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# The Watershed Of Practice-Based Research: Lessons And Opportunities From The COVID Pandemic

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Watersheds are the sources that nourish the streams and rivers that water the fields, flora, fauna, towns, and cities of every nation. Watersheds themselves are fed by the rain and snow that fall. When water-providing clouds fail, watersheds fail, rivers dry up, and life suffers. Similarly, the majority of patient visits to clinicians happen in primary care; primary care practices act as watersheds for the health of populations in every nation. Primary care is where and how most people get most of their health care. Today the watershed of [primary care in North America is at risk](#), already low in numbers: [representing 30 percent of the physician workforce, underfunded: supported by only 5.4 percent of US health spending, and now battered by the COVID-19 pandemic](#).

[Practice-Based Research Networks](#) (PBRNs) are groups of primary care providers and practices working together to answer community-based health care questions through the use of evidence and translate research findings into practice. Like citizen

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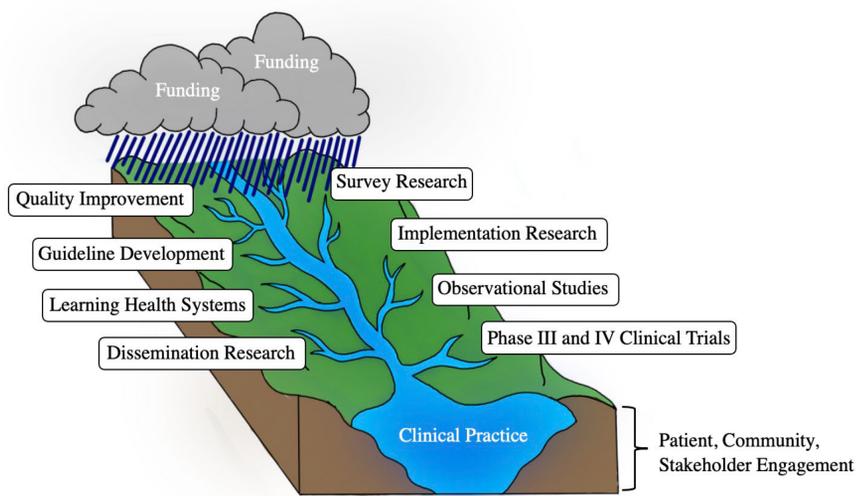
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science networks of [soil and water sensing stations in the natural environment](#), PBRNs are the infrastructure best suited to measuring and improving the health of the national primary care watershed. Typically, PBRNs draw on the experience and insight of practicing clinicians to identify and frame research questions whose answers can improve the practice of primary care. PBRNs can produce research findings that are immediately [relevant to the clinician](#) and, in theory, more easily [assimilated into everyday practice](#). Participation in PBRNs also promotes [retention of clinicians in rural areas](#).

The PBRN watershed includes the many types of research (tributaries) conducted within PBRNs (see exhibit 1). Patients, communities, and stakeholders shape research questions (landscape), and funding sources (clouds) support their growth. This research evidence feeds into primary care practices and patients to improve clinical practice. US-based PBRNs have grown in number from a modest 28 in 1994 to [185 registered PBRNs in 2020](#). In 2020, more than 150,000 PBRN clinicians serve more than 86 million patients, comprising 25 percent of the US population. There are PBRNs in all 50 states and 25 countries. The work of US-based PBRNs have been funded by agencies, primarily the Agency for Healthcare Research and Quality (AHRQ), with some project-specific funding from the National Institutes of Health (NIH) and the Patient-Centered Outcomes Research Institute (PCORI). In Canada, the majority of PBRNs are supported by an academic institution with an aim to develop relationships between academic and community settings. PBRNs focus on improving patient care through the practice-based research and learning environments. The [Canadian Primary Care Sentinel Surveillance Network](#) is a national network of 15 regional or provincial PBRNs that collects point-of-care patient data from electronic medical records for the purpose of surveillance, research, and quality improvement. In Canada, funding agencies aim to better support the engagement of patients, caregivers, and families in PBRN-related research through initiatives such as the Strategy for Patient-Orientated Research (SPOR). [The SPOR Primary and Integrated Health Care Innovations](#) (PIHCI) Network facilitated research that fostered a learning system that engaged practice, research, and policy. In 2017, the AHRQ's support for the PBRN Learning Center (P30) grants ended, and the AHRQ no longer provides direct funding support to PBRNs. Thus, for PIHCI and other PBRNs, the watershed for primary care research began to dry up.

Exhibit 1: Watershed of practice-based research



Source: Created by coauthor, Elexia Wright.

Even before the COVID-19 pandemic, PBRNs were struggling for funding to maintain research infrastructure and capacity. When the pandemic hit, it rendered already-diminished PBRNs to even worse functioning, such as turning the water off for a bench laboratory. Many primary care practices [were shuttered](#), especially those without virtual care capabilities. Primary care providers were suffering from alarming rates of [burnout](#) before the pandemic, which has only [progressed](#) with the development of new COVID-19 variants. These stressors [limited access](#) to primary care at the very time when there was a critical need for rapid access to testing, treatment, research translation, and ultimately vaccine delivery. Although the rapid development of COVID-19 vaccines was a success, the lack of highly functioning networks of practice with the capacity for research and learning health systems has failed our patients and communities.

PBRNs that have survived the pandemic so far have had to adapt to continue their work in the field. [Practice support facilitators](#) have adapted to support practices during the pandemic through methods such as web conferencing, managing supply shortages, and obtaining small business loans to keep practices open for business. PBRNs continue to address questions important to practicing primary care providers and inform decisional dilemmas in primary care through comparative effectiveness research. However, [this work occurs in a fragmented fashion](#). States and counties with more coordinated primary care and public health pandemic responses have had [lower case rates and mortality](#). With better infrastructure, a more effective, coordinated national response could be deployed in the next national emergency.

## We Need To Change From A Reactive System To A Responsive System

Practice-based research, through support of the primary care watershed, remains the best pathway for improving individual patient care and outcomes. Examples of applicable research from PBRNs include [dissemination of best practices](#), prevention and screening, multimorbidity management, long COVID-19, and [undifferentiated syndromes](#). This research spans a wide range of research methods and settings: qualitative, quantitative, observational, pragmatic trials, implementation effectiveness, caring for marginalized populations, and optimizing learning health systems. Without translation of proximal research findings to ambulatory practice, the [translational pathway](#) is slow and incomplete, and individual patient care and population outcomes cannot improve optimally. In settings of equal access to primary care, PBRNs can do the work of [addressing health disparities and structural racism](#) in health care.

To build on this work, the following is needed:

### 1. Expand Funding For Primary Care Research Infrastructure

This includes training a primary care research workforce, expanding capacity for learning health systems within primary care practice-based settings, and inculcating a culture of data-driven ongoing learning as a routine aspect of health care delivery. The work of building, maintaining, and sustaining trusting relationships with practices and a culture of continuous learning (which requires research capacity) requires substantial investment in research infrastructure. Another salient feature is a data-informed system with the capacity for a national infrastructure to respond quickly to medical emergencies, pandemics, and humanitarian efforts.

### 2. Expand And Optimally Enable Current Practice-Based Research Networks

Because the current PBRNs are mostly situated in rural and underserved communities, these networks have a unique capacity to address the needs of the most vulnerable and have the largest impact on health inequity. However, given the costs required to maintain and expand PBRNs and the lack of infrastructure funding, [expansion of PBRNs is unlikely in the current funding environment](#).

### 3. Provide Targeted Funding For A [Hub For Federal Primary Care Research](#)

This hub can assist practice-based networks with coordination, convening, training, infrastructure, research resources, evidence implementation resources, and grant funding. The [AHRQ in the past has provided funding for a PBRN Resource Center and for Centers for Primary Care Practice-Based Research and Learning](#). These mechanisms provided ongoing support for new PBRNs and opportunities for shared learning and pursuit of funding opportunities across larger populations.

### 4. Increase Patient-Centered Outcomes Research Funding

Support efforts by the AHRQ, NIH, PCORI, SPOR, and substantially re-orient such resources to practice-based settings where patients get most of their health care. A summary of the recent RAND report on Health Services Research and Primary Care Research notes that [only 1 percent of the NIH's research funding is directed toward primary care research. The AHRQ is only modestly better with 13 percent of its funded projects](#) being classified as primary care research. [A 2016 analysis of PCORI funding found that only 19 percent of its funded research involved primary care](#). The imbalance is striking.

Primary care practices are the watershed for the health of a population, and PBRNs provide the capacity to assess and improve the health of that watershed, with the ultimate goal of improving health outcomes and health equity. The COVID-19 pandemic has threatened this symbiotic relationship by undermining capacities for both primary care and PBRNs. Without support for the distal pathways of translation, optimal individual patient care and population outcomes will not be realized.

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