POLICY *Brief*

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▶▶ A Population Health Approach to Health System and Human Resource Planning

June 03, 2024

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▶ Introduction

During the past few years, it has become clear that Canada's healthcare system is facing a human resource and subsequently, a health services crisis. As a result, we are witnessing a growth in health inequities due to an increasing disparity in access to health services. When viewed from a population health perspective, the crisis indicates that there is a fundamental disequilibrium between supply and demand; that is health services and health human resources do not meet the population's health needs. In this Policy Brief, I explore what population health needs are, how we are failing to incorporate them into planning, and possible solutions moving forward.

▶ Shortages in Canada

Canada is facing a significant shortages of healthcare professionals across various disciplines. This crisis is multifaceted, stemming from factors such as an aging population increasing demand for healthcare services, an aging healthcare workforce leading to retirements, and challenges in recruiting and retaining new healthcare workers.

In Saskatchewan, this problem is put in stark focus when specialists leave the province, as was the case in early April, when the province's only Pediatric Allergist taking referrals went back to Alberta.[1] This is occurring in a context where the Provincial Auditor reported a 2,200 deficit in health-care workers over the next five years (reported in 2022)[2], and the Saskatchewan Health Authority reports overall need to stabilize rural acute and emergency room services.[3] As has been the case across the country, to help address this issue, the Ministry of Health in Saskatchewan has recently made significant investments into increasing the supply-side of the health human resource equation with over $141 million this budget year towards recruitment, training, and rural and remote staffing.[4]

▶ Indicators of "need"

But what of the demand-side of this issue? What do we know about the "need" for services and staff? Population health needs can be understood as the healthcare needs and social needs associated with the social determinants of health, built off of the seminal work of Kindig and Stoddart that emphasizes the distribution of health outcomes across a population is as important as the average health of that population.[5]

These needs can practically be assessed using multiple methods. For example, healthcare needs can be assessed through community surveys, health care utilisation data, epidemiological data, or individual screenings. With respect to social needs, similar methods can be employed, including asking providers about the social needs of their populations, community-based surveys, individual social needs screening and leveraging area-based social demographic data.[6]

Murphy et al (2017)[7] describes that these needs ostensibly should inform the health service and human resource planning process, which is understood as a "deliberative process in which decision-makers plan the health services to be delivered in a given jurisdiction." [8] The intelligence required to understand the demand side include data on the healthcare utilisation, disease epidemiology, and the demographic characteristics of the population. Indicators of supply include the stock of providers, participation rates, activity rates, competency prevalence, and productivity.

The question then arises of why there is a mismatch between supply and demand for healthcare services, which contributes to health inequalities? It a complex issue that involves a myriad supply and demand-side dynamics. One concrete problem that the literature suggests is that we don't assess demand - or population health needs - comprehensively, because health care service and human resource planning is currently driven by only understanding one of the many indicators described up to this point: health care utilisation data.

▶▶ Ignoring the cracks

Health care utilization is the quantification or description of the use of services by individuals for preventing and curing health problems, promoting health maintenance, obtaining information about one's health, or prognosis. But, if one were to use only utilization data to understand demand, one will only *capture those who used the system, and miss those who didn't use the system* and fell through the cracks. Using this information exclusively biases decisions to cater to system users with the highest access, leading to resource misallocation and undermining health equity.

Recent work done by Alberta Health Services[9] suggests specifically that "Alberta health care service planning decision makers do not use a consistent approach to address the health needs of Alberta's population in their planning process. Often health care service planning is based on health care utilisation rather than what matters to communities and populations we serve". Writ large in Canada, Tomblin Murphy[10] also corroborates this when discussing healthcare human resource planning health care such that "needs frequently go unmet because the services required to address them and order the health human resource necessary deliverable services have not been planned in accordance with the needs for care in the population".

What culminates from the exclusive use of historical health utilisation data is a biased data problem. Historical health utilisation fails to detect underlying health and social risks, and *unmet* needs, and can increase inequities through misallocating resources. It leads to an inefficient mix of providers, poorly targeted programs, increased distrust between communities in the system, and ill-informed preventative services.[11] (Jackson et al 2022)

▶▶ Better data; big and small

The current use of historical health utilisation data to plan forward resonates with Hekler et. al's[12] description of a "big data approach". They state: "the use of data collected from one set of individuals [from the past] with the goal of improved description and prediction of a phenomenon for other individuals, not necessarily those from whom the data were collected [in the future]" (p. 2). It is evident that this is not sufficient for meeting population health needs.

To help more accurately plan to meet needs, the health service planning process should also include a "small-data approach" which is: "the rigorous use of data collected to advance the goals of the specific N-of-1 unit for whom the data are about (i.e., a single person, clinic, hospital, healthcare system, community, city, etc.). The goal of a small-data approach is to achieve improved individual-level description, prediction and, ultimately, control for that specific unit" (p.2). Introducing a rigorous small-data approach to health service planning, combined with a population health perspective, may increase the resolution of our assessment of healthcare service and human resource needs in our communities.

> "Often health care service planning is based on health care utilisation rather than what matters to communities and populations we serve."

An example of a small-data approach comes from the United States, where conducting community health needs assessments every three years is mandated for Critical Access Hospitals under the Affordable Care Act.[13] This assessment includes the use of stakeholder meetings, community focus groups, surveys, interviews with community leaders, and population health and other health-related data, to arrive at richer, community-specific demand information. Local public health units must also conduct these assessments every five years to maintain accreditation. As such, preventative services can also be deployed in a needs-based model that can help services match contemporary population health demands.

To fully harness the possibility of a small-data paradigm, health system planners must work collaboratively, across sectors and levels of providers and patients, to unearth the population health needs that matter to the communities themselves.

Towards a needs-based approach

A more complete understanding of population health needs in a community requires blending big data and small data to health service and health resource planning. It starts by taking a population health approach that recognizes health is a broad construct that requires both health and social need insights. To satisfy population health needs, the work must then also be cross-cutting because no one organisation can maintain population health. We must also be acutely aware that the past is not the future; moving beyond only using health utilisation data by routinely assessing needs from communities. Health service planning must be a deliberative process that actually considers the most relevant information, to understand present and future population health needs, then to work backwards from needs, to implement efficient and effective service and human resources strategies.

This would first require a review of current planning processes employed at the most relevant regional level appropriate to each province, and an assessment of how and where data fits in. Unfortunately, it is not well-document how this process occurs.

Apart from the scant peer-reviewed assessments, the publicly available knowledge on health service and human resource planning likely lies buried in strategic planning documents and/or within the institutional knowledge of those in 'planning' branches of health authorities or Ministries of Health. This suggests that planning capacity is already available to improve the process and we may just need to coordinate the use of more sophisticated data that exists across national and local agencies who already measure health and social indicators of population health.

As is the case for community health needs assessment approach in the United States, data collection involves a combination of existing administrative socio-demographic data and regularly scheduled community engagement that should already be happening as part of routine program evaluation. Practically speaking, this may only require a small team of practitioners and/or engagement experts already embedded in jurisdictions, translating community-member reported 'needs' into intelligence for planning units to combine with administrative data in their next planning cycle.

One step towards this direction on the supply-side of the equation is the establishment of Health Workforce Canada in late 2023. This independent organization is mandated to "improve the collection and sharing of health workforce data and share practical solutions and innovative practices." Though it is early days, there are signals[14] that their activities are going to be focussed on harnessing data to drive better planning processes. A similar national initiative by them, or others, may be required to coordinate the local and regional use of big- and small-data approaches to understand the demand-side health service and human resource 'needs' such that we don't continue to use only historical utilization data to perpetuate the planning of a system that serves some and not, others.

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