Embedding research in rural hospitals: **a leadership priority** for reducing health inequities and fostering innovation

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Rural hospitals play a critical role in delivering care to populations that face persistent health inequities compared with their urban counterparts. These inequities include poorer survival rates for time-sensitive conditions, later-stage diagnoses, and reduced access to specialized care. Despite their central role in their communities, rural hospitals remain under-represented in health research and often lack the sustainable infrastructure needed to conduct it. International experience shows that hospitals engaged in research achieve better patient outcomes, greater adherence to evidence-based practice, and stronger workforce retention. Case examples demonstrate that embedding research capacity in rural hospitals is feasible, improves quality, fosters innovation, and accelerates the adoption of effective care models. Thus, building research into the core business of rural hospitals is both an ethical obligation and a strategic opportunity for health system improvement.

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The health gap between rural and urban Canadians is persistent and well-established.[1] Rural residents experience avoidable disadvantages in access to timely, high-quality care, leading to poorer overall health outcomes. These inequities are driven by system-level factors, such as service distribution, infrastructure limitations, and workforce shortages, rather than geography alone.[2] For example, rural hospitals in Canada had higher 30-day in-hospital mortality rates following stroke than urban academic hospitals and the Canadian average.[3] Also, trauma patients treated in rural emergency departments (EDs) had a higher mortality rate and were more likely to die prehospital or in the ED compared with patients treated at an urban trauma centre.[4]

Addressing this issue requires more than incremental improvements in service delivery; it demands locally generated evidence to inform models of care that reflect the realities of rural practice. Embedding research capacity in rural hospitals should be regarded not merely as an enhancement, but also as an important strategic priority.

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Why research must be embedded in rural hospitals

International evidence shows that research-active hospitals are associated with improved patient outcomes, better adherence to evidence-based practice, and increased workforce engagement.[5] Mechanisms may include the faster adoption of new evidence into clinical workflow, more robust clinical governance and decision-making, and greater professional satisfaction and retention among clinicians.[5]

In rural settings, smaller organizational size and closer community integration can allow research findings to be implemented more quickly than in large urban centres. However, without dedicated structures and resources, these advantages are lost. Some voices have argued that rural hospitals have the potential for "place-based research" — investigations that directly address local priorities and realities, allowing improved knowledge of solutions to address rural health inequities.[6] Embedding research capacity enables rural hospitals to move from being passive recipients of externally generated evidence to active contributors shaping care models.

Case examples

In the following cases, rural research led to improvement in health service delivery and access to care.

Example 1: Living Lab Charlevoix (Quebec, Canada)

The Living Lab Charlevoix — developed by the Centre intégré de santé et des services sociaux de l'Outaouais in partnership with Université Laval — integrates innovation into daily rural health care operations.[7] Initiatives have included:

- Implementing TREKK (TRanslating Emergency Knowledge for Kids), a pediatric emergency decision-support application
- Trialling AI-based clinical documentation in emergency care
- Testing telemedicine for in-flight ambulance nurses (abandoned after connectivity challenges)
- Mobilizing over 3000 medical students during COVID-19 to staff rural emergency departments

Even discontinued projects yielded actionable knowledge, demonstrating that rigorous evaluation of "failed" innovations can be as valuable as successful implementation.

Example 2: Colac Area Health research unit (Australia)

Colac Area Health, a small rural hospital in Victoria, Australia, embedded a dedicated research unit in its governance structure in partnership with Deakin University and the Western Alliance Academic Health Science Centre.[8,9] The unit provided staff with protected time for research, operational resources, and training in study design, data analysis, and knowledge translation.

In the first two years of operation, measurable improvements were observed:

- Research capacity and culture increased in 9 of 20 measured domains
- Staff competence in research methods, analysis, and translation improved
- Perceived career development opportunities and workplace relevance among participating staff were enhanced

These outcomes demonstrate that embedding research leadership in organizational governance, combined with partnerships, dedicated resources, and protected staff time, can significantly strengthen rural health service research capacity and sustainability.

Example 3: The Rural Health Initiative (central Idaho, USA)

The Rural Health Initiative (RHI) was developed through a partnership between the University of Washington's Institute of Translational Health Sciences' community engagement program and St. Mary's Health and Clearwater Valley Health System in north-central Idaho.[10] The goal was to build capacity for community-driven translational research in a rural setting.

Through literature review, community survey data, and facilitated discussions, the RHI identified health care access as the top community health priority across three counties. Key outcomes of the initiative include:

- Establishing a co-led partnership model, with academic researchers and rural health care leaders sharing decision-making authority
- Conducting a community forum and surveys that engaged both health care providers and residents to prioritize health challenges
- Identifying barriers limiting health care access, such as geography, economics, workforce shortages, and cultural factors
- Highlighting potential solutions, including expanding services (e.g., telehealth, community health workers), reducing costs, improving infrastructure, and supporting behavioural change initiatives
- Developing guidance for best practices in community–academic rural partnerships, emphasizing community-led processes, trust-building, inclusive engagement, and long-term commitment

This case underscores the importance of rural communities directly shaping the research agenda, ensuring that academic resources align with local priorities and contribute to sustainable improvements in health care access.

How can we embed research in rural hospitals?

A critical factor in realizing the benefits of research in rural hospitals is organizational structure. Smaller hospitals often have the advantage of agility, allowing new findings to be adopted quickly. However, without formal mechanisms, such as dedicated research units, governance representation, and operational funding, this potential remains largely untapped. Strong leadership commitment and integration of research into hospital strategy are, therefore, essential.

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Key leadership actions may include:

- **Governance integration:** Position research as a standing element of executive strategy and align it with quality and safety portfolios
- **Protected time and resources:** Support clinicians and allied health care staff with protected time, administrative assistance, and access to analytic resources
- **Local relevance and co-design:** Involve patients, Indigenous communities, and local providers to ensure research questions and methods are contextually appropriate
- **Networked collaboration:** Engage with provincial and national research networks to share expertise and infrastructure
- **Accountability:** Track both process indicators (e.g., staff participation, publications) and impact indicators (e.g., practice changes, patient outcomes)

In Canada, funding models rarely support sustained rural research capacity. In Australia, some federal grants now require rural organizational leadership and residency of the principal investigator in rural areas.[6] Similar Canadian policy measures could:

- Incentivize rural hospital leadership to invest in research infrastructure
- Promote equitable distribution of research funding
- Create pathways for career development in rural research roles

Embedding research in rural hospitals is not a luxury, it is an ethical and operational necessity. Evidence suggests that doing so can help reduce avoidable morbidity and mortality in rural centres.[1,2] Strategically, strengthening organizational performance, fostering innovation, and improving workforce retention are key benefits associated with research engagement.[7-10] International studies also show that hospitals engaged in research tend to deliver higher-quality care,[11] making the integration of research into rural hospital operations a leadership responsibility rather than a peripheral activity.

Conclusion

Rural health inequities in Canada remain persistent and concerning. Quantitative evidence from Canadian studies highlights significant outcome disadvantages associated with rural residence, largely driven by system-level factors rather than by individual patient characteristics.[3,4] Case

studies from Quebec,[7] Australia,[8,9] and the United States[10] demonstrate that embedding research capacity in rural hospital governance is both feasible and impactful. Evidence also indicates that hospitals with stronger research engagement are associated with lower mortality rates.[11]

Although this discussion has focused primarily on rural hospitals, similar principles apply to other rural health services, including community mental health programs and non-governmental organizations. These services often operate with even fewer resources than hospitals, yet they play a vital role in addressing the complex health needs of rural populations. Extending research partnerships and infrastructure support to these organizations could enhance care models, strengthen service integration, and contribute to reducing inequities at the community level.

At the same time, important limitations must be recognized. In particular, the cost-effectiveness and long-term sustainability of embedding research capacity in rural hospitals and related services remain underexplored. Although evidence points to clinical and organizational benefits, the absence of robust economic evaluations means that health system leaders must weigh these initiatives against other competing priorities in resource-constrained environments.

Taken together, these findings suggest that rural hospitals are well positioned to lead place-based research efforts that address both local and global health challenges.

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