

Rural Health Services: Finding the Light at the End of the Tunnel

Services de santé ruraux : à la recherche de la lumière au bout du tunnel



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Abstract

Many rural communities across Canada are facing challenges to the sustainability of core emergency and acute care health services, primarily due to problems with medical and nursing staffing. Data related to service efficacy and effectiveness are not well organized. Most of Canada still relies on reporting by large geopolitical areas (local health areas) that do not always relate natural catchment population outcomes to community hospital services. Re-organizing rural health services' outcome reporting by the characteristics of geographically defined catchment populations would facilitate better planning, systemic quality improvement and stronger continuing professional development for health professionals. It may also serve to inform the transformation of core health services in larger communities.

Résumé

Plusieurs communautés rurales au Canada font face à des défis en termes de durabilité des services essentiels de santé d'urgence et des soins de courte durée, principalement en raison de problèmes de personnel médical et infirmier. Les données sur l'efficacité et l'efficacité des services ne sont pas bien organisées. Dans la majeure partie du Canada, le traitement des données est encore lié à de grandes régions géopolitiques (circonscriptions sanitaires), ce qui ne permet pas toujours d'associer les résultats d'un bassin naturel de population aux services hospitaliers communautaires. En réorganisant la production de résultats dans les services de santé ruraux selon les caractéristiques des bassins de population définis géographiquement, il serait plus facile de procéder à la planification, à l'amélioration de la qualité du système et à un meilleur perfectionnement professionnel continu pour le personnel. Cela pourrait aussi permettre d'éclairer la réorganisation des services de santé essentiels dans les plus grandes communautés.

THERE HAS BEEN A STEADY EROSION OF RURAL HEALTH SERVICES OVER THE PAST 15 years in Canada and internationally (Allen et al. 2004; Hutten-Czapski 2009, 1999; Mungall 2005; Rourke 1998). Maternity care units have closed; emergency departments have pulled back to limited hours; family doctors have abandoned their practices and left their communities, leaving rural residents with limited access to basic health services (Halseth and Ryser 2006; Hays et al. 1997). In British Columbia, a special designation has been created for such situations. They are called “communities in crisis,” a term used to describe rural services that no longer have adequate resources to staff the core emergency and ambulatory health services in their communities. As many as 10% of small rural communities in British Columbia have been tagged with this designation at any given time over the past five years (E. Rivera, Rural GP, Locum officer, personal communication, March 5, 2012).

In response, incentives have been developed to try and bolster rural community services, including generous locum stipends with attendant coverage of expenses and special perks for the physician (BC Ministry of Health Services 2004). Recruitment initiatives to attract new physicians to the community have also been developed and have included generous start-up bonuses. These incentives, however, have not addressed the root causes of the problems, leading to the need for increasing “band-aid” solutions to keep rural services running. The health-care system's capacity to meet the needs of smaller rural communities is in trouble, and the collapse of some small communities' services may be a harbinger of problems in larger communities.

Part of the challenge in addressing core issues is that the data that drive our planning are focused on process-of-care measures such as staffing, recruitment, diversion and wait times (utilization rather than outcomes), and the political drivers are responding to the biggest fires at any given time in whatever way is possible to limit the collateral damage. The problems, however, are systemic, and the solutions need to be embedded in how we organize services at a foundational level. The solutions must be organizational. Currently, however, it is difficult to

measure and respond to rural population outcomes as they relate to the specifics of individual community services (e.g., prevention of diabetic complications). We are blinding ourselves to seeing what works and what doesn't.

There are three reasons for this situation. First, in British Columbia the conventional approach to using historically defined local health areas (originally based on school district boundaries) as the unit of outcomes reporting and analysis is inadequate for the purposes of linking the health of a catchment population to the activities of the geographically defined points of service. Second, the timing of reporting is delayed such that planners and providers are always responding to data that may be as much as two years old. The health services picture will always be faded with this delay. Third, the integration of appropriately organized data into the planning and practice process within a quality improvement framework has not been adequately developed.

Other investigators and planners have proposed alternative approaches to data management to enhance health services planning. Pong and Pitblado (2001) have criticized the use of local health areas, arguing that using geopolitical units did not optimize the usefulness of health outcome reporting because outcomes are difficult to link with specific facilities. In response, Schuurman and colleagues (2006) have argued for the creation of population catchments surrounding rural hospitals.

There is also a rich literature on how to measure geographic accessibility to health services and the strengths and weaknesses of various methodological approaches to measuring travel time and distance (Connor et al. 1994; Guagliardo 2004; Haynes et al. 2006; Lin et al. 2002; Pong and Pitblado 2002). Further work has been done related to planning the placement of new health services based on geographically linking need for services with existing access points (Daskin and Dean 2005; Harper et al. 2005; Langford and Higgs 2006). Complicating the analysis of linking need to access and outcomes, however, are the challenges posed by dense urban population concentration and the attendant challenges of multiple points of reasonable access to services. This makes geographical definition difficult for catchment populations dependent on a specific service for comprehensive basic healthcare. Urban centres are further complicated by the fragmentation of care between generalist and specialist providers. Without the link between service points and service provision, defining a framework for service accountability to a specific population is difficult.

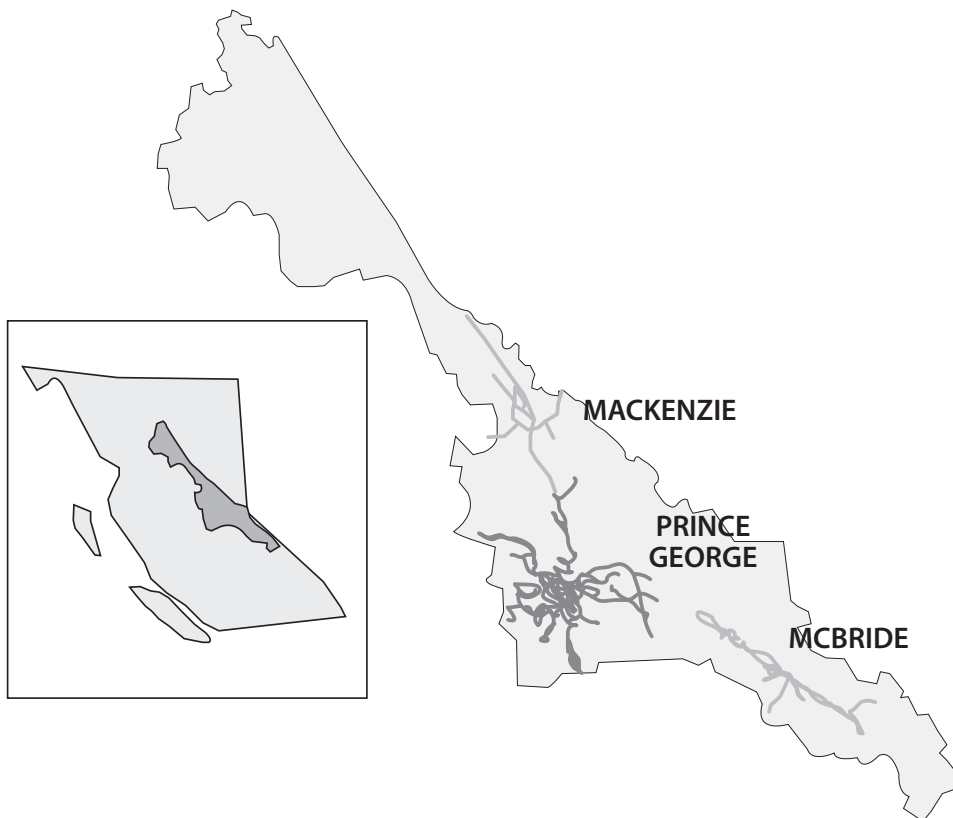
Across Canada, some jurisdictions are attempting innovations in data management to address the historical limitations affecting health services evaluation and planning, and the urban influence dominates most such initiatives. The Canadian Institute for Health Information tracks hospital performance across Canada. It has established portals that are designed to provide enriched access to facility-identifiable data on the delivery of services by Canada's hospitals. These data can be used to underpin quality management strategies over time and across institutions (CIHI 2012).

In Manitoba, the Need to Know team approach stratifies data across 11 regional health authorities and sub-areas within each (Need to Know 2012). Health indicator definition and

monitoring occur across the regions and areas, and support comparison of outcomes. Clinical process indicators are also supported for physicians through the Physician Integrated Network (Government of Manitoba 2012). These electronic medical record indicators are linked to the allocation of performance incentive funding.

In Newfoundland, some hospital and health data reporting is organized across several provincial small-area maps which include school districts, health authorities and rural secretariat regions (Government of Newfoundland and Labrador 2012). While all these strategies seek to use data more effectively to support performance monitoring and quality improvement, they fall short of the potential provided by tracking outcomes at the service catchment level and using population data rather than facility utilization data.

FIGURE 1. Overlay of 1-hour surface travel-time catchments on the Prince George Local Health Area, demonstrating how data from the smaller communities of Mackenzie and McBride would be obscured by the larger referral centre of Prince George



Studying the effectiveness of health services through a rural lens provides insight not only into how we can plan effective and efficient services for small rural populations, but also into how we might structure healthcare services for larger communities. To close the loop

between service provision and outcomes in rural communities, we need to define geographically the population catchment areas surrounding each rural hospital service (see Figure 1 for an example from northern British Columbia). This approach would allow us to measure the effectiveness of the local services by the population's outcomes regardless of where access takes place. Moreover, the proportion of the population with index conditions seen and dealt with locally becomes part of the outcome framework and a measure of the effectiveness of the service – and the system. If population catchment need-for-services is systematically quantified based on demographic and socio-economic characteristics and communities are stratified by this measure, a quality-of-care framework can be created for research, innovation, learning and improvement. With this approach, we move from a system that is focused on putting out political fires and imposing ad hoc solutions on process problems to a system that creates a level playing field and identifies and learns from success. Data on outcomes become the driver for the system rather than a by-product. Furthermore, we can layer more specialized service catchments on top of the core community service organization, which can provide another layer of data monitoring and quality improvement.

As an example of the potential of this conceptual approach, the Centre for Rural Health Research in Vancouver, British Columbia has worked extensively on rural maternity services over the past seven years. Its Rural Birth Index is a composite score measuring the level of need for local intrapartum maternity services (CRHR n.d.). The score is then parameterized against an optimal level of service that should be sustainable (Grzybowski et al. 2009). Service strata based on index strata can be created and population outcomes compared temporally at the hospital catchment level or across the service strata level (Grzybowski et al. 2011). Next steps include building a quality-of-care framework for rural maternity care providers and hospitals and creating confidential reports for each facility. These reports provide feedback on performance for the catchment population and benchmark against the performance for the service strata (cross-provincial communities of like service levels), ideally using a process control method to flag variances. At the provincial management level, service catchments that consistently demonstrate strong performance could provide leadership in the diffusion of innovative and successful practice models. At the local level, communities that experience less-than-hoped-for results could target continuing medical education/continuing professional development opportunities to address potential knowledge areas related to outcomes of concern. The Rural Coordination Centre of BC and the MORE^{OB} (Managing Obstetrical Risk Efficiently) Program both encourage and support providing on-site interprofessional courses in key clinical content areas, and this would be a logical approach from which to build local skills (RCC BC 2012 and MORE^{OB} 2001).

Rural communities need an integrated and coordinated approach to managing the data we are already collecting, with the objectives of providing better care for the population and better support for the providers. The recent interest in understanding the potential for innovative primary care models to transform the healthcare system may be the attractor that will drive this work forward. Perhaps there is light at the end of the tunnel.

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NOTE

1. While the focus of this commentary is on core services available in a rural community, similar modelling can be undertaken for access to more specialized services for larger population catchments. It is important to recognize that there is always a trade-off between travel time and access to specialist expertise for residents of rural communities.

REFERENCES

- Allen, V.M., N. Jilwah, K.S. Joseph, L. Dodds, C.M. O'Connell, E.R. Luther et al. 2004. "The Influence of Hospital Closures in Nova Scotia on Perinatal Outcomes." *Journal of Obstetrics and Gynaecology Canada* 26: 1077–85.
- BC Ministry of Health Services. 2004. *Medical On-Call/Availability Program (MOCAP) Policy Framework for Health Authorities*. Retrieved December 19, 2012. <<http://www.health.gov.bc.ca/pcb/pdf/Medical%20On-Call%20Availability%20Program%20%28MOCAP%29.pdf>>.
- Canadian Institute for Health Information (CIHI). *Canadian Hospital Reporting Project (CHRP)*. Retrieved December 19, 2012. <http://www.cihi.ca/CIHI-ext-portal/internet/EN/TabbedContent/health+system+performance/indicators/performance/cihi010657?WT.ac=chrp_hsp_fp_20120404_e>.
- Centre for Rural Health Research (CRHR). n.d. "The Rural Birth Index." Retrieved December 19, 2012. <<http://crhr.ca/our-research/policy-and-planning/rbi/>>.
- Connor, R.A., J.E. Kralewski and S.D. Hillson. 1994. "Measure Geographic Access to Health Care in Rural Areas." *Medical Care Research and Review* 51(3): 337–77.
- Daskin, M. and L.K. Dean. 2005. "Location of Health Care Facilities." *International Series in Operations Research & Management Science* 70: 43–76.
- Government of Manitoba. n.d. *Physician Integrated Network (PIN)*. Retrieved December 19, 2012. <<http://www.gov.mb.ca/health/phc/pin/index.html>>.
- Government of Newfoundland and Labrador. n.d. *Newfoundland and Labrador Community Accounts*. Retrieved December 19, 2012. <<http://nl.communityaccounts.ca>>.
- Grzybowski, S., J. Kornelsen and N. Schuurman. 2009. "Planning the Optimal Level of Local Maternity Service for Small Rural Communities: A Systems Study in British Columbia." *Health Policy* 92(2–3): 149–57.
- Grzybowski, S., K. Stoll and J. Kornelsen. 2011. "Distance Matters: A Population-Based Study Examining Access to Maternity Services for Rural Women." *BMC Health Sciences Research* 11(147): 1–8.
- Guagliardo, M.F. 2004. "Spatial Accessibility of Primary Care: Concepts, Methods and Challenges." *International Journal of Health Geographics* 3: 1–13.
- Halseth, G. and L. Ryser. 2006. "Trends in Service: Examples from Rural and Small Town Canada, 1998 to 2005." *Journal of Rural and Community Development* 1: 69–90.
- Harper, P.R., A.K. Shahani, J.E. Gallagher and C. Bowie. 2005. "Planning Health Services with Explicit Geographical Considerations: A Stochastic Location–Allocation Approach." *Omega* 33(2): 141–52.
- Haynes, R., A.P. Jones, V. Sauerzapf and H. Zhao. 2006. "Validation of Travel Times to Hospital Estimated by GIS." *International Journal of Health Geographics* 19(5): 40.
- Hays, R.B., P.C. Veitch, B. Cheers and L. Crossland. 1997. "Why Doctors Leave Rural Practice." *Australian Journal of Rural Health* 5(4): 198–203.

- Hutten-Czapski, P. 1999. "Decline of Obstetrical Services in Northern Ontario." *Canadian Journal of Rural Medicine* 4: 72–76.
- Hutten-Czapski, P. 2009. "Abridged Version of the Society of Rural Physicians of Canada's Discussion Paper on Rural Hospital Service Closures." *Canadian Journal of Rural Medicine* 14(3): 111–14.
- Langford, M. and G. Higgs. 2006. "Measuring Potential Access to Primary Healthcare Services: The Influence of Alternative Spatial Representations of Population." *Professional Geographer* 24. doi: 10.1111/j.1467-9272.2006.00569.x.
- Lin, G., D.E. Allan and M.J. Penning. 2002. "Examining Distance Effects on Hospitalizations Using GIS: A Study of Three Health Regions in British Columbia, Canada." *Environments and Planning* 34(11): 2037–53.
- MORE^{OB} Program. 2012. Retrieved December 19, 2012. <<http://moreob.com>>.
- Mungall, I.J. 2005. "Trend towards Centralisation of Hospital Services, and Its Effect on Access to Care for Rural and Remote Communities in the UK." *Rural and Remote Health* 5: 390.
- Need to Know Data Resources and Research Reports. 2012. Winnipeg: University of Manitoba. Retrieved December 19, 2012. <http://www.rha.cpe.umanitoba.ca/data_resource.shtml>.
- Pong, R.W. and J.R. Pitblado. 2001. "Don't Take 'Geography' for Granted! Some Methodological Issues in Measuring Geographic Distribution of Physicians." *Canadian Journal of Rural Medicine* 6: 103–12.
- Pong, R.W. and J.R. Pitblado. 2002. "Beyond Counting Heads: Some Methodological Issues in Measuring Geographic Distribution of Physicians." *Canadian Journal of Rural Medicine* 7(2): 12–20.
- Rourke, J.T.B. 1998. "Trends in Small Hospital Obstetrical Services in Ontario." *Canadian Family Physician* 44: 2117–24.
- Rural Coordination Centre of BC (RCCBC). 2012. Retrieved December 19, 2012. <<http://www.rcbc.ca>>.
- Schuurman, N., R.S. Fiedler, S.C. Grzybowski and D. Grund. 2006. "Defining Rational Hospital Catchments for Non-Urban Areas Based on Travel-Time." *International Journal of Health Geographics* 5(43): 1–11.