Addition of advanced practice providers to health care teams

Optimizing health care teams by including nurse practitioners and physician assistants would increase efficiencies and value for money spent in BC's health care system.

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A collective effort is required to deliver safe, effective, and affordable health care. Challenges to health care delivery in Canada include the country's population distribution: more than 70% of the population is concentrated in 5% of the land mass.[1] People living in rural and remote communities often have to travel long distances and contend with difficult weather to access the care they need. This results in higher negative impacts on social determinants of health in at-risk populations, including Indigenous people, who have a higher rural representation.

Policies shape how this care is delivered and how health care teams are built. Traditionally, a health care team was made up of doctors and nurses. Other positions have been added over time to increase efficiency, safety, and patient satisfaction, which has resulted in specializing, complementing, or sometimes substituting what each health professional does.

The Canada Health Act[2] guides Canada's hospital-centric health care system. It consists of five guiding principles or pillars: public administration, comprehensiveness, universality, portability, and accessibility. Fragmented responsibilities are shared between provinces, territories, and some federally insured groups, such as Indigenous peoples, the Canadian Armed Forces, and the RCMP. Coordinating and optimizing this multijurisdictional system is complex and often riddled with political strife in terms of funding and responsibilities.

Provinces also have their own regulatory responsibilities for various health professions. British Columbia has regulated nurse practitioners since 2005,[3] while Manitoba has regulated physician assistants since 1999 and nurse practitioners since 2001.[3]

Measuring health care system performance requires reliable, comparable data, such as that provided by the Canadian Institute for Health Information.[4] This overview compares BC's and Manitoba's performance in using advanced practice providers in health care teams because of their similar geographic and population challenges and similar timelines in which nurse practitioners in both provinces and physician assistants in Manitoba became regulated. Data on other western provinces are included in the tables to provide context.

Advanced practice providers

Advanced practice providers are health professionals who undertake tasks traditionally assigned to or performed by physicians, although the definition can vary because regulations differ worldwide. In this review, I focus on physician assistants and nurse practitioners. The tasks performed by these providers can range from simple to complex. Regulators and professional bodies are responsible for delineating scopes of practice.

In Canada, physician assistants are "academically and clinically educated medical generalists who practice medicine within a formalized relationship with physicians."[5] Supervision is described as "negotiated autonomy."[6] A nurse practitioner is "a registered nurse with additional educational preparation and experience who possesses and demonstrates the competencies to autonomously diagnose, order and interpret diagnostic tests, prescribe pharmaceuticals and perform specific procedures within their legislated scope of practice."[7]

Table 1 shows the number of family physicians, specialists, nurse practitioners, and physician assistants in the four western provinces per 100 000 residents in 2021, and the estimated number of available positions for each role (December 2022 for BC and Manitoba; March 2023 for Alberta and Saskatchewan).[8-11]

Provincial comparison

BC has a land area of approximately 945 000 km[12] and, as of 2021, a population of approximately 5.2 million.[13] Manitoba's land area is approximately two-thirds that of BC,[14] but its population was approximately one-third of BC's in 2021.[13] Both provinces have large Indigenous and rural populations **[Table 2]**.

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As of 2021, there were 648 nurse practitioners in BC,[4] and the provincial government wants to continue increasing that number. BC does not currently regulate or allow physician assistants to work in the public system, other than through the Canadian Armed Forces.

In 2021, there were 275 nurse practitioners and 138 physician assistants in Manitoba.[4] The low number of provincial job postings for those two categories in Manitoba in 2021 suggests that neither profession was on the rise.[9]

Structuring optimal health care teams

Creating the appropriate mix of health care professionals to maintain good-quality care can be expensive. In my opinion, a large amount of money is already spent on health care resources, and administrators must now shift from focusing on the bottom line to finding efficiencies that provide more value for money spent.[15] In 2017, in a series of reports on the value of physician assistants, the Conference Board of Canada explored the idea of increasing efficiency with the addition of physician assistants and adding value to the health care system.[16] The results showed cost and time savings, increased patient volumes, and greater system efficiency and provided insight into funding models. In 2014, an article in the *Harvard Business Review* endorsed the use of nurse practitioners and physician assistants to refocus the services of higher-skilled physicians.[17] The authors hypothesized that high health care costs are "the result of mismatched capacity, fragmented delivery, suboptimal outcomes, and inefficient use of highly skilled clinical and technical staff."

There is no single solution for how to optimize health care teams, as well described by Milewski and colleagues, who concluded that a solution that works for one pediatric orthopaedic group may not be suitable for all teams.[18] Having choices in the makeup of a health care team allows administrators to enable care team leaders and communities to shape effective teams, which can then be adjusted based on results gathered using reliable metrics, including patient input and care outcomes. Chapter 7 of *A Canadian Healthcare Innovation Agenda*[19] makes a strong argument for acquiring better comparable data to bring innovation to health care. Allin and colleagues described how system performance adjustments are dynamic and dependent on lessons learned, which requires robust, uniform information gathering.[19] The patient's role is currently undervalued in shaping the system; patient-reported outcomes and experience measures must be acknowledged and acted upon. When patients report difficulties in accessing care, health care leaders at all levels must establish clear measures that go beyond announcements. More importantly, they must

TABLE 1. Number of health professionals (2021) and available positions across BC, Manitoba, Alberta, and Saskatchewan.*

	British Columbia	Manitoba	Alberta†	Saskatchewan†
Number of professionals (per 100 000 residents)				
Family physicians	136.5	108.8	122.1	105.8
Specialists	123.1	107.7	127.4	99.8
Nurse practitioners	12.4	19.9	14.2	22
Physician assistants	0.6‡	10.0	1.2	0.1‡
Number of available positions (December 2022 for BC and Manitoba; March 2023 for Alberta and Saskatchewan)				
Physicians (family physicians and specialists)	1062[8]	103[9]	540[10]	263[11]
Nurse practitioners	153[8]	1[9]	23[10]	25[11]
Physician assistants	N/A	2[9]	1[10]	N/A

* Data from the Canadian Institute for Health Information unless otherwise cited.[4]
† Data from Alberta and Saskatchewan are included to provide broader Western Canadian context.
‡ Canadian Armed Forces physician assistants working in BC or Saskatchewan.

TABLE 2. Characteristics of populations in BC, Manitoba, Alberta, and Saskatchewan.

	British Columbia	Manitoba	Alberta†	Saskatchewan†
Total population (2021)	5.2 million	1.4 million	4.4 million	1.2 million
Rural population (2016)	13.6%	26.8%	16.4%	33.2%
Indigenous population (2016)	5.9%	18.0%	6.5%	16.3%
Seniors (65 years and older) (2021)	19.7%	16.5%	14.4%	16.7%
Percentage of the total population with a regular health care provider (2019–2020)	81.7%	84.3%	85.2%	82.8%
Perceived health‡ (2019–2020)	60.0%	60.2%	63.7%	58.9%

* Data from the Canadian Institute for Health Information.
† Data from Alberta and Saskatchewan are to provide broader Western Canadian context.
‡ The percentage of the population 12 years of age and older who reported their health to be excellent or very good.

review performance after a change is made to measure the outcomes and determine whether the change was positive.

Researchers in the UK studied the primary care practitioner mix to address three significant issues, which are relevant to the Canadian system:[20] (1) better match patient needs, (2) increase access, and (3) free up physician time. Any physician time that is gained can be used to focus on higher-needs patients or to establish a better quality of work/life.

In 2021, the Organisation for Economic Co-operation and Development (OECD) indicated that the distribution of physicians between urban and rural areas in most OECD countries was unbalanced; Canada had more than twice as many urban-based physicians as rural-based physicians.[21] In a 2010 survey of 4000 rural and remote nurses, only 4% were nurse practitioners.[3] More recent metrics on rural and remote nurse practitioners are difficult to find, but in the absence of new information, my assumption is that the percentage has not improved significantly. Solutions to creating safe, affordable rural and Indigenous health care are needed, because the costs of delivering this care are higher than the costs of delivering care in urban settings, with lower travel requirements and fewer access difficulties.[1] The disparity in who has a regular care provider across Canada varies from 24% in Nunavut to 91% in Ontario.[22]

There are also opportunities to find further efficiencies within scheduling and panel design. This was explored by Balasubramanian and colleagues,[23] using engineering concepts to reshape panels to improve access and longitudinal care. It is logical to have physicians spend less time doing paperwork and dealing with issues that could be handled by an advanced practice provider and more time performing procedures. The downside would be the increased costs of hiring advanced practice providers, but delays in accessing care can have a larger financial impact on the economy. White and colleagues compared mid-level provider use in a practice to advance this redesign.[24] They compared the "icebreaker" model (where patients are first seen by a mid-level provider, then by a physician) with the "stand-alone" model (where some of a physician's tasks are taken on by mid-level providers and there is some shared care) and concluded that the stand-alone model worked better unless the icebreaker model had lower-cost providers. In the stand-alone model, advanced practice providers completed some of the physician's tasks, and interactions between the physician and advanced practice providers were kept to a minimum. In this case, physician assistants have negotiated autonomy, where responsibilities are shared and care remains guided by the physician, and nurse practitioners may work independently of physicians.

"Robbing Peter to pay Paul" aptly describes some health care resource management practices. In 2022, Howlett and colleagues reported that the number of family physicians in Canada had increased by 24% since 2011, which outpaced population growth.[25] However, primary care access continued to worsen. A combination of factors could explain this, but it is difficult to assess them without adequate metrics. It could be that more family physicians were working in areas where their services were needed but not where policymakers wanted them to practise. Some family physicians have reduced their services to a narrower scope in response, which may negatively impact rural and Indigenous populations' access to adequate care. Other factors, such as compensation, work conditions, and job satisfaction, also play a role in where physicians can afford to live and how they balance professional and life responsibilities. **Table 1** lists the number of job vacancies in various health care professions in BC, Manitoba, Alberta, and Saskatchewan. BC boasts significantly more vacancies than Manitoba and has higher ratios of providers with higher health care costs per capita. Health care resourcing efforts must consider system-wide innovations when there are shortages of people to fill roles; national coordination of professional regulation would be a good start. As demonstrated by the nursing shortage,[7] when individuals shift from one role to another (e.g., nurses to nurse practitioners), the shortage is not eliminated; it is repositioned. An effective ratio of various health care professionals is required to meet the needs of a community. Repeating the same cycle of solutions by adding more of the same professions is not sustainable, nor does it help create more effective teams.

The OECD reported that Canada was just outside the top three countries in per capita health care spending in 2020.[21] In 2022, BC spent $8790 per capita for health care, which represented a 2.4% increase from the previous year.[26] Manitoba reduced its health care expenditures by 1% to $8417 per capita.[26] **Table 2** shows that in 2019–2020, similar percentages of the populations in BC and Manitoba had a regular health care provider and "perceived health,"[27] which is a measure of the percentage of the population aged 12 years and older who reported their health to be excellent or very good. In 2016, Manitoba had higher percentages of rural and Indigenous populations than BC, whereas in 2021, BC had a slightly larger population of seniors. Although not conclusive, Manitoba appears to have created more value with its policy decisions regarding advanced health care providers in that its health indicators are comparable to BC's, it spends less on health care per capita, and it has a slightly higher percentage of the population with a regular health care provider **[Table 2]**, despite having a population base that is more susceptible to social determinants of health. This especially appears to be the case considering that Manitoba had 43.1 fewer physicians (family physicians plus specialists) per 100 000 residents than BC in 2021 **[Table 1]**. As of 2021, Manitoba had more physician assistants and nurse practitioners than BC **[Table 1]**, which likely reduced the demands on Manitoba physicians to meet the province's health care needs.

Adding a variety of advanced health care practice providers, including physician assistants, to BC's health care system would increase efficiencies and value for money spent by creating an overlap of skills that would help bridge the wide gaps in health

care. The initial costs of creating these efficiency gains would be a first step toward improving access, sustainability, and better team-based care.

The use of physician assistants allows for a realignment of teams. Surgical first assists and some hospitalists can be redirected to primary care, which would leave surgeons and a core of hospitalists to supervise physician assistants. The reach and capacity of primary care can be increased by providing physician-level care by physician assistants, who are supervised by physician leaders, and would maintain the physician relationship with the patient. Manitoba, which uses a variety of advanced practice providers, demonstrates better performance for access and affordability compared with BC, and similar health outcomes.

Conclusions

Prevention, prompt treatment, and safety are essential to health, as is offering the care that we all deserve. The evidence-based and holistic approach used for patients should extend to health care systems management. It needs to be adaptive and to put more value on measurable outcomes. To increase workforce efficiency and apply innovations, comparable metrics in Canada's interlinked health systems need to be gathered. The use of advanced practice providers adds value because a diversified workforce improves long-term affordability by safely multiplying the existing physician workforce. Adjusting the ratio of the various types of providers in health care teams will help keep costs down and maintain good-quality care. In Canada, provinces will continue to be slow in human health resource innovation without a coordinated approach to professional regulation.

Dr Katharine Smart, former Canadian Medical Association president, stated that "In an optimal situation, every family doctor would be paired with a [physician assistant]."[28] As a physician assistant, I cannot disagree, but I would rephrase this to be more holistic in terms of our entire health system. Every care team, across both primary and specialist care, would benefit from administrative flexibility, including the option to create teams that best serve the community and team members. Rural and Indigenous care is expensive and would benefit most from more collaborative primary care and specialist outreach using a balanced approach to advanced practice providers. ■

References

1. Picard A. Matters of life and death: Public health issues in Canada. Douglas & McIntyre; 2017.
2. Tiedemann M. The Canada Health Act: An overview. 17 December 2019. Accessed 4 December 2022. https://lop.parl.ca/sites/PublicWebsite/default/en_CA/ResearchPublications/201954E.
3. Wong ST, Farrally V. The utilization of nurse practitioners and physician assistants: A research synthesis. Nurse Practitioner Association of Alberta, 2013. Accessed 27 October 2022. https://albertanps.com/downloads/Utilization-of-Nurse-Practitioners-and-Physician-Assistants.pdf.
4. Canadian Institute for Health Information. Health workforce in Canada: Overview. Accessed 26 May 2023. www.cihi.ca/en/health-workforce-in-canada-overview.
5. Jones I, Burrrows K, Nickell L, Millham A. Canadian physician assistant competency framework 2021. Canadian Association of Physician Assistants, 2021. Accessed 4 December 2023. https://capa-acam.ca/wp-content/uploads/2021/09/Canadian-EPA-PA.pdf.
6. Canadian Association of Physician Assistants. Issue brief: Physician assistants. Updated January 2022. Accessed 4 December 2022. https://capa-acam.ca/wp-content/uploads/2022/08/CAPA-Information-Brief-on-Physician-Assistants_January-2022-5.pdf.
7. Canadian Nurses Association. Advanced practice nursing. Accessed 4 December 2022. www.cna-aiic.ca/en/nursing/advanced-nursing-practice.
8. Health Match BC. Find a job. Accessed 4 December 2022. www.healthmatchbc.org/Jobs-in-BC/Find-a-Job.
9. Health Careers Manitoba. Opportunities. Accessed 4 December 2022. https://healthcareersmanitoba.ca/opportunities.
10. Alberta Health Services. AHS careers. Accessed 10 March 2023. www.albertahealthservices.ca/careers/careers.aspx.
11. Saskatchewan Health Authority. Careers. Accessed 10 March 2023. www.saskhealthauthority.ca/careers-volunteering/careers.
12. Super, Natural British Columbia. BC fact sheet. 2019. Accessed 15 June 2023. www.hellobc.com/content/uploads/2019/04/TM_BCFactSheet.pdf.
13. Statistics Canada. Table 17-10-0134-01: Population estimates, July 1, by health region and peer group, 2018 boundaries. 2 March 2023. Accessed 29 June 2023.
14. Government of Manitoba. Manitoba's strategic advantages: The land. Accessed 15 June 2023. www.gov.mb.ca/jec/mbadvantage/theland.html.
15. Canadian Foundation for Healthcare Improvement. Myth: User fees ensure better use of health services. J Health Serv Res Policy 2014;19:121-123.
16. Brichta J. Value of physician assistants: Recommendations for action. Conference Board of Canada, 2017. Accessed 2 November 2022. https://capa-acam.ca/wp-content/uploads/2018/11/9230_Value-of-PAs_Recommendations_BR.pdf.
17. Kaplan RS, Haas DA. How not to cut health care costs. Harvard Business Review. 2014. Accessed 4 December 2022. https://hbr.org/2014/11/how-not-to-cut-health-care-costs.
18. Milewski MD, Coene RP, Flynn JM, et al. Better patient care through physician extenders and advanced practice providers. J Pediatr Orthop 2022;42(Suppl 1):S18-S24.
19. Allin S, Davidson MJ, Denny K, O'Toole D. The role of performance data and information in driving and supporting health system innovation. In: A Canadian healthcare innovation agenda: Policy, governance, and strategy. Carson AS, Nossal KR, editors. McGill-Queen's University Press; 2018. pp. 105-124.
20. Gibson J, McBride A, Checkland K, et al. General practice managers' motivations for skill mix change in primary care: Results from a cross-sectional survey in England. J Health Serv Res Policy 2023;28:5-13.
21. Organisation for Economic Co-operation and Development. Health at a glance 2021: OECD indicators. 2021. Accessed 25 May 2023. www.oecd-ilibrary.org/social-issues-migration-health/health-at-a-glance-2021_ae3016b9-en.
22. How well is your health system working? Canadian Institute for Health Information. Accessed 4 June 2023. https://yourhealthsystem.cihi.ca/hsp/inbrief.
23. Balasubramanian H, Banerjee R, Denton B, et al. Improving clinical access and continuity through physician panel redesign. J Gen Intern Med 2010;25:1109-1115.
24. White DL, Torabi E, Froehle CM. Ice-breaker vs. standalone: Comparing alternative workflow modes of mid-level care providers. Prod Oper Manag 2017;26:2089-2106.
25. Howlett K, Grant K, Ha TT. Canada has more family doctors than ever. Why is it so hard to see them? The Globe and Mail. 26 November 2022. Accessed 27 November 2022. www.theglobeandmail.com/canada/article-family-doctors-canada-shortages.
26. Canadian Institute for Health Information. How do the provinces and territories compare? [infographic]. Accessed 29 June 2023. https://www.cihi.ca/en/how-do-the-provinces-and-territories-compare.
27. Canadian Institute for Health Information. Perceived health details for British Columbia. Accessed 29 June 2023. https://yourhealthsystem.cihi.ca/hsp/indepth#/indicator/031/2/C9001/.
28. Smart K. How physician assistants can help solve Canada's health-care crisis. Maclean's. 6 September 2022. Accessed 21 November 2022. www.macleans.ca/society/how-physician-assistants-can-help-solve-canadas-health-care-crisis.