitative, supportive and palliative services to targeted individuals or populations. Primary Health Care (PHC) services and products can be described and measured in terms of distinguishing qualities, for example, first-contact accessibility, comprehensiveness of services, continuity, cultural sensitivity, interpersonal communication, respectfulness and technical quality of clinical care.

Outcome (or Impact) Evaluation Measures

Measures of outcome can take on several levels of complexity. The most elementary level involves the assessment of the condition of those who have received the service – that is, are clients healthier?

Primary health care outcomes can be immediate, intermediate or long-term and evidence suggests that the primary health care sector should be held more accountable to immediate outcomes and less accountable to intermediate and final outcomes. Immediate outcomes are those most directly attributable to outputs and for which the PHC workforce of policy makers, managers and practitioners can reasonably assume control, responsibility and accountability.

Three immediate outcomes are, for the most part, under direct control of the PHC sector: increased knowledge about health and healthcare among the population; reduced risk, duration and effects of acute and episodic conditions; and reduced risk and effects of continuing health conditions.

Population Health and Planning and System-Level Evaluation

The NPLC is committed to contribute data to system level evaluation and planning through participation in POPLAR and other data linkage endeavors. The clinic's data will be coded and standardized which will enable easy data linkage to other administrative databases ensuring that all patients served within the NPLC can be included in system level analytics either at the Ottawa Health Team, OH-region or provincial level.

Individual-level linkage of person-specific data offers the opportunity to aggregate anonymized information across databases about (a) the population perspective, to create a fuller understanding of peoples' use (or non-use) of health services, or (b) the provider perspective, to create a richer picture of professionals' practice patterns. Individual-level linkages between person-specific and organizational- or area-level information create nested data structures that offer the opportunity to test hypotheses regarding, for example, the impact of different

organizational characteristics or community contexts on supply, distribution, delivery and use of PHC services.

9.0 PERFORMANCE AND REPORTING INDICATORS

Principles of Good Indicators

In order to be meaningful, indicators should adhere to the following principles: They should be valid, reliable, sensitive, acceptable, feasible, universal, and inclusive. These seven principles are defined below; collectively, they state that good indicators measure the right things consistently and accurately, in a way that can be understood and accepted; that the process of collecting the data does not create undue burden; and that the same indicators have consistent meaning in diverse settings.

Valid: The indicator measures what it is supposed to be measuring.
Reliable: The indicator can produce consistent results each time.
Sensitive: The indicator is sensitive and can measure changes over time or between groups.
Acceptable: The indicator is understandable and credible.
Feasible: The indicator can be collected and managed.
Universal: The indicator can be used with different groups.
Inclusive: An indicator that is developed with more than one group is more likely to be inclusive.

Validated and meaningful indicators have been selected from various frameworks and include the nine attributes of a high performing health care system – access, patient-centredness, integration, effectiveness, focus on population health, efficiency, safety, appropriate resources, equity which have been aligned with the Institute of Healthcare Improvement Quintuple Aim.

This work considers and aligns with the following prominent provincial, national, and international-level frameworks for older adults (WHO, 2017, WHO, 2019, RGP, 2017, Wodchis et.al, 2021, OH 2023, PHAC 2015.). In addition, the stated goals of the NPLC proposal have been used to guide to prioritize measures and include: ensuring people who are uncertainly attached to primary care have access, prolonged independence, improved quality of life and reduced pressure on institutional care. In addition to the indicators included, ad hoc metrics and improvement data will be available to monitor and improve care. In particular this could be focused on prevention and promotion activities such as routine preventive care by NP (and team) (e.g., influenza vaccination, pneumococcal, mental health risk assessment, risk assessment for cardiovascular disease, eye exams, hearing tests).

9.1 Indicator Cascade

INDICATOR	Quintuple Aim					QIP/CQIPs			Data Source				
	Patient Experience	Population Health	Cost of care	Health Equity^	Provider Experience	Equitable Care	Timely and Efficient Care	Safe/Effective Care	EMR	Practice Profile*	Patient Expereince Survey	Patient Reported Outcome Measures	OHT Level Measures
Advancing Timely Access to Primary Care													
Number of new patients (previously unattached)	x			x		x			x				
Timely access to a primary care provider (same/next day)	x			x			x				x	x	
% primary care clients receiving inter-professional care	x								x				
High Quality Primary Care													
Medication review in previous 12 months	x							x	x		x		
% of non-palliative care patients newly dispensed an opioid	x							x		x			
Fall Prevention (or % of older adults reporting a fall)	x								x		x		
Influenza vaccination rate		x		x					x	x			
Pneumovax vaccination rate		x		x					x				
Breast cancer screening rate		x		x				x		x			x
Colorectal cancer screening rate		x		x				x		x			x
Cervical cancer screening rate		x		x				x		x			x
Costing and Efficiencies													
Interactions (visits) by provider type			x						x				
Number of individuals served by NPLC			x						x				
Cost per unit of service			x						x				
Cost per individual served			x						x				
Health System Outcomes													
% of ALC days								x					x
Rate of ED visits for first MHA-related care													x
ED visits by CTAS levels	x		x							x			
ED visits best managed elsewhere	x		x							x			
Admissions for Ambulatory Care Sensitive Conditions	x		x							x			
Hospital readmissions within 30 days	x		x							x			
Hospital readmissions within 1 year	x		x							x			
Client Reported Experience and Outcomes													
% clients who always feel comfortable and welcome	x										x		
Care is reported to be holistic and recognizes opportunities to optimize all aspects of health	x										x		
% of people age 65+ who want to remain in their current residence and are confident they can do so	x										x		
% of patients who have been approached to participate in advance care planning and/or who have a documented conversation with their PCP	x										x		
Patient involvement in decisions about care	x			x			x				x		
Patient reported quality of life	x											x	

*Practice Profile data will be available after EMR data is sent to ICES/MOH

**Health Equity is seen as a cross-cutting equity and all indicators will be equity-stratified

10. DATA COLLECTION PLAN

This section is a guide to identify the information that should be collected. The bulk of the data that informs this evaluation framework is generated from the primary care electronic medical record (EMR) and patient surveys. The actual data elements will be dependent on the EMR selected however attempts should be made to collect standardized data that will enable all indicators, reporting and improvement efforts as well as data linkage in the future to ensure that the NPLC data can be included in system level measurement and accountabilities.

- On-going provider EMR training and support should to ensure consistent data entry.
- Patient experience and patient reported outcomes will be gathered using either paper or electronic surveys.
- Individual patient information is gathered whenever there is contact with any NPLC staff that would warrant a note in the EMR.
- Information is documented for both telephone, video or other technologies and face-to-face contact with patients. Each individual provider should indicate the actions for which they are responsible in a separate encounter/visit note.

Three broad categories of individual patient information are to be gathered:

- General identifying information (this answers basic questions about who the NPLC is serving)
- Sociodemographic information (this describes the characteristics about the patients served at the NPLC)
- Information about interactions with the client (detailed information about the services provided between all NPLC providers and patients)

10.1 Registration and Sociodemographic Data Collection

When	Usually during the first contact and then updated when a change occurs
Who	Reception or Providers
How	The Electronic Medical Record
Why	This information helps answer questions such as: • Is the NPLC serving their intended populations? • Are providers addressing the social determinants of health? • Are health outcomes being equitably obtained? • Do certain groups of patients require tailored of service delivery?
What	Three types of individual patient information should be collected for all registered clients: • General client information (unique patient id/chart number, date of birth, gender, sex at birth, postal code, health card number) • Sociodemographic information for each client (Ethnicity/race, Household income, etc) • Social need information (ability to make ends meet, loneliness, etc.)

10.2 Individual Interactions with Provider Data

All patient interactions with a provider should be recorded using standardized data to ensure data is usable and extractable for data linkage and reporting. Templates can be designed to facilitate data entry within the EMR and be streamlined with the provider's clinical notes. All providers should record this information in every encounter each time there is a service provided to or for a client.

When	There is contact/interaction between any NPLC staff and a patient and services are received by the patient
Who	The staff involved - only one staff member per encounter/visit – if there is more than one provider involved each individual should complete their own encounter. Staff members should complete individual encounters every time they have a one-on-one interaction with a patient.
How	Information is completed about each contact with individual clients. Each encounter should be associated with only one provider. If a provider is working in coordination with other providers, each one should record their own encounter.
Why	This information helps answer questions about the services provided for patients and will provide relevant information for output data, costing, performance indicators and quality improvement initiatives
What	Standardized data reflecting the type of visit (in-person, telephone/video), location of visit (NPLC, home visit, community agency), all diagnoses/issues addressed (using standardized nomenclature e.g., ICD10, ENCODE-FM), all services, procedures, immunizations, and referrals.

10.3 Patient Reported Experience Survey

Involving patients in their care is a key feature of health care improvement policies across countries and health systems. Recognizing that patients are experts about their experience over their care journey is key to ongoing improvement and reporting. Measuring patient experiences on a regular basis provides a systematic and objective way to get insight into which processes in the practice are working well for them, and which can be improved. By collecting data, establishing a baseline and analyzing this information, the practice can improve and redesign processes, monitor progress over time, and improve patient experiences. Health Quality has provided a comprehensive guide to conducting patient experience surveys as well as proposed survey questions (Health Quality Ontario, 2015)

When	A survey schedule should be used to make sure a comprehensive view of all patient experiences are captured in the survey. A year-round rolling approach is the gold standard however recognizing this may be perceived as too onerous, the recommendation is to identify one week per month to conduct the survey (less ideal is one week every quarter).
Who	A staff person should be available to explain the survey to the patient and answer any questions. This can be done by receptionists, providers or volunteers.

How	The survey data can be collected on-line (e.g., Survey Monkey) or using a paper survey. It is recommended that the surveys are dropped into a sealed box (or done electronically) rather than handed back to the provider. Determine the sample size for the survey and ensure communication materials are posted at the clinic (e.g., poster). Import data (from an on-line survey) or enter data into excel (or another analytic tool). Reflect on quantitative and qualitative data for ongoing improvements.
Why	Understanding patient experiences are key to understanding quality of care in your practice and is also required for QIP and on-going accountability.
What	Health Quality Ontario Patient Experience Survey, Health Quality Ontario, 2015.

10.4 Patient Reported Outcome Measurement (PROMs)

Patient reported outcome measures (PROMs) provide insight on the effectiveness of care from the patient's perspective (CIHI). By capturing data to monitor and compare individuals' healthcare outcomes, PROMs can measure care effectiveness and contribute to its improvement (van Oppen et al. 2020). PROMs use in primary care has expanded from simply describing patient populations to contributing to decision making, in response to the increasingly complex, ever-changing healthcare environment.

When	Different points of time e.g., pre and post, every 6 months etc. (Brower, et al, 2021)
Who	A staff person should be available to explain the survey to the patient and answer any questions. This can be done by receptionists, providers or volunteers.
How	The survey data can be collected on-line (e.g., Survey Monkey) or using a paper survey. Determine the sample size for the survey and ensure communication materials are posted at the clinic (e.g., poster). Import data (from an on-line survey) or enter data into excel (or another analytic tool). Reflect on quantitative and qualitative data for ongoing improvements.
Why	Understanding patient reported outcomes are key to understanding whether health care services and procedures make a difference to patient's health status and quality of life.
What	Several possibilities (possibly project specific). A commonly used PROM tool EQ-5D (tool available upon request from CIHI (CIHI, 2015))

11. CONCLUSION

Nurse practitioner care is ideal for this population. We are proposing a demonstrated model that is team based, as a NPLC. We know that our senior population in Ottawa is increasing, and the current resources are not enough to meet the demand for primary health care.

This model of care will strengthen the overall primary care system in Ottawa, with a focus on supporting seniors with the greatest frailty, social isolation and barriers to accessing care. The longer-term goals are prolonged independence, improved quality of life and reduced pressure on institutional care for the primary care patients receiving care.

Working with community partners, as well as providing care in a team-based model, will ensure that senior's health care needs are met holistically. This framework clearly demonstrates that NPs are optimal to delivering care to the older adult population. We are building an evaluation framework that is iterative, ensuring ongoing quality care, continuous improvement and accountability.

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