

A procedural skills rurality index for the medical community

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[[résumé](#)]

Abstract

When a rural acute-care hospital loses physicians with advanced skills (GP anesthesia, GP surgery and operative obstetrics), it may be downgraded to a diagnostic centre or clinic. In this paper a rurality index is described that is a measure of the skills and requirements of individual rural communities. It applies to communities with fewer than 20 fulltime family physicians, awarding points for level of training and involvement in the medical community. The total number of points divided by the ideal number of physicians gives the Rurality Index for that community. The common denominator is an intuitive estimate of the ideal number of physicians required for the community. The aim of the index is to provide an internal guide for planning by rural physicians, educators and government.

Résumé

Lorsqu'un hôpital rural de soins actifs perd des médecins ayant des compétences avancées (OP-anesthésie, OP-chirurgie et chirurgie obstétricale), il risque d'être rétrogradé au statut de centre de diagnostic ou de clinique. Dans cette communication, on décrit un indice de ruralité qui constitue une mesure des compétences spécialisées et des besoins des communautés rurales. L'indice s'applique aux communautés qui comptent moins de 20 médecins de famille à plein temps : on attribue des points pour la formation et la participation à la communauté médicale. Le nombre total de points divisé par le nombre idéal de médecins produit l'indice de ruralité de la communauté en question. Le dénominateur commun représente une estimation intuitive du nombre idéal de médecins dont la communauté a besoin. L'indice vise à produire un guide interne de planification pour les médecins ruraux, les éducateurs et le gouvernement.

Several thoughtful indexes have been devised to categorize degrees of rurality for communities on the basis of their isolation.¹⁻³ I wanted to devise a rurality index that came from within the medical community, reflected its composition and needs and was comparable to the indexes of other, similar communities. The shortage of physicians in rural Canada is not just a shortage in numbers but a shortage of specific additional skills, which, for the purpose of this paper, I will call "advanced skills," defined as: GP anesthesia, GP surgery and operative obstetrics (cesarean-section capability). My focus is on rural communities with 20 or fewer full-time equivalent (FTE) family practitioners who work in communities with an acute-care hospital.

The value of the small acute-care hospital has been well outlined.⁴ The existence of the acute-care rural hospital depends on the availability of advanced skills. When a medical community loses these advanced skills, the acute-care facility may be downgraded to a diagnostic and treatment centre or an outpost clinic. Many rural communities in Canada have had fully functioning acute-care hospitals for over 50 years. Today almost all of them are threatened by a shortage of physicians who can provide advanced skills.

The Rurality Index I propose comes from within the medical community and is a measure of its milieu interieur.* It is also a measure of the composite skills of the medical community relative to the availability of the advanced skills and subsequently the ability of the acute-care hospital to provide care. The index will apply to communities with 20 or fewer FTE family physicians. It awards points to individual physicians for the level of training and involvement that they bring to the medical community, using a scale of 1 to 10 as shown in [Table 1](#). Physicians who share practices or work part time would multiply their point scores by the percentage of the year that they worked.

The common denominator for the index is the intuitive estimate of the ideal number of physicians for the medical community. The estimate is intuitive because it is readily known to the physicians practising in the community. I use the intuitive ideal number here to replace the term "permanent requirements" used by health care planners, as the latter term is arrived at in a much more complicated way. Intuitive utilizes the savoir faire of the physicians who actually work in the facility. Few medical communities in rural Canada operate with an intuitive ideal number of physicians. Using the actual number of physicians as the common denominator would skew the numbers into a false comfort zone.

I have selected 3 medical communities to demonstrate the use of the Rurality Index. Community A in 1999 has 4 FPs with an ideal number of 6 ([Table 2](#)). In 1997, Community A had 5 family physicians, 5 with basic obstetrical skills, 4 with advanced skills, giving it a Rurality Index of 7.5 ($10 + 15 + 20 = 45/6 = 7.5$). In 1998, community A lost 1 family physician with basic obstetrical skills and operative obstetrical skills who was replaced by 1 family physician without basic obstetrical skills and no advanced skills, giving it a Rurality Index of 6.1 ($10 + 12 + 15 = 37/6 = 6.1$). These figures show a significant change in the Rurality Index as physicians leave and are

replaced by physicians without the same skills.

Community B has 6.5 FTE family physicians with an intuitive ideal number of 8 family physicians ([Table 3](#)). Community B has visiting specialists: 2 plastic surgeons, 1 radiologist and an otolaryngologist. Anesthesia is crucial to Community B, and they have 2 anesthesiologists now, so presumably they would be looking for a third family physician with anesthesia skills as their eighth family physician. The community is also a participant in the University of British Columbia Rural Residency Training Program.

Community C has 17 family physicians, 2 surgeons, 1 urologist, 1 otolaryngologist, 1 internist, a visiting obstetrician/gynecologist, a visiting radiologist, and a visiting pathologist. I have given 10 points to each specialist-surgery or specialist-obstetrics/gynecology in a community and no points to the other specialties or to itinerant specialty services. Two family physicians are older than 60 years and are exempt from call. Five family physicians do anesthesia, 3 do anesthesia call only. I have assumed for this index that "any call is call." One family physician does cesarean sections ([Table 4](#)).

The questions now remaining are: What does the Rurality Index measure? and What is the norm? The Rurality Index measures everything from the fragility to the stability of a rural medical community. I would like to refer to it as the comfort zone. It is purely coincidental that the numerical range of the comfort zone resembles a range for the pH of blood. It is a nice metaphor for the Rurality Index. Either a community is tending toward acidosis, like community C or alkalosis like community A in 1997. Anything below 6.5 suggests that a medical community is in danger of losing its operating room and its ability to provide a safe comfortable level of obstetrical care and a reasonable slate of emergency and elective general surgery. Levels above 7.5 raise the question, Is there enough work for the physicians to maintain their advanced skills? I have not included the effect of placing nurse practitioners or midwives into the calculation of the Rurality Index, but I think their effect would be to lower the comfort zone for the rural medical community. This index does not adequately reflect the interdependent relationship between the family physicians with advanced skills or their relationship with specialists except to show that specialists do not raise the Rurality Index when family physicians give up their advanced skills. The "solo specialist syndrome"† of geographic isolation, peer isolation and peer dependency produces excessive workloads and frequent burnout. Medical communities in this situation can be shocked at the loss of a service overnight, like operative obstetrics. The adage and its corollary, "no anesthesia, no surgery," holds true, emphasizing a need to have a full complement of the advanced skills in the medical community. The smaller the medical community the greater the commitment is for the physicians with advanced skills, and this needs to be recognized and addressed within the medical community itself.

Many things flow from a community having a high Rurality Index (e.g., geriatric services, aboriginal medicine, family and individual counselling, working closely with other health care providers and visiting specialists and related services). These communities make ideal sites for

teaching rural medicine.

The Rurality Index presented here is a simple concept with some built-in subtleties, which will be very apparent to those who know the rural medical community. I hope it will provide an internal guide for future research and planning for rural physicians, educators and government.

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*milieu interieur, a term coined by the physiologist Claude Bernard in his book published in 1865 entitled *An Introduction to the Study of Experimental Medicine*. He theorized that the condition of the body's internal environment could be measured by a few observations on the composition of the blood and that its constancy was a measure of free and independent existence.

†"Solo specialist syndrome" arises from the antipathetic symbiotic relationship between the family physicians and the specialists in the rural community. These dedicated physicians find themselves isolated from their specialist colleagues and their fellow physicians in small rural communities. Family physicians easily transfer all responsibility to the solo specialist who as easily accepts the responsibility, thereby producing a vulnerable dependency.

References

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