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Heart Failure Care in Rural Canada: Nurse Practitioners Addressing the Disparity

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Letter from the Editor

As summer comes to an end and we head into fall, we are looking ahead to the NPAO conference on September 21-22 in Toronto.

We will be there and look forward to meeting and talking with the NP community.

Come by and let us know what you would like to see in the NP Current – we welcome any feedback and suggestions.

Thank you for the manuscript submissions that keep coming in and the reviewers who give their time. If you have an idea for an article, someone you think we should interview, or a clinical pearl to share with your peers, please get in touch!

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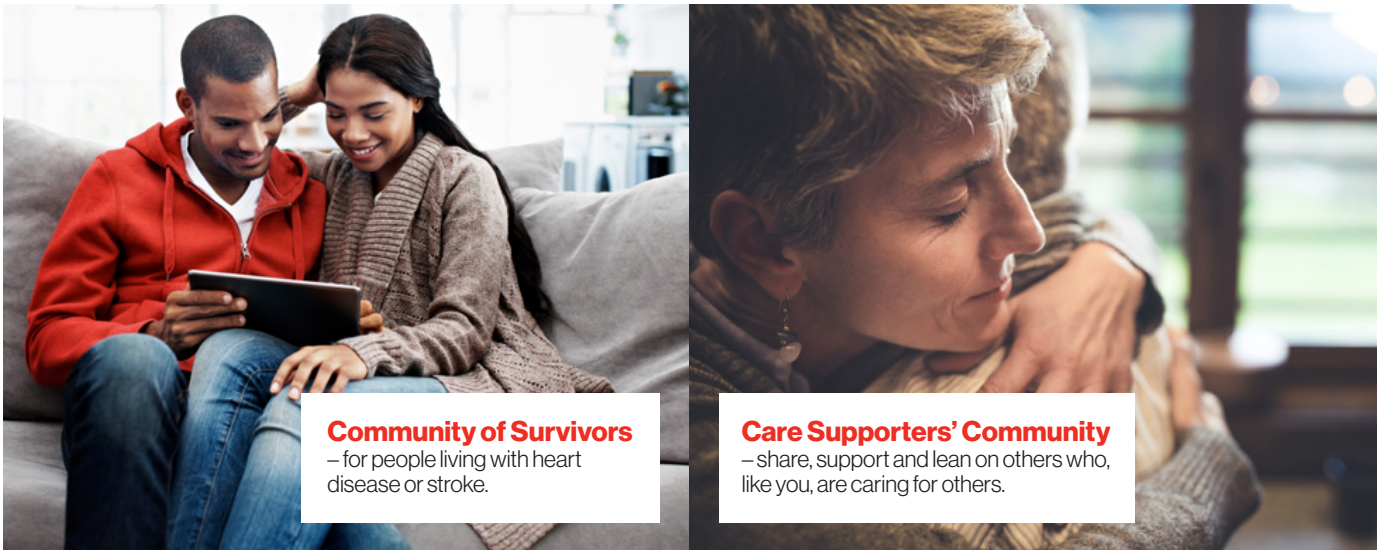

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Heart Failure Care in Rural Canada: Nurse Practitioners Addressing the Disparity

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Highlights:

- The high annual healthcare system costs and mortality associated with heart failure (HF) is a growing problem.
- Rural populations have higher rates and costs of cardiovascular disease, yet few heart failure services are available.
- The management of heart failure differs between Canadian provinces, with urban areas having better access to services.
- Access to NPs in heart failure clinics can increase patients' adherence to care plans, lower hospital readmission rates, decrease follow up appointment times thus lowering health system costs, and reduce mortality.
- NPs are a cost effective solution to the shortage of HF clinics in rural communities.

ABSTRACT

Heart failure (HF) is a chronic disease that requires regular, frequent healthcare visits and is one of the leading causes of hospitalization. Patients with HF have reduced physical function that affects multiple aspects of their lives, including mood, exercise, and activities of daily living. Patients recently diagnosed with HF require significant lifestyle changes to maintain their health and function. More importantly, these patients require appropriate access to care to increase their adherence to lifestyle changes and decrease their risk of mortality. Nurse practitioners (NPs) are well situated to address inequities in the care of HF patients and meet the needs of rural populations who have reduced access to health services.

KEYWORDS: Urban population, rural population, Canada, patient compliance, heart failure, chronic disease, nurse practitioner, health equity

Heart failure (HF) is a leading cause of hospital admission and readmission that in turn increases costs the Canadian healthcare system (Poon et al, 2022).[1] There are significant disparities in the delivery of cardiac care between Canadian jurisdictions, with cardiac clinics primarily condensed in urban areas and few services available to rural populations. These disparities impede timely access to care and increase costs for patients who must travel to appointments. Inadequate access to care also contributes to higher HF mortality rates, as evidenced by the outcomes in rural populations (Muñoz et al., 2020).[2] Studies have found that readmission rates among patients with HF are as high as 20% within 30 days of hospital discharge, and that timely post-hospitalization appointments can improve management of the disease and decrease rates of readmission (Gandhi et al., 2017; Virani et al., 2017).[3,4] Patients who live in rural areas are at higher risk of developing complications of HF because they have fewer clinical appointments, undergo less screening, and are more likely to be underdiagnosed when compared to their urban counterparts (Primm et al., 2019).[5] Rural disparities negatively impact HF outcomes by decreasing patients' adherence to care plans, reducing the likelihood that patients will attend follow up appointments, and impeding patients' access to health assessment and monitoring. Nurse practitioners (NPs) are ideally situated to ensure timely follow-up of patients with HF while also minimizing rehospitalization and mortality rates among rural and urban populations.

Implications of Nurse Practitioner Care for Heart Failure Patients

Canadian NPs are registered nurses who have completed a graduate level of education and hold the legal authority to diagnose and treat illness, order diagnostic tests, and prescribe medications or perform procedures (CNA, 2021).[6] NPs often work in specialized areas of clinical care, for example, cardiac clinics. As such, NPs are important members of the interprofessional network of providers within HF care, where they monitor HF symptoms, provide patient education, and titrate medications as appopriate (Waters & Giblin, 2019).[7] Patients with HF are instructed to follow up with their healthcare provider within 7 to 14 days of hospital discharge (Waters & Giblin, 2019).[7] NPs are able to conduct holistic patient assessments during these transitions of care, thus reducing rates of rehospitalization and mortality (Waters & Giblin, 2019).[7] As a result, Canadian NPs serve as a cost-effective resource within rural HF care settings (Craswell et al., 2018).[8]

Heart Failure Epidemiology

Patients with HF have a 20 to 25% rate of readmission within the first 30 days post-hospitalization (Gandhi et al., 2017; Virani et al., 2017).[3, 4] In addition, mortality rates among these patients are as high as 30% within one year of hospitalization (Gandhi et al., 2017; Virani et al., 2017).[3, 4] HF is the third leading reason for hospital stays in Canada with an average length of stay being 7 days (CIHI, 2023).[9] It is critical to enhance the outpatient management of HF within Canada in order to address the simultaneous increases in healthcare spending, rates of HF-related complications, and complexity of overall care. In addition, inconsistencies in the care of patients with HF need to be addressed across Canada; only a few provinces have dedicated HF programs, while others solely rely on primary care providers (Virani et al., 2017).[4]

There are several disparities between rural and urban populations in terms of HF care, including travel time and available services (see Table 1). Rural populations tend to have poorer access to high quality HF care, are more likely to face shortages of healthcare providers, and have higher rates of cardiovascular disease when compared to urban populations (Primm et al., 2019).[5] For example, rural patients with New York Heart Association (NYHA) class IV HF, which is defined as a patient who experiences HF symptoms at rest and is unable to perform any physical activity without discomfort, have 35% higher mortality rates when compared to their urban counterparts (Muñoz et al., 2020; American Heart Association, 2021).[2, 10] In urban areas, patients with lower socioeconomic status often become dependent on urban emergency care services for their primary HF care. As a result, their service utilization rates are three times higher than their rural counterparts (Muñoz et al., 2020).[2] However, rural counterparts have more delays in accessing services as there are varying amounts of out-of-hours service centres depending on location, and their primary care providers are not as available throughout the week (Muñoz et al., 2020).[2]

Table 1: Disparities between Rural and Urban Populations with Heart Failure *(Muñoz et al., 2020)*[2]

• Increased travel time
• Less available health services for heart failure
• Less health service utilization
• Less primary care providers
• Higher mortality

Burden of Hospital Readmission and 1 Month Rates

High re-hospitalization rates among HF patients (Gandhi et al., 2017)[3] affect healthcare costs, patient mortality, and overall quality of life (Gandhi et al., 2017).[3] These rates most often reflect the re-admissions that occur in the first 28 to 30 days post-discharge. Re-hospitalization rates have not improved since 2007 and continue to grow with the ageing Canadian population (Virani et al., 2017).[4] In addition, patients with HF tend to have longer stays in hospital, which increases healthcare costs and resource utilization and decreases patient quality of life (Virani et al., 2017).[4] A key strategy to effectively reduce re-hospitalization rates and mortality is to provide patients with adequate access to HF clinics.

Heart Failure Clinics

Specialized HF clinics are multidisciplinary settings staffed by nurses, cardiologists, pharmacists, psychologists, dieticians, and social workers who often have specific training or expertise in HF care (Gandhi et al., 2017).[3] These clinics focus on patients' lifestyle, diet, exercise, medication compliance, and education about medication titration (Gandhi et al., 2017).[3] There is significant variation in the way these HF care centres are integrated into the healthcare system across Canada. This is likely due to differences in the services offered at each clinic, and the demand for care of other cardiac diseases that benefit the publicly funded healthcare system in Canada. While a few Canadian provinces have developed specialized HF programs, others rely exclusively on primary care to manage HF (Virani et al., 2017).[4] Jurisdictional comparisons of cardiac clinics demonstrate that HF programs differ in terms of the services they provide and the populations they serve. In addition, these clinics are often defined in different ways, and may be called "heart clinics", "cardiac centres", "heart centres", "cardiac care clinics", "cardiac rehabilitation centres", and "heart failure clinics".

Benefit of Heart Failure Clinics

Research has shown that HF clinics can improve patient re-hospitalization rates and decrease patient mortality (Ghandi et al., 2017; Koser et al., 2018; O'Toole et al., 2020).[3, 11, 12] Although HF clinics show promise in reducing hospitalization and mortality rates among all HF patients, the most significant benefits have been observed among those with HF decompensation who require emergency room treatment or hospital admission (Ghandi et al., 2017).[3] The care provided at HF clinics is targeted, patient-centred, and individualized, without the limitations of time and resources that are common in primary care clinics. HF clinics have the capacity to enhance health equity by focusing on the holistic management of HF, and offering additional follow up appointments within local health systems (Gandhi et al., 2017).[3] These clinics, especially when NP-led and multidisciplinary, promote patient self-care and have the potential to lower post-clinic hospitalizations (Charteris & Pounds, 2020).[13] As a result, NPs play a pivotal role in the multidisciplinary team at HF clinics, where they can address the needs of HF patients across Canada.

Benefits of Nurse Practitioners in HF Care

The collaborative and comprehensive patient-centred approach utilized by NPs can increase patient adherence

to care plans, enhance patient engagement, and improve clinic appointment attendance in cardiac rehab settings (O'Toole et al., 2020) (Table 2).[12] Charteris and Pounds reported that care plan engagement and adherence were increased among patients who attended an NP-led cardiac rehabilitation program between 2014 to 2016.[13] This is an important finding because medication and diet non-adherence are key care plan factors that contribute to decompensation and rehospitalization among patients with HF (Charteris & Pounds, 2020).[13]

NPs working in multidisciplinary HF clinics can significantly impact patient outcomes (see Table 2). For example, 30-day hospital re-admission rates decreased by 8% and all-cause mortality rates were 0% among patients who attended an NP-led multidisciplinary HF clinic (Siodlak et al., 2020).[14] In a smaller study, 30-day re-admission rates were lower than average in a multidisciplinary clinic that included NPs (Charteris & Pounds, 2020).[13] As well, there was a significant decrease in the length of time between hospital discharge and follow up appointments (from 45 to 19 days), and a high degree of patient satisfaction (93% positive). (Charteris & Pounds, 2020).[13]

Table 2: Key Benefits of Nurse Practitioners in HF Care *(O'Toole et al., 2020)*[12]

• Comprehensive patient-centred model of care focused on health promotion and disease prevention.
• Increased patient care plan engagement and prolonged care plan adherence.
• Decreased 30-day re-hospitalization rates.
• Decreased number of days between discharge and follow up.
• Evidence of increased benefits when paired with a multidisciplinary team.

Applications to Rural Communities

Rural settings present additional barriers to the accessibility of healthcare, due to geographical issues and limited availability of healthcare staff (CARRN, 2020).[15] NPs can be a viable alternative to provide consistent care in rural communities (Waters & Giblin, 2019).[7] Since NPs focus on health promotion and disease prevention, these practitioners are well positioned to address comorbidities in rural populations and reduce the effects of geographical barriers.

Although a multidisciplinary approach is optimal when managing HF, it can be challenging to maintain consistency of care if patients are forced to move between multiple settings and care providers (Virani et al., 2017; Waters & Giblin, 2019).[4, 7] Patients with HF require multiple follow-up appointments for medication titration, self-care education, and symptom management. As a result, rural communities would benefit from having either a clinic with a multidisciplinary team that includes an NP or a HF-specific clinic that is led by an NP to deliver high quality patient-centred HF care. NPs play a particularly important role in rural communities due to the higher rates of cardiovascular disease and mortality among these populations. In addition, this population of clients benefit from more frequent and thorough appointments for preventative care, which NPs are well suited to provide (Muñoz et al., 2020; Primm et al., 2019).[2, 5]

> "NPs play a critical role in addressing the burden of disease among HF patients within rural areas."

Implications for Health Systems

A multidisciplinary approach to HF care, including rehabilitation and follow-up, are important to address the rising hospital costs in Canada as well as the high rates of complications and mortality associated with the disease. Rural populations are at particularly high risk of HF complications and can reap significant benefits from NP-led multidisciplinary care teams. Health authorities and stakeholders can improve access to care and promote better health outcomes for HF patients by utilizing NPs within their respective rural healthcare hubs.

Conclusion

The management of HF within primary care is becoming increasingly more complex as the Canadian population continues to age. NPs play a critical role in addressing the burden of disease among HF patients within rural areas. Rural NP-led HF clinics can positively impact the care of HF patients by increasing their adherence to care plans, reducing hospital readmission rates, decreasing the time between initial assessment and follow up appointments, and lowering their rates of mortality (Charteris & Pounds, 2020).[13] As a result, NP-led clinics could also be associated with a significant reduction in overall healthcare costs. NPs serve as a viable solution to address the current lack of high-quality HF care in rural settings. NPs can meet the complex care needs of this patient population while simultaneously reducing costs to the system and contributing to positive patient outcomes.

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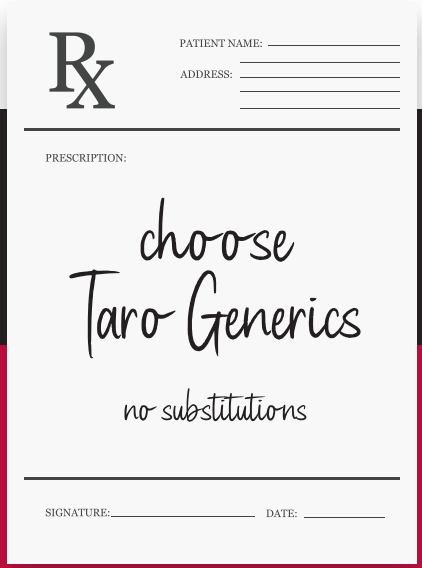

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Nursing Clinic Leadership Styles and Structures: A Literature Review

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Introduction

This literature review provided recommendations to a Nurse Practitioner-Led clinic that was evaluating its leadership structure. There are many different models, styles, and leadership structures. Some leadership structures require one leader, some two, and others require more than two. **Even with one leader, there are several different leadership styles, such as servant, transformational, authentic and participatory leadership.** This particular clinic had two different management leads, one focused on overseeing administration and the other was the Nurse Practitioner lead. The Board of Directors was interested in understanding which type of leadership structure would be most effective for a nurse-led clinic. "Leadership in the clinical practice environment is important to ensure both optimal patient outcomes and successive generations of motivated and enthusiastic clinicians'' (Davidson et al., 2006, p. 180).[1] The clinic was one of many that currently exists in Canada and wanted to ensure optimal patient-centred care was convenient and more personalized than traditional primary health care settings. "The complexities of interpersonal relationships within the clinical domain, and the critical issues faced by nurses on a daily basis indicate that morale, job satisfaction, and motivation are essential components in improving workplace efficiency, output and communication amongst staff" (Stapleton et al., 2007, p. 1).[2] In this setting, there was added pressure on Nurse Practitioners (NP) to support a self-sustaining organization and engage in leadership roles.

Many clinics faced retention issues, along with increased internal and external pressure to enhance quality, efficiency, and service (Taylor-Ford & Abell, 2015; Davidson, Elliott & Daly, 2006).[1,3] The fact that newly appointed leaders failed to adjust to their new roles in nursing clinics, was "making leadership transitions a topic of urgent importance in the healthcare industry" (Hill, 2007; as cited in, Taylor-Ford & Abell, 2015, p. 63).[3] The research question for this literature review was: What is the most effective leadership structure for an NP-led clinic?

Overview of the Scholarly Literature

The scope of the present literature review included effective organizational leadership and dual versus single leadership roles/models within healthcare organizations. This analysis identified the advantages and disadvantages of single, dual and shared leadership (for comparison purposes), and summarized effective organizational structures for health clinic practices. The review also examined the different leadership styles and models, some within a healthcare setting. The intent was to find evidence of best practices for leadership structures for an NP-led clinic purpose and culture.

Multiple databases of relevant peer-reviewed articles and keywords such as: 'leadership', 'one leader', 'dual leadership', 'shared leadership', 'nurse practitioner-led clinic', 'nursing', 'health care' and 'clinical leadership'. At the time, literature was sparse and there were few articles on leadership best practices, so the search was broadened to include different leadership structures or models in a healthcare setting. This included adding new search terms such as 'transformational', 'servant', 'multi-leader', 'leadership styles' and 'co-CEO's'.

This literature review used Google Scholar and library search engines to identify articles. Nine (9) articles between 2011-2017 were evaluated and had a focus on health care or a nursing organization, and the other articles (23) focused on effective leadership or management approaches. This included case studies (5), scholarly or theoretical texts for nursing (2), a culture text, leadership/management texts (2) including Northouse (2018)[4] and Daft (2018)[5], as well as articles pertaining to culture and motivation (2), managerial/educational leadership (4), clinical leadership practices (5), a multi-leader teams review, and a clinical policy document. These framed this review of academic literature on person-centred practice in nursing, clinical supervision, evidence-based approaches in nursing, and influential factors or motivation in clinical nurse roles. Two articles also focused on improvement in clinical leadership/practices, along with scholarly leadership or management articles (4), and other studies reviewed clinical leadership teams (4). Documents that provide the rationale and structure of nurse-practitioner clinic leadership were also examined, such as the job descriptions of leadership roles, the organizational structure, and a nursing clinic learning organization.

Determining the most effective leadership style and structure is also influenced by the current culture within an organization. "Leadership styles are undoubtedly influenced by the mission and type of organization, together with the beliefs and value systems of the individual, organization and broader society" (Davidson et al., 2006, p. 182).[1] In this review, we consider leadership development, styles, and structure of leadership within the scholarly literature to recommend best practices for clinical leadership. To begin, we examined leadership development and styles, including transformational leadership. Then we will compare different leadership models (e.g., single, dual and shared leadership) before closing with guidelines considerations.

Leadership Development

Case studies that examined the leadership within nursing clinics suggested best practices to implement leadership development opportunities. "We must first understand the complex phenomenon of leadership development and its impact on the leader before we can assess the impact of clinical leadership on nursing and patient outcomes" (Dierckx de Casterle et al., 2008, p. 755).[6] One case study, we reviewed, which was completed using a *Leadership*

Practice Circle Program (LPCP), aligned closely with the characteristics of the nurse-practitioner clinic we were evaluating, including, managers recently hired, high turnover, highly engaged chief operating officer/chief nursing officer (COO/CNO), and access to an experienced leadership coach (Taylor-Ford & Abell, 2015).[3] This case study took place over a period of ten months, at a small non-profit hospital in Northern California, that implemented an LPCP intervention to determine the impact on leadership competency development and turnover. Seven participants engaged in the LPCP intervention.

The LPCP was comprised of group sessions (4 hours in length that followed the same agenda and were held at an outside location), and individualized quarterly coaching sessions. Group sessions were designed for learning and development and included a consistent format: Centering & Check-In, Leadership Competency/Skill Development; Self-Reflection & Practice; Working Dialog; Coaching, Accountability, and Next Meeting (Taylor-Ford & Abell, 2015, p. 66).[3] Communication of organizational information, problem-solving of issues, and networking were also considered a benefit of the LPCP.

The case study was evaluated using the Bradberry and Greaves (2011)[7] 360° instrument (pre and post-test), along with an open-ended survey after the LPCP program, with 100% participation. In addition, pre-intervention turnover rates were compared to turnover rates one-month post-program. Findings illustrated that the skill of "developing others" showed statistically significant improvement post-intervention (p=0.0012)", and the turnover rate changed from 23% (pre-intervention) to 13% (p. 67).[7] The following thematic results were also identified: increased self-awareness, leadership presence, confidence, intentional communication, and a sense of collective goal and vision. Practicing difficult conversations was also noted as being uncomfortable but important.

The *Clinical Leadership Development Project* (CLP) was a similar intervention used in a single case study in which leadership development was evaluated over an 11-month period in which 17 multidisciplinary professionals participated (Dierckx de Casterle et al., 2008).[6] Data collection included semi-structured interviews, a focus group and observation. This study illustrated that the lead nurse became "more effective in areas of self-awareness, communication skills, performance and vision", and the nursing team benefited because "more effective leadership promoted effective communication, greater responsibility, empowerment and job clarity" (Dierckx de Casterle et al., 2008, p. 753).[6] The authors noted that it was important for participants to perceive leadership development as an ongoing, invested and interactive process. "For the clinical leader, personal development is crucial first. By developing strong self-awareness, the leader can identify his [or her] strengths and weaknesses, and thus advance towards more effective leadership" (p. 757).[6] In this way, depending on personal factors (e.g., age, character, experience, attitude or vision) appeared to determine individual differences and whether or not the individual gained from the CLP experience or not. Improvement in clinical leadership also seemed to influence "patient-centred communication, continuity of care and interdisciplinary collaboration" (p. 753).[6]

Interestingly, as a result of the CLP, the lead nurse collaborated on problem-solving and used goal-oriented communications to engage the team in positive and negative conversations. The lead also created a vision of their role of leadership, the team's interactions, and the clinics' care or outcomes combined. Team members felt more responsibility for their roles and a heightened sense of creativity within patient care. For instance, in this study the clinical leader distanced himself from participating in direct patient care which gave him greater responsibility for inpatient care. Regardless of this, the clinical leader was still recognized for having "a significant impact on patient care through his person, vision, knowledge and position" (p. 759).[6] Structure and clarity in the work environment and the clinic's caregiving process, which derived from the leader's confidence and transformational leadership qualities, was gained from participation in CLP, an interactive process that would be challenging for any clinical leader or team member.

This finding is supported by Rost's (1991) definition of leadership as an influential relationship among leaders and followers who intend real changes that reflect their mutual purposes. Rost's post-industrial leadership paradigm is characterized by collaboration, power-sharing, facilitation and empowerment (Rogers, 1991),[8] all of which can be recognized in the leadership of this case study (as cited in Dierckx de Casterle et al., 2008, p. 761).[6]

Leadership Structures

There are several different types of leadership structures and styles and choosing one for an organization, required thoughtful analysis to determine the best leadership for the culture of an NP organization. In the research reviewed, we identified an effective approach to a single lead, dual leadership roles, and shared leadership.

Single Leader

The use of a single leader within a clinical setting was discussed often in the literature examined, along with the particular style required of the leader. A few articles pointed to the importance that a leader in a clinical setting utilizes a participative approach. A participative approach required more time to ensure that all voices were heard but saves time in the long-term (K. Kirkpatrick, personal communication, May 14, 2018; Quinn, 2017).[9, 10] This was one component of the situational style of leadership, which enabled a leader to be flexible, and engaged in different approaches of leadership depending on the situation presented, and individual needs (Northouse, 2018; Daft, 2018).[4,5] For instance, a participatory approach could be used in crafting the philosophy of the clinic by involving staff, and ensuring that all members feel included and heard (Quinn, 2017, p. 57).[10] Additionally, a leader who embodies "a participatory approach … recognizes that every member of the team has an important leadership role. Part of the role of senior leaders is to encourage staff to engage in a participatory approach in their care of patients and when supporting their colleagues" (Quinn, 2017, p. 57).[10]

Another style of leadership highlighted was a visionary clinical leader. O'Rourke (2001)[11] shared that a visionary clinical leader "can simultaneously have a vigilant focus on promoting health; the capacity to build effective teams; articulate and demonstrate what others cannot see, and address immediate challenges as well as leading their team into a future which is often unknown" (Davidson et al., 2006, p. 185).[1] Florence Nightingale was an example of "commanding genius" with her visionary leadership, as described by Lord Dean Stanley (Andrews, 1929; as cited in Matthews et al., 2020).[12] She mentored nurses to expand their expertise and ensured training in good character; as "role models of compassion and empathy", and evidenced-based improvements for patient care (Matthews et al., 2020).[12]

In a clinical setting, an individual leader would also foster a culture in which employees were engaged with patients and each other, and create a welcoming culture. "An examination of their goals and strategies can help identify a model that can best lead to the reforms necessary to achieve the primary goal of increasing value by improving care" (Trastek et al., 2014, p. 378).[13] This required a clinical leader to have a vision, well-articulated and measurable goals, clearly defined roles and performance measures, to ensure staff were accountable for contributions to the clinic's culture and patient needs. Kraines (2011)[14] suggested this was done best by ensuring one LEAD's (Leverage potential, Engage commitment, Align judgment, and develop capability), via establishing accountability frameworks with all members. "Accountability is the obligation of an employee to deliver all elements of the value that he or she is being compensated for delivering, as well as the obligation to deliver on specific output commitments with no surprises" (Kraines, 2011, p. 15).[14] Clarity of role and accountability was only present when a one-to-one relationship existed between a leader and their team members (Kraines, 2011).[14] A thoughtfully chosen leadership style for an individual leader at a clinic, along with establishing well-articulated accountability structures, would translate into a healthy team commitment and culture, and ultimately, the experience patients encountered.

Dual Leadership

Co-leadership is surprisingly common in many non-healthcare-related organizations. Few articles were found using co-leadership in healthcare or nurse-led clinics. In a review article, Dust and Ziegert (2016) found that "the reciprocal interaction of co-leaders is likely to generate innovation through the complementary cognitive orientations of each leader" (p. 529).[15] If co-leaders could function well together and collaborate on ideas, they created great opportunities for an organization to advance. After reviewing 175 articles and considering the configuration-contextualization chart, Dust and Ziegert concluded that multi-leader programs may lead to role ambiguity, confusion of responsibility and conflicts of power among individuals with redefined roles in leadership.[15] "In highly urgent and complex programs it can be beneficial to have multiple leaders, although all leaders must be self-aware and continue to communicate and coordinate with all others within the system" (p. 530-1).[15]

Arena, Ferris, and Unlu (2011), discussed the occurrence of co-CEOs.[16] Their article concluded that, "If co-CEOs complement each other in expertise and in their job responsibility… there might be less need for advising by other board directors" (p. 391).[16] They defined complementarily as "the presence of off-setting skills, abilities, or experiences within the co-CEOship" (p. 395).[16] In essence, two leaders could be a great option if the leaders had separate roles and backgrounds, and could complement each other when it came to managing and leading the employees at their place of work. In nursing, this is often the case, as a *Nurse-Practitioner (NP) lead* often partnered with an *administrative non-clinical lead*, to engage clinic workers.

> The power should be equally divided between the person with administrative responsibilities and the NP who also have a clinical vision of care. We know from other projects, that the dimensions of the NP and CNS roles are underdeveloped when there is no clear leadership. In the context of interpersonal dynamics, it is also important to identify a leader that all (or almost all) team members respect who can act as a resource when conflicts arise (K. Kirkpatrick, personal communication, May 14, 2018).[9]

To implement a two-leader model, clinics are advised to choose two individuals that demonstrated complementary skills, exceptional communication, a high degree of trustworthiness and honesty (Arena et al., 2011).[16] Leaders should be in constant communication, assign and agree upon clear roles for each team member and work collaboratively to motivate members to reach the common goal(s).

Interestingly, *Powys Teaching Local Health Board* provided some indication of policies regarding the current NP-led clinic leadership structure. Clinical supervision of all staff in a clinical environment was central to a safe and effective practice (Lawrence & Labourne, 2012).[17] The key to clinical supervision was encouraging self-assessment, critical thinking and reflective skills to ensure all learnt from practice and became better at helping and caring for people.

Managerial supervision, on the contrary, was service driven and focused on "workload, functioning within the team and maintaining clarity of role, responsibilities and accountability… task-oriented, with a formal service-led agenda" (p. 10).[17]

This included performance appraisal, training and development, setting and monitoring goals, objectives, policies and procedures, and team effectiveness. In responsibility of both roles, the only difference between managerial and clinical supervisions appeared to be in caseload management and clinical/professional supervision, annual and multi-disciplinary leaves for the clinical supervisor. To be effective, the leads in these roles were required to create opportunities to dialogue and agree to the combined direction for their respective priorities (K. Kirkpatrick, personal communication, May 14, 2018).[9] In the NP-led clinic, there was some overlap between responsibilities in reviewing the Administrative lead, and the NP-led job descriptions (e.g., "to lead to track and resolve quality of care infractions, address issues, support performance evaluation and hires, etc.). Overlap was expected, however, clarity of role could be enhanced by creating responsibilities that are specific and measurable to the particular role (e.g., the Administrative lead had to collaborate with the NP lead for one-third of all their responsibilities).

Shared Leadership

In *Shared leadership in teams: An investigation of antecedent conditions and performance* (Carson et al., 2017), describe Shared leadership as, "total amount of leadership displayed by team members as perceived by others on a team" (p. 1225).[18] Shared leadership was an approach to leadership when there was no specific "head", or at the very least the top leader acted only as a coach, not a manager. Participants (n = 348) were put into 59 multi-functional teams (four to seven participants per team) to determine differences between shared leadership, team performance, internal team membership (social support) and external coaching. All teams worked for a business to assist with a current need and each had a faculty advisor as the external coach. Surveys were given to respective parties approximately two-thirds of the way during projects as well as after completion of projects. All results in the study led the authors to conclude that shared leadership yielded the best results and was best achieved through external coaching. Rather than relying solely on the leadership from an external leader, team members could rely on each other and work collaboratively. "When teams are focused on

collective goals (shared purpose), there is a greater sense of meaning and increased motivation for team members to both speak up and invest themselves in providing leadership to the team and to respond to the leadership of others" (p. 1223).[18]

Guidelines and Consideration

Clinical leadership is a growing area of scholarship, and even though some best practices identified through our literature review have been shared, there was not an agreed-upon leadership style or structure suggested for nurse-practitioner clinics. McSherry and Pearce (2016) found that "health care organizations need to identify, develop, and/or engage with leadership frameworks and/or program providers that suit their unique health care organizational culture and working environment" (p. 16).[19] This section outlines guidelines, leadership considerations and leader development practices to help members determine the most effective leadership structures for their organization.

Guidelines for Leadership Decisions

McSherry & Pearce (2016) in their paper What are the *effective ways to translate clinical leadership into health care quality improvement?* shared current literature about leadership within clinics.[19] Several definitions of clinical leadership were given and discussed; characteristics of leaders/clinical leaders, statements and rationale of clinical leaders were provided; and a guide/checklist for understanding clinical leadership was shared (McSherry & Pearce, 2016).[19]

The *Role of Nursing Leadership in Providing Compassionate Care* (Quinn, 2014), explored how leadership was expected to change as health/social care changed and how changing leadership could be applied in nursing.[10] Skills were identified for leaders, differences between leaders and managers were discussed, and a summary of all leadership styles was presented.

Leadership Considerations

The leaders and leadership approach taken would determine the culture of the organization, which in turn determines the services provided. There are three critical skills in establishing a culture: building safety, sharing vulnerability, and establishing purpose (Coyle, 2018).[20] When an organization demonstrated these skills through communication and teamwork, the culture became strong and the workplace welcoming. Leaders can be encouraged to build safety by interacting with affection and warmth and demonstrating qualities such as rapport-building, empathy, genuineness, and respect toward team members (Stapleton et al., 2007).[2]

Building Psychological Safety Considerations

Psychological safety requires a positive attitude and perspective toward individual roles, the team, and clinical operations. Attitude change is the only way to bring transformation to staff, and the whole organization and a flourishing cultures flow from a leader's support of innate human psychological needs (Deci & Ryan, 2008; Goleman et al. 2002).[21, 22] When employees were encouraged to utilize their skills to their fullest and feel psychological safety, they are motivated to deliver exceptional services (Pink, 2011).[23]

Sharing Vulnerability Considerations

Being authentic, telling the truth and owning up to the actions or outcomes a person experienced (whether good or bad), promoted vulnerability (Northouse, 2018; Coyle, 2018).[4,20] Vulnerability precedes trust, in that there is an attitude shared amongst all team members, including the leader, in which mistakes are accepted since they are part of learning and improving (e.g., Growth Mindset; Dweck, 2010).[24] When all members shared openly, their strengths and weakness, a culture of vulnerability existed where all team members reflect, were self-aware and shared. Dweck (2010) stated that accepting mistakes are human, and do not have to be internalized to define character (i.e. fixed mindset).[24] Instead, by taking risks to learn and accepting mistakes, learning led a person to explore more, improve practice and grow both personally and professionally (i.e., growth mindset). The good news is that even though some may demonstrate a fixed mindset, a growth mindset can be learned.

Establishing Common Purpose

Teams that focused on "collective goals (shared purpose)", embodied a greater sense of meaning and motivation to speak up and "invest themselves in providing leadership", while responding positively to the leadership of others (Carson et al., 2017, p. 1223).[18] By authentically engaging staff in the development of the vision, goals, controls, and philosophy of the clinic, a leader could motivate team members towards a collective purpose and effective performance. Deci and Ryan (2008) shared, that leaders who nurtured self-determination, tapped into the intrinsic motivation or personal purpose and drive that humans naturally possess.[21]

Organizational leaders could nurture self-determination or the intrinsic motivation towards a sense of purpose with team members by ensuring these three psychological needs are met: Autonomy, Competence and Relatedness.

Leadership Development

Many articles pointed to the use of leadership development programs, such as the *Leadership Practice Circle* (Taylor-Ford & Abell, 2015), and personal development and coaching that helped nursing leaders.[3] "Coaching may be a key to creating clinical work environments with good retention, work satisfaction and high-quality measures. Nurses can also learn how to self-coach, be more self-aware and develop themselves" (Stapleton et al., 2007, p. 5).[2] Clinics that instilled a practice of leadership development for all members would establish a common definition or perspective towards leadership, nurture a greater understanding of leadership approaches, and strengthen the self-awareness of each member, resulting in more effective interpersonal relations.

Conclusion

Due to the common suggestions of participatory approaches to leadership in the clinical setting, and one that was focused on patient care, a flat organizational structure would be suggested. For one leader, the chosen leadership style they embodied was essential to nurturing the culture and purpose for staff members to feel part of and buy into (Matthews, 2020; Trastek et al., 2014; McSherry & Pearce, 2016).[12, 13, 19] In dual leadership roles, complementary skills and collaborative practices needed to be both intended and measured for clinic success and survival (Daft, 2018; Dust & Ziegert, 2016; Arena et al., 2011; Kilpatrick et al., 2012).[5, 15, 16, 25] Dual leadership demands that each lead must have complementary strengths and skills, clarity in their roles/behaviours, and leadership development, and both individuals must agree and embark on developing and maintaining a culture, and relationship, of collaboration (Northouse, 2018; Lawrence & Labourne,

2012).[4, 17] Communication between the two leads must be consistent and could follow transformational leadership practices to potentially engage team members, enhance clarity, and elicit the importance of each member's role and open communication with each other (Coyle, 2018).[20]

Within the NP-led clinic, clear role descriptions that were differentiated and communicated may lead to improved leadership of the clinic, along with performance controls that are tied to the leadership development competencies provided (see Appendix A). Using a coaching framework to guide this co-leadership model, could engage staff in self-reflection and performance improvement. Sharing vision, co-creating the philosophy and culture, and establishing effective goals, performance targets and coaching practices towards improved leadership and performance would establish a strong purpose at the clinic.

Leaders who are self-aware demonstrated authentic practices and provided a model for team members' behaviours and a framework for building a culture of collaboration. Effective leadership was just one component of effective patient care. Management of clinical operations was also required and was more technical in nature which required expert power along with effective tools and techniques to manage effectively (Daft, 2018).[5] Through appropriate leadership styles and structures, and effective and efficient management practices, clinic operations would address the needs of patients and provide exceptional care to those they serve. Future research could also help to indicate the style and structures of leadership that would work best for a nurse-practitioner-led clinic.

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APPENDIX A - Clinical Leadership

To foster clinical leadership:

- Professional societies play an important role by providing an environment of collegiality, provision of leadership and mentorship and promotion of clinical excellence (Aitken 1999).
- Mentorship and clinical supervision programmes, locally and externally to institutions.
- Clinical and professional doctorates.
- Designated paths of career progression (e.g. progression of the CNC role from grade 1 to grade 3).
- Intraprofessional collaboration (e.g. collaboration between clinical nursing specialties).
- Interprofessional collaboration (e.g. models of advanced practice clinical supervision). Academic and clinical service collaboration (e.g. clinical professors of nursing described above).
- Development of skills in the affective domain as well as research and knowledge (e.g. negotiation skills and conflict resolution). (Davidson et al., 2006, p. 185)[1]

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Current Clinical Approach to Mycoplasma Genitalium

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Background

Mycoplasma refers to any organism belonging to the Mollicutes class. Although over 200 named Mycoplasma species exist, only six are established human pathogens. Of these six species, five inhabit the genitourinary tract: *M. hominis*; *M. genitalium*; *M. fermentans*; *ureaplasma urealyticum*; and, *ureaplasma parvum*. Mycoplasmas are the smallest free-living organisms and because they lack a cell wall, they are not visible post Gram staining.[1] Since mycoplasmas lack a cell wall, antibiotics that target cell wall synthesis such as penicillin, cephalosporins and other beta-lactams are ineffective.[2,3]

Although *M. hominis* and *ureaplasma* have been associated with genitourinary disease, their pathogenic roles are unclear due to the following: genitourinary colonization with these species is common among healthy asymptomatic adults; significant design limitations of published studies; traditionally these organisms have been difficult to detect; and, mycoplasmas are rarely the only organism isolated from a specimen making it difficult to determine whether they are causative pathogens or simply co-isolates.[1] Unlike *M. hominis* and *ureaplasma*, *M. genitalium* is recognized as "an emerging sexually transmitted pathogen" that is a "significant cause of genital tract infections".[4,5]

Globally, *M. genitalium* prevalence estimates range between 1 and 4 percent of males and 1 and 6 percent among females.[3,4] However, higher prevalence rates have been found among sexually transmitted infection (STI) clinic clients with prevalence as high as 38% among those at risk of a STI.[3,4] Locally, a study conducted on clients at Hassle Free clinic in Toronto between September and December of 2013 found that the overall prevalence of *M. genitalium* was 4.2%, somewhat higher for men at 4.5% compared to women at 3.2%.[6] Another Canadian study that examined clients at two STI clinics in Alberta from January to April of 2016 found an overall *M. genitalium* prevalence of 6.2% with a male prevalence of 5.3% and a female prevalence of 7.2%.[7]

Mycoplasma genitalium is sexually transmitted via genital to genital mucosal contact.[5,8] It has also been found in low rates in anorectal samples and penile-anal transmission has been established.[5,8] Oral-genital transmission is unlikely.[3] Risk factors for *M. genitalium* infection include: young age, smoking, non-Caucasian ethnicity, increasing number of sexual partners and recent sexual intercourse.[3,9] Co-infection with *M. genitalium* and other bacterial STI's has been found among high-risk individuals with *M. genitalium* and chlamydia co-infection being the most common.[3] Although no causal relationship has been established, individuals with *M. genitalium* were two times as likely to be HIV infected.[5]

Similar to bacterial STI's, *M. genitalium* can either be symptomatic or asymptomatic. In fact, the majority of individuals with *M. genitalium* in the genitourinary tract do not develop disease.[9] In males with symptoms, *M. genitalium* causes urethritis and is the cause of 15-20% of non-gonococcal urethritis (NGU), 20-25% of non-chlamydial urethritis NGU and 40% of persistent or recurrent urethritis.[2] Symptoms of urethritis caused by *M. genitalium* typically include dysuria, urethral discharge and urethral pruritis.[3] Males infected with *M. genitalium* may also experience proctitis and balanoposthitis (inflammation of the glans penis and foreskin).[8,9] Among females, symptoms of infection with *M. genitalium* can include: dysuria; cervicitis (including purulent or mucopurulent cervical discharge and cervical friability; vaginal discharge; vaginal itching; lower abdominal pain; menorrhagia; inter-menstrual bleeding; and, post-coital bleeding.[2,3,8,9] Complications that have been found to be associated with *M. genitalium* infection in women include: pelvic inflammatory disease (PID); adverse pregnancy outcomes such as spontaneous abortion and preterm delivery; and, tubal factor infertility.[2,3,8,9] In both males and females, sexually acquired reactive arthritis may occur.[9]

Testing

Routine screening is not recommended. Testing is only recommended in cases of persistent or recurrent urethritis, cervicitis or PID when both chlamydia and gonorrhea have been ruled out.[4]

In Canada, access to testing for *M. Genitalium* is limited as it is only available via the National Microbiology Laboratory (NML) in Winnepeg.[7,10] In order for a sample to be forwarded for testing for *M. genitalium* at the NML, Public Health Ontario (PHO) requires that the following criteria be met: client is symptomatic with persistent or recurrent urethritis, cervicitis or PID; client has negative chlamydia and gonorrhea test results; and, approval by the PHO laboratory microbiologist is granted.[10] The NML which uses a nucleic acid amplification test will test samples positive for *M. genitalium* for mutations associated with antimicrobial resistance.[5]

Testing for *Mycoplasma* (not including *M. genitalium*) and *ureaplasma* is done by culture at the Ontario public health lab and turnaround time can take up to 17 days.[10]

Further testing information can be found at Public Health Ontario: Ureaplasma/Mycoplasma – Culture and Reference Identification | Public Health Ontario.

Treatment

Due to limited test availability, most infections will be managed and treated by syndromic management of urethritis, cervicitis or PID.[4]

The recommended treatment for suspected or confirmed *M. genitalium* that was not previously treated with Azithromycin is:

- Azithromycin 500 mg PO on day one, followed by 250 mg PO on days 2 to 5.[4]

Treatment with Azithromycin 1 g PO in a single dose has been reported to select for macrolide resistance and thus individuals who have not responded to this regimen may not benefit from being re-treated with the 5 day regimen.[2,4] When an individual with suspected or confirmed *M. genitalium*-associated cervicitis or urethritis has previously been treated with azithromycin, the recommended treatment is:

- Moxifloxacin 400 mg PO once daily for 7 days[4]

For suspected or confirmed *M. genitalium*-associated PID, the recommended treatment is:

- Moxifloxacin 400 mg PO once daily for 14 days in addition to a PID standard treatment regimen[4]

Health Canada (2021) advises that test of cure should be done at a minimum of 3 weeks post treatment for those that continue to experience symptoms or live in areas with high antibiotic resistance.[4] It is important to note that a study conducted at a STI clinic in Toronto in 2013 found high resistance rates among study participants with 58% demonstrating macrolide resistance and 20% showing fluoroquinolone resistance.[6]

In cases where treatment is warranted for an uncomplicated genitourinary infection caused by *Ureaplasma* or *M. hominis*, the recommended treatment is:

- Doxycycline 100 mg PO twice daily for 7 days in lower urogenital tract infection

Or

- Doxycycline 100 mg PO twice daily for 14 days in the instance of more extensive infection such as PID[1]

Flouoroquinolones can be used in cases of treatment failure or resistance.[1]

Management

In addition to patient education on *M. genitalium* and its sequelae, patients should be told to abstain from sexual intercourse for 14 days after the start of treatment and until all symptoms have resolved.[9]

Current partners of cases should also be treated to prevent reinfection of the index case.[4] They should be treated whether or not they have symptoms and do not require testing before treatment.[11]

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Prescribing Nature in Primary Care: A Non-Pharmacological Approach to Complement Current Chronic Disease Management

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ABSTRACT

Chronic diseases account for a large proportion of morbidity and mortality worldwide. Chronic diseases negatively affect patients' health and quality of life, and increase healthcare expenditures. Nurse Practitioners must seek out cost-effective initiatives to decrease the burden of chronic diseases; prescribing time spent in nature is one such initiative. Spending time in nature improves mental and physical health and helps people become more environmentally conscious, thereby benefiting planetary health. Social prescriptions, such as green prescriptions, are an effective tool to encourage patients to spend more time in nature on a regular basis, which can lead to significant health benefits.

KEYWORDS: Nature, health, green space, forest, wellbeing, green prescribing, social prescriptions, planetary health

Noncommunicable chronic diseases account for 74% of deaths globally each year.[1] Cardiovascular diseases account for most of these deaths, followed by cancers, chronic respiratory diseases, and diabetes.[1] In Canada, 44% of adults over the age of 20 live with at least one of the following chronic conditions: hypertension, osteoarthritis, mood and/or anxiety disorders, osteoporosis, diabetes, asthma, chronic obstructive pulmonary disease, ischemic heart disease, cancer, and dementia.[2] Chronic illness is costly to the healthcare system; at $7,507 per person annually, Canada has some of the highest healthcare expenditures of any country, trailing behind only the United States, Germany, and the Netherlands.[3] In 2010, Canada's direct health expenditures totalled $183.1 billion, with another $18.9 billion in indirect health expenditures related to loss of productivity due to morbidity and informal caregiving.[4]

Nurse practitioners (NP) play an important role in health promotion and disease prevention.[5] As such, NPs are ideally situated to recommend and prescribe time in nature, which is a cost-effective strategy for illness prevention and health promotion that can also reduce the economic burden of chronic diseases.[6] As an additional benefit, recommendations to spend more time outdoors tend to decrease sedentary time and increase exercise, without the resistance that typically occurs when patients are explicitly directed to increase exercise time.[7] In addition to the direct benefits on patients' mental and physical health, spending time in nature helps individuals become more environmentally conscious, ultimately benefiting the health of the planet.[8]

Defining Nature

Nature is a broad term that can have a variety of meanings and interpretations for different individuals. Research studies examining the health benefits of nature have focused on the effects of green spaces or forests in contrast to more urbanised environments. For example, one study examined the effects of forest therapy on serotonin.[9] The researchers described the forest site in detail, including its overall size (in square meters) and distribution of trees (by type and percentage). The forest site was studied in contrast to an urban site, which had a tree-lined sidewalk with a single type of tree and no green space within a one-kilometer radius.[9] Other studies have been less precise in their definition of nature and have included a variety of settings, such as gardens, parks, sports fields, and woodlands.[10] Some studies have referred more specifically to "forest-bathing", also known as "shinrin-yoku," which is a Japanese practice that includes mindfulness of all five senses while immersing oneself in nature.[11] Mental and physical health benefits of one's own neighbourhood, including one's own backyard, have also been studied.[6] Regardless of the exact definition used, existing studies on nature therapy have identified consistent health benefits, both mental and physical. Further research is needed to determine if distractions, such as electronic devices, may negate the positive effects of nature exposure.

It is apparent that spending time in nature can mean different things to different people, and may vary depending on context. In clinical practice, it would be beneficial to use a broader definition of nature that simply encourages clients to spend time outside, without being overly restrictive about the specific natural environment. For this purpose, nature could be defined as any area consisting of living plants and animals that may have varying degrees of man-made influences. This broader definition allows for a variety of nature settings, ranging from a small urban park to a remote wild forest,[12] many of which are readily accessible to most people and all of which will provide some health benefit. Therefore, this type of definition makes it easier for NPs to prescribe nature as an adjunct to traditional chronic disease management.

Health Benefits of Nature

COVID-19 Pandemic

Research on the benefits of time spent in nature has gained traction in recent years, especially during the COVID-19 pandemic.[13-15] COVID-19 restrictions resulted in negative psychological consequences for many affected individuals;[13] depression and anxiety commonly occurred as a result of loneliness and boredom, while reduced physical activity negatively affected physical health.[14] During the pandemic, researchers studied Canadian undergraduate students' wellbeing and found that those who spent more time in nature reported higher levels of wellbeing.[13] Wellbeing was measured according to the students' affect, vitality, ability to flourish, and overall life satisfaction.[13]

During the COVID-19 pandemic, increased exposure to nature improved the health and wellbeing of individuals, both mentally and physically.[14] Researchers documented several benefits of nature therapy during the pandemic, including increased physical activity, improved sleep, reduced stress, and decreased rates of mental health disorders such as depression and anxiety.[14] In addition, time spent in nature was correlated with lower perceived levels of stress and an improved ability to cope with life during the pandemic.[15] Research has shown that lower stress levels are directly correlated with positive health effects.[16] It is well recognized that stress affects autonomic and neuroendocrine responses; as such, chronic stress can lead to the development of hypertension, atherosclerosis, inflammation, fatigue, obesity, and other chronic diseases.[16] Chronic stress can also indirectly increase negative coping mechanisms, including gravitation toward dietary patterns that are high in fat and low in fruit and vegetable intake, which can contribute to obesity, cardiovascular disease, and cancer risk.[16]

Mental Health

Spending time in nature is associated with a significant decrease in the stress hormone cortisol;[17,18] the amount of time spent in nature is directly and positively correlated with the degree of stress reduction a person experiences.[17] However, the most significant stress reduction is achieved within the first 20 to 30 minutes of nature exposure.[17] Furthermore, living in a neighbourhood with a high percentage of natural vegetation has been associated with improved mental health.[19] Meditating and exercising in a forested environment has been shown to increase serotonin levels, leading to elevated mood.[9] Forest bathing has been shown to decrease symptoms of depression[20,21] and anxiety.[20] When immersion in nature is combined with daylight exposure, there is a potentiating effect on the mood and affect of those with symptoms of depression.[22]

Physical Health

While spending time in nature has been shown to improve mental health, it is also associated with physical health benefits. Spending time in forests has been shown to significantly reduce both systolic and diastolic blood pressure, particularly for individuals diagnosed with hypertension.[23] Fatigue can affect mental and physical wellbeing, and research conducted on truck drivers found that those who visited gardens, parks, sports fields, allotments, woodlands, lakes, rivers, coastlines, beaches, or mountains at least once per week experienced less chronic and acute fatigue.[10] Various positive associations between nature exposure and health have been found, including improved cognitive function, brain activity, blood pressure, mental health, physical activity, and sleep.[24]

Many studies have examined the correlation between nature exposure and the prevention of specific diseases. One study found the risk of developing Parkinson's disease was significantly decreased with exposure to higher levels of residential greenness.[25] Another study examined the effects of outdoor light exposure on myopia in school children, and found that increasing time spent outdoors during the school day led to delayed onset and slowed progression of myopia in the study participants.[26] Furthermore, increased exposure to green spaces, and more time spent playing outdoors, decreased the need for spectacles (a probable marker of myopia) in school children.[27] Research examining asthma hospitalizations found that there were significantly fewer acute asthma hospitalizations in areas with higher tree density.[28] In another study, elderly patients with COPD who were brought on a forest bathing trip experienced significantly lower levels of perforin, granzyme B, pro-inflammatory cytokines, and stress hormones when compared to the control group who were brought to an urban setting.[29] Men living in areas with higher levels of greenness showed reduced risk of prostate cancer.[30] In a nation-wide study in the United States, women with higher levels of greenness around their home had lower rates of all-cause mortality, with the strongest findings for mortality from cancer, respiratory, and kidney disease.[31]

It is important to consider that simply spending more time outdoors may increase time spent in physical activity and, thus, decrease sedentary time.[7] It has been suggested that setting targets for outdoor time may be met with less resistance from patients than setting targets for physical activity. Both of these targets may improve patients' physical activity levels and, thus, result in the same or similar health benefits.[7]

Social Prescribing

Prescribing non-medical interventions to improve health behaviours and manage chronic conditions is referred to as social prescribing. The purpose of social prescribing is to connect patients with activities or support services within their community.[32] A green prescription, which falls under the umbrella of social prescribing, is a formal recommendation for patients to spend time in nature to benefit their health and wellbeing.[33] Patients are more likely to follow a social prescription if the chosen activity is readily accessible and the positive benefits from the activity are clear.[34] Spending time in nature may be more challenging for those living in an urban centre, where there is limited access to green spaces. However, it should be emphasized that any time spent outdoors will produce some benefit, especially in terms of reducing sedentary time.[7] Nurse practitioners who provide green prescriptions should follow up with their patients to review the patients' experiences of spending more time outdoors and to monitor specific markers of health, including blood pressure, mood, affect, and stress levels.[34]

Nurse practitioners can use the following screening questions to identify clients who might benefit from a nature prescription: "Have you been outside yet today?" and "Have you been outside in nature in the last week to walk, hike, play with a pet, listen to birds, garden, or have a picnic?".[35(p69)] If the patient responds "no" to both questions, they likely have a nature deficit and could benefit from a nature prescription.[35] The nature prescription should include specific types of activities as well as location, duration, and frequency.[35] In addition, it may be beneficial to request that the patient record their mood, feelings, blood pressure, and heart rate before and after the nature activity.[35] Although there is no consensus on the exact amount of time patients should spend in nature, at least 120 minutes per week has been shown to improve overall health and wellbeing.[36] The 120 minutes of nature time is cumulative, and can be broken down into smaller sessions of 20 to 30 minutes over the course of the week; shorter periods of nature exposure can still produce significant health benefits.[17]

The British Columbia Parks Foundation initiated a national program called PaRx to assist healthcare providers in prescribing nature.[37] This program allows NPs and other healthcare providers to prescribe one Parks Canada Discovery Pass per month; the pass provides one year of free access to all national parks, national historic sites, and national marine conservation areas.[37] The aim of the program is to increase patients' access to nature and, given

that an NP can prescribe one pass each month, should prioritize clients for whom financial barriers would prevent access. The PaRx program has been endorsed by multiple medical schools as well as physican and NP groups across Canada. Licensed healthcare providers simply need to register on the program's website to receive instructions on how to engage in this initiative.[37]

Planetary Health

The health of human beings is inextricably linked to the stability of Earth's natural environments.[38] As a result, planetary health is directly linked to human health. Planetary health is defined as the interdependent power of all natural and man-made ecosystems to live, grow, and thrive.[39] Planetary health research has highlighted key areas of planetary damage, including pollution, climate change, and loss of biodiversity, all of which negatively affect the health of human beings.[40] For example, extreme weather, multi-year warming, and tropical cyclone exposure are each associated with worsening markers of mental health.[41] In addition, climate change has contributed to increased incidences of Lyme disease in the United States, due to higher annual average temperatures that have increased tick survival and enhanced their host-seeking behaviors.[42] These are just a few examples of how human health is affected by damage to the Earth's natural environments.

Spending time in nature has been found to increase one's value for and connection to nature, which leads to an increase in pro-environmental attitudes and behaviors.[8] By encouraging patients to spend time in nature to improve their physical and mental health, NPs are also developing more environmentally conscious citizens, thereby contributing to planetary health.[33,43] When citizens are passionate about improving the health of their communities and environment, they may become involved in political and legal actions, and pressure governments to make positive legislative changes to improve planetary health.[44] As such, health becomes more than just an individual concern; it becomes a community concern, as members of the community realize that decreasing pollution and improving planetary health can enhance the health and wellbeing of all those living within the community.[45]

Conclusion

Chronic diseases are significant contributors to global morbidity and mortality as well as rising healthcare expenditures. Therefore, it is critical to find cost effective interventions to treat and manage these illnesses. Nurse practitioners can incorporate nature prescribing into their regular practice to improve patients' health outcomes, reduce healthcare spending, and contribute to planetary health. Since any amount of time spent outdoors can increase patients' level of physical activity and improve overall health, nature prescriptions can use broad definitions of time spent in nature. When writing nature prescriptions, NPs should focus on the types of activities most readily available and accessible to patients, based on factors such as proximity and transportation. Nurse practitioners should prescribe 120 minutes per week of outdoor time, encourage patients to engage in activities they enjoy, and monitor changes in patients' mental and physical health as they begin spending time in nature. Individuals who spend more time outdoors develop a greater connection to nature and the environment, and become more environmentally conscious citizens who tend to modify their behaviours and choices to improve planetary health, which positively impacts human health.

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PRESCRIPTION ANTIHISTAMINE COVERED BY MOST PRIVATE INSURANCE PLANS

Indications:

Seasonal Allergic Rhinitis

BLEXTEN® (bilastine) is indicated for the symptomatic relief of nasal and non-nasal symptoms of seasonal allergic rhinitis (SAR) in patients 4 years of age and older with a body weight of at least 16 kg.

Chronic Spontaneous Urticaria

BLEXTEN® (bilastine) is indicated for the relief of the symptoms associated with chronic spontaneous urticaria (CSU) (e.g. pruritus and hives), in patients 4 years of age and older with a body weight of at least 16 kg.

Contraindication:

- History of QT prolongation and/or torsade de pointes, including congenital long QT syndromes

Relevant warnings and precautions:

- QTc interval prolongation, which may increase the risk of torsade de pointes
- Use with caution in patients with a history of cardiac arrhythmias; hypokalemia, hypomagnesaemia; significant bradycardia; family history of sudden cardiac death; concomitant use of other QT/QTc-prolonging drugs
- P-glycoprotein inhibitors may increase plasma levels of BLEXTEN® in patients with moderate or severe renal impairment; co-administration should be avoided
- BLEXTEN® should be avoided during pregnancy unless advised otherwise by a physician
- A study was performed to assess the effects of BLEXTEN® and bilastine 40 mg on real time driving performance compared to placebo. Bilastine did not affect driving performance differently than placebo following day one or after one week of treatment. However, patients should be informed that very rarely some people experience drowsiness, which may affect their ability to drive or use machines.

For more information:

Please consult the product monograph at https://www.miravohealthcare.com/wp-content/uploads/2021/08/Blexten-PM-ENG-Aug2021.pdf for important information relating to adverse reactions, drug interactions, and dosing information which have not been discussed in this piece. The product monograph is also available by calling 1-866-391-4503.

Σ As of August 31, 2021, the estimate from internal data of patient exposure is based on units sold of the defined daily dose of 20 mg bilastine and the mean treatment duration of 3 weeks.

Reference:

1. Blexten® Product Monograph. Aralez Pharmaceuticals Canada Inc. 2021.

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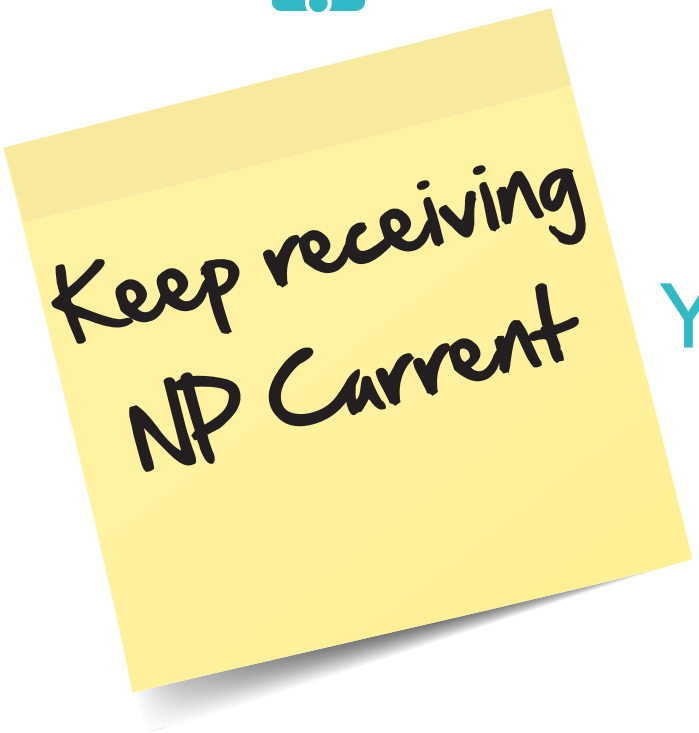

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