

Secondary stroke prevention best practice recommendations: exploring barriers for rural family physicians

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Introduction: Patients' risk of having a second stroke can be substantially reduced by implementing best practice recommendations for secondary stroke prevention. However, evidence indicates that rural practitioners may face barriers to implementing these recommendations into their practices. This research project developed a workshop to increase practitioner awareness of the recommendations, and to identify barriers to the application of recommendations for secondary prevention of stroke in rural practices.
Methods: The workshop provided a venue for family physicians, specialists and health district representatives to discuss the recommendations. It was evaluated using a sequential explanatory mixed-methods approach using 3 methods of data collection: a questionnaire, documentation of comments made during discussion periods and post-workshop interviews.
Results: Participants at the workshop increased their awareness of the recommendations, and they gained an increased appreciation of how they might collaborate with other practitioners and the health district to implement the recommendations. The workshop identified barriers to implementing recommendations, such as miscommunications with the local health district, role conflict among physicians regarding health promotion and difficulties coordinating care with specialists.
Conclusion: The workshop was an effective venue for improving communication between physicians and the health district and for reducing barriers to the implementation of recommendations.

Introduction : Il est possible de réduire substantiellement le risque que des patients subissent un second accident vasculaire cérébral en appliquant les recommandations de pratique optimale pour la prévention secondaire. On constate toutefois que les médecins en milieu rural rencontrent parfois des obstacles lorsqu'ils tentent d'appliquer ces recommandations dans leurs pratiques. Le présent projet de recherche comprenait la mise sur pied d'un atelier visant à sensibiliser les médecins aux recommandations pour la prévention secondaire de l'accident vasculaire cérébral et à reconnaître les obstacles à leur application dans la pratique en milieu rural.
Méthodes : L'atelier a été une occasion pour les médecins de famille, les spécialistes et les représentants de la régie régionale de la santé de discuter des recommandations. Une approche séquentielle explicative faisant appel à plusieurs méthodes a servi à l'évaluation au moyen de trois types de collecte de données : questionnaire, prise en note des commentaires formulés durant les périodes de discussion et entrevues consécutives à l'atelier.
Résultats : Les participants à l'atelier se sont familiarisés avec les recommandations. Ils ont acquis une meilleure compréhension des façons de collaborer avec les autres médecins et avec la régie régionale de la santé pour appliquer les recommandations. L'atelier a aussi permis de reconnaître les obstacles à leur application, par exemple, problèmes de communication avec la régie régionale, désaccord quant au rôle des médecins dans la promotion de la santé et difficulté à coordonner les soins avec les spécialistes.

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Conclusion : L'atelier a été une rencontre fructueuse qui a facilité la communication entre les médecins et la régie régionale de la santé et contribué à surmonter les obstacles à l'application des recommandations.

INTRODUCTION

In Nova Scotia, approximately 1300 strokes occur per year, resulting in more than 500 deaths.[1] If a person has already experienced a stroke or transient ischemic attack (TIA) the risk of recurrence is estimated at 15% within 2 years and as high as 30% after 5 years.[2–4] This risk can be substantially reduced through secondary prevention interventions, outlined in the best practice recommendations of the Canadian Stroke Strategy.[5,6] These include risk assessment, lifestyle modifications and medication management.[7] Unfortunately, lack of health system supports, and practitioner attitudes and beliefs toward the recommendations can hamper implementation of the recommendations in physicians' practices.[8–12] For example, health systems may limit access to specialized equipment for diagnostic tests, or practitioners may feel the recommendations are not applicable to their practices. Evidence indicates that in rural areas, where individuals may be at higher risk of stroke[13] and where health care resources may be limited, the barriers to implementation of recommendations may increase.[14,15]

Knowledge translation is an area of study that tries to understand how to facilitate the use of research evidence in clinical practice. For example, knowledge translation studies have shown that practitioners are more likely to use research evidence if they understand how it can be adapted to their practice,[16,17] and if they are actively engaged in exchanging information about research with health care decision-makers and research experts.[18–20] Frameworks based on the knowledge translation research can be used to design interventions for increasing the use of research in clinical practice. This research project used the Promoting Action on Research Implementation in Health Services (PARIHS) framework to create an intervention to increase the application of recommendations for secondary prevention of stroke in rural family practices. The PARIHS framework is based on the notion that the use of research in clinical practice is affected by perceptions of the quality of the research evidence, the context in which the evidence will be applied, and the application of an appropriate strategy for facilitating the use of research in clinical practice.[21,22] Using the PARIHS framework as a guide, our research project assessed practitioners' perceptions of the quality of evidence supporting recommendations for secondary prevention of stroke; explored contextual barriers to applying the recommendations in rural practices; and evaluated whether a workshop that stimulated information exchange among family physicians, specialists and health district representatives was an appropriate facilitation strategy for increasing the application of the recommendations in rural family practices.

METHODS

Evidence

The evidence conveyed in the workshop was the recommendations for secondary prevention of stroke. These recommendations include the assessment and management of hypertension, lipids and diabetes; antiplatelet therapy; anticoagulant therapy for patients with atrial fibrillation; carotid revascularization for those with high levels of stenosis; and lifestyle modifications (i.e., smoking cessation, increased physical activity and improved nutrition).[6]

Context

The workshop was offered in South West Health, a rural health district in Nova Scotia. This district is about 300 km from Halifax, where the nearest tertiary care hospital and university are located. At the time of the workshop the district had 3 local hospitals and employed 36 family physicians to provide health care services for about 62 000 residents. Family practitioners were geographically dispersed throughout the district and were required to rotate coverage for local hospital medical services. No neurologists or cardiovascular surgeons practise in the district.

The health district was chosen because of its readiness for health system change. A needs assessment, conducted 3 years before the research project, had indicated a suboptimum percentage of poststroke patients who were taking appropriate medications for their condition; 79% were taking antithrombotics,

40% were taking antilipemics and 71% were taking at least one antihypertensive medication.[23] These percentages should be closer to 90% for all 3 medications. The district was aware of this gap and had acknowledged the need for improvements in care for stroke patients. The health district had recently been funded as a provincial demonstration project for implementing coordinated care for stroke patients, which was based on best practice recommendations across the continuum of care. One result of this was the establishment of a new stroke clinic that employed a nurse practitioner trained in health promotion strategies and an internist trained in care for stroke patients. At the time of the study the clinic had just started, and the number of patient referrals from family physicians was lower than expected.

Workshop facilitation strategy

The workshop was designed to facilitate a dialogue on the recommendations for secondary prevention of stroke among family physicians, specialists and representatives from the health district. To inform this dialogue, 3 specialists from the urban tertiary care hospital took part in the workshop: a stroke neurologist, a cardiologist and a nutritionist with expertise in health promotion. The stroke neurologist presented the research evidence and updated the group on current national and provincial initiatives supporting the recommendations. The cardiologist presented the current recommendations for preventing a heart attack, to stimulate a discussion about the similarities and differences between the recommendations for stroke and heart attack. The nutritionist provided examples of behavioural change strategies that practitioners could use to increase patient compliance with recommendations for health promotion post-stroke. Time was allocated in the workshop for presenters and participants to discuss the research evidence and identify ways the recommendations could be applied to rural practices.

Health district representatives were involved in the workshop to improve participants' awareness of how the health district could support implementation of the recommendations. They created a resource directory of health district services, presented case studies and participated in discussions. The administrator responsible for the district's stroke demonstration project led a discussion on what changes were being made in the district to support secondary prevention of stroke. The stroke clinic nurse practitioner provided specific information on the health promotion services being provided by the stroke clinic. The stroke clinic internist presented local case studies illustrating how the clinic could increase evidence-based care in the district.

Study participants

All 36 family physicians in the health district were invited to the workshop. Internists working in the district were invited when space became available. A local family physician responsible for continuing medical education championed the workshop to local family physicians. To compensate family physicians for income lost as a result of attending the workshop, they were offered an honorarium of $500.

Evaluation and analysis

A sequential explanatory mixed-methods approach was used to evaluate the workshop and to explore the implementation of recommendations postworkshop. This evaluation approach involves the collection and analysis of quantitative data, then uses the findings to create a qualitative tool for follow-up data gathering.[24] We used 3 methods of data collection: a questionnaire administered during and directly after the workshop, documentation of comments made during the discussion periods and post-workshop interviews conducted by an independent contractor.

The PARIHS framework was used by the research team to create a questionnaire that evaluated participants' perceptions of the quality and applicability of the research evidence supporting the recommendations, the context in which the recommendations would be applied, and whether the workshop facilitated an awareness and acceptance of the recommendations among participants. The questionnaire was given to all workshop attendees, to be completed and handed in anonymously. There were 2 sections. Section 1 was given at the start of the workshop, because it allowed participants to evaluate workshop presentations and discussions immediately, rather than at the end of the workshop. This section asked about technical problems (e.g., was the presentation clear), and asked them to evaluate the relevance and worth of the content. Questions were assessed using a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), with space for written comments. Section 2 had a similar format and was distributed at the end of the workshop. This section asked respondents to assess their acceptance of the recommendations by asking them questions about the quality of the evidence,

the existence of contextual barriers to implementing recommendations in their practices, and their future ability to implement the recommendations in their practice.

Postworkshop interviews were conducted 2 to 4 months after the workshop with family physicians, the health district administrator and the stroke clinic nurse practitioner who attended the workshop. Interviews used a structured interview guide to probe opinions of the workshop and reflections on the questionnaire results, and to explore whether the practitioners had been better able to implement the recommendations after the workshop. The interviews were conducted, recorded and transcribed by a third party.

The Dalhousie University Research Ethics Board approved the research project. All participants gave written consent to have their comments recorded and to participate in the evaluation.

Data analysis

Quantitative data from the questionnaire were entered into an SPSS 15 database for cleaning — to check for errors that may have occurred during inputting of data — and analysis. Descriptive analyses examined the distribution of responses and calculated means and percentiles. The qualitative data were analyzed manually. Each interview was reviewed and coded by 2 researchers using an iterative content analysis. In this analysis, each researcher first identified codes that reflected emerging themes in the individual interviews, then these initial themes were grouped into broader themes that were common across the interviews.[25] After each researcher reviewed all the interviews, and had reached a point where no new themes were evolving, the 2 researchers compared their findings and reached consensus on common themes. These common themes were presented to family physicians on the research team to enhance the trustworthiness of the findings.

RESULTS

Questionnaire findings

Sixteen participants attended the workshop, including 14 family physicians and 2 general internists. All participants completed section 1 of the questionnaire, which assessed how well the workshop facilitated dissemination of the recommendations. The results indicated that respondents felt the presentations and discussions at the workshop improved their awareness of the recommendations. The mean rating for all presentations and discussions ranged from 4.3 to 4.8 out of 5.0 (between "agree" and "strongly agree") demonstrating that respondents felt the presentations were clear, relevant, appropriate and worthwhile. The most highly rated aspect of the workshop was the stroke clinic internist's presentation of the local case studies.

Fifteen participants completed section 2 of the questionnaire regarding respondents' acceptance of the recommendations. Almost all respondents agreed that the practice recommendations were well-supported by the research evidence (100%), applicable to their practice (67%–100%) and reflected what they were currently doing in their practice (66%–100%). The recommendation on carotid revascularization was felt to be the least applicable to participants' practice (67%), did not reflect what they were doing in their practice (66%), did not align with patient preferences (46%) and was felt to be less well-received by patients (54%). Participants felt that the health promotion recommendations with the lowest patient receptivity were smoking cessation (20%), increased physical activity (27%) and improved nutrition (40%). As part of the sequential explanatory mixed-methods approach, recommendations with the lowest percentages of agreement (i.e., health promotion and carotid revascularization) were further explored in the postworkshop interviews.

Most respondents (67%) expressed the opinion that the services currently available in the community, or the hospital, adequately supported their ability to follow recommended practices for the secondary prevention of stroke. The services that most respondents said were "mostly" or "very" useful were diagnostic imaging (100%), diabetes education centre (100%) and 24-hour blood pressure monitoring (93%). In contrast, 62% felt the stroke clinic and 35% felt the smoking cessation program were "mostly" or "very" useful. The health promotion services that respondents were most likely to use outside of their practice were those that educated patients on nutrition (43%) and physical exercise (36%).

Qualitative findings

The qualitative findings are based on comments recorded during the workshop discussions, written comments from the 2 sections of the questionnaire and postworkshop interviews. Interviews were conducted with 12 family physicians (the internist

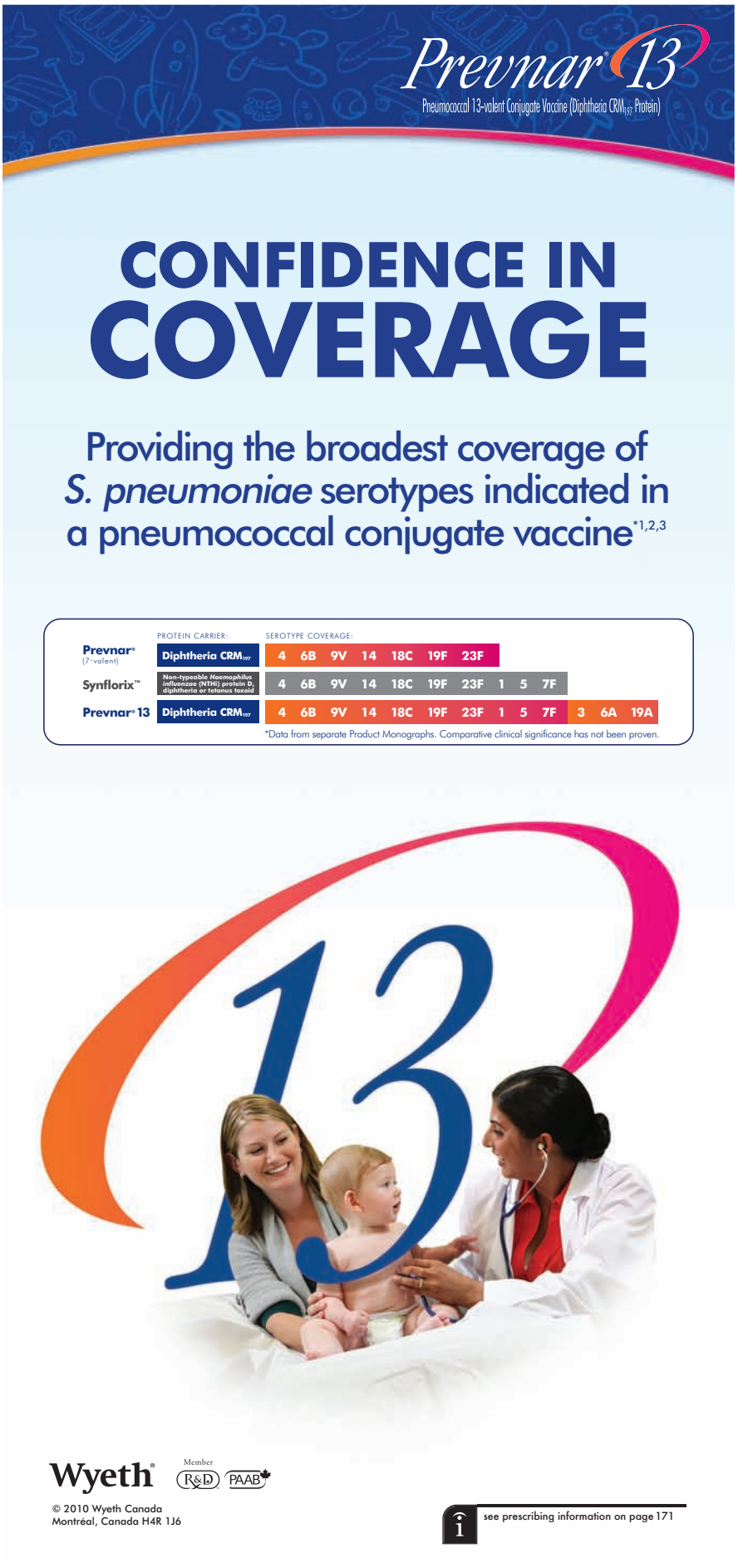
was excluded from the interviews, and 2 family physicians were unable to schedule an interview after 6 attempts). In addition, interviews were conducted with the health district administrator and the stroke clinic nurse practitioner. The following 3 themes emerged: communication issues between practitioners and the health district, implementation of the recommendations in practice and the need to coordinate services with other health professionals to implement recommendations.

Theme 1: communication issues between family physicians and the health district

Comments made during the workshop indicated that communications materials distributed by the health district about the stroke clinic had been misinterpreted by some of the family physicians. These physicians felt they had not been consulted when the district decided to implement a stroke clinic. However, many respondents expressed hope that over time they would have a better understanding of the clinic's value. This topic was explored in the postworkshop interview with the health district administrator. The administrator's comments reflect that it had been challenging for the district to communicate with practitioners who have very busy practices. However, she felt the workshop had stimulated practitioners to become involved in future health district changes, which she hoped would improve communications.

Theme 2: implementation of the recommendations

This theme represents how the workshop facilitated changes in



family physicians' care of stroke patients. Although the quantitative findings indicated practitioners were already implementing the recommendations in their practice, during the interviews almost all practitioners noted that they had made further changes to their practice. The workshop was particularly effective at increasing practitioner attentiveness to the recommendations for aggressively treating high lipids and the need to treat patients with a prior TIA, as well as fostering better attitudes toward assisting patients with making lifestyle changes.

Theme 3: the need to coordinate services with other health professionals to implement recommendations

This theme is related to family physicians' awareness of other services and coordination with health services outside their practices to successfully implement the recommendations. Physicians indicated they had been too busy to look at the resource directory handed out at the workshop, and did not report increased awareness of services available in the health district. Concerns mentioned about coordinating services were with regard to referring patients to the stroke clinic, providing health promotion education and accessing services for patients who might need carotid revascularization. These concerns were significant enough to justify separate subthemes.

3a) Subtheme: referring patients to the stroke clinic. Comments documented during the workshop and in the comments sections of the questionnaire indicated several practitioners felt the stroke clinic might be detrimental to patient continuity of care. This perception seemed to change when the postworkshop interviews were conducted. In these interviews, family physicians said they were increasing their referrals to the stroke clinic and their patients' experiences were very positive. The quotes demonstrate that practitioners may have started to view the clinic as an asset rather than a disruption to their practice. One participant said, "I think the clinic approach is definitely something that … we should be looking towards because our resources are becoming … limited."

3b) Subtheme: providing health promotion education. In the interviews, almost all respondents talked about the conflict they felt around physicians' responsibilities in helping patients make lifestyle changes. For example, was health promotion within their scope of practice, or was it better handled by other professionals? They expressed frustration because they did not have the time or felt ill-equipped to do health promotion adequately. One participant said, "Even though it would be preferable to think that you would take the time to do it with them, I don't think that I would … I think that need can be better serviced by someone else." Some respondents were dissatisfied with available supportive services in the health district, and others talked about not being able to influence a patient's behavioural change. The administrator commented on the lack of training in health promotion provided to family physicians.

3c) Subtheme: accessing services for patients who might need carotid revascularization. In postworkshop interviews, practitioners were asked to reflect on the results from the questionnaire indicating that carotid revascularization had low practitioner support and aligned poorly with patient preferences. Comments indicated practitioners felt they could not effectively implement this recommendation because of the challenges they faced when trying to access specialized services for their patients. For example, to satisfy the best practice recommendation that a carotid revascularization be done within 2 weeks of the incident stroke (or TIA) for appropriate candidates, the practitioner needed to contact and convince both a radiologist and a vascular surgeon, who are often unaware of the recommendation and located a distance away, to squeeze their patient into an overbooked schedule. One physician noted that this process might be uncomfortable for the family physician because it could create conflict with other health professionals. The administrator expressed the opinion that this process is more comfortable for the family physician when the family physician has personal connections with these health professionals.

DISCUSSION

Summary of the main results

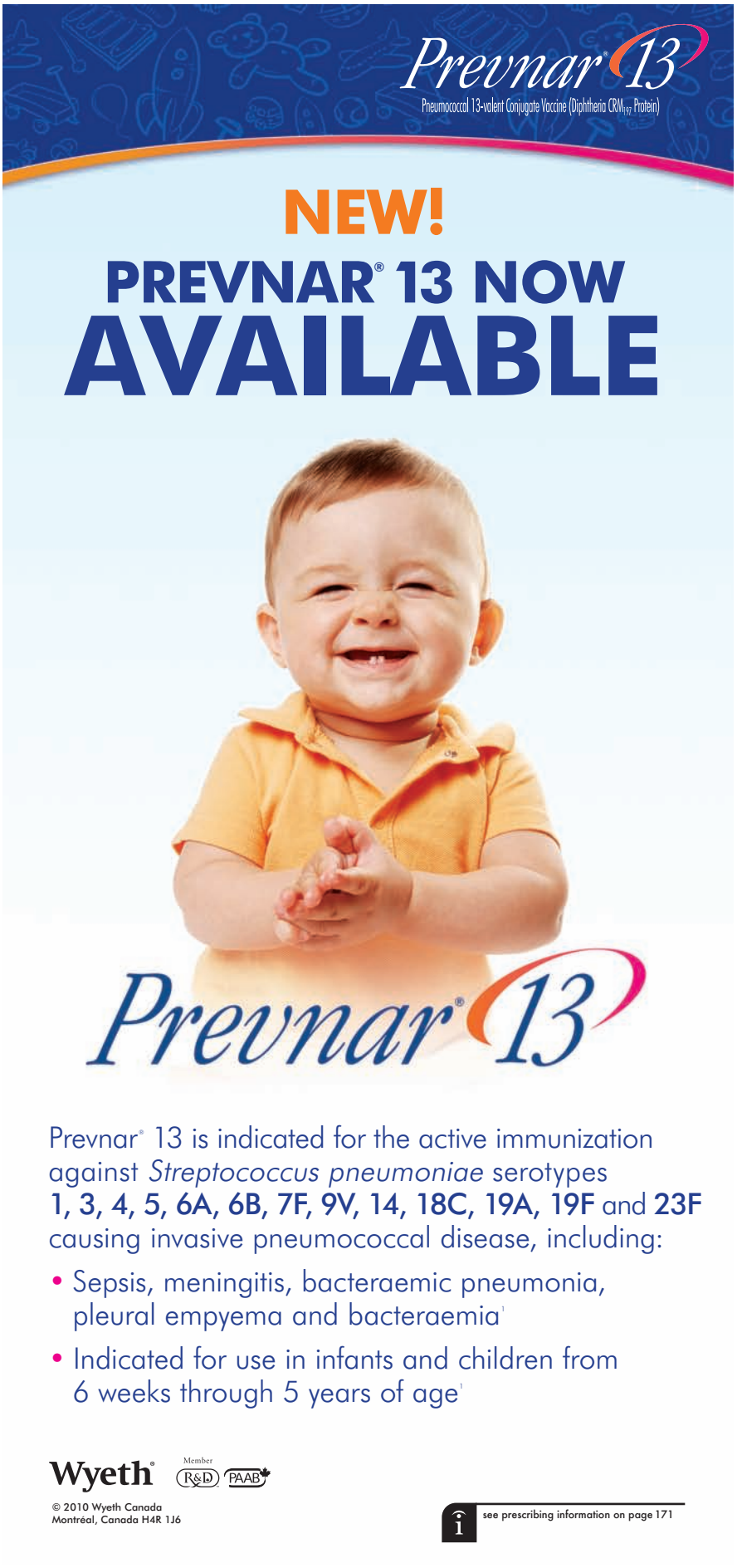
The purpose of the workshop was to create a venue where specialists, health system administrators and family physicians could discuss the recommendations for secondary prevention of stroke with the intent of helping family physicians contextualize the recommendations to their rural practice. The results indicated that the workshop increased family physician awareness, appreciation and application of the recommendations. Physicians spoke of a greater appreciation of the importance of aggressive treatment in patients who had experienced a TIA and who were suffering from hyperlipidemia, in order to prevent a second stroke. Best practice recommendations for smoking, physical exercise

and carotid revascularization were rated as less applicable to their practices, and less aligned with patient preferences and receptivity in the postworkshop questionnaire. When these results were further explored in the follow-up interviews, they seemed to be rooted in issues around communication, scope of practice and coordination with other health services. The interviews also demonstrated that participants had gained an increased appreciation of how health district initiatives, such as the introduction of a stroke clinic, could help them with implementing the recommendations. The workshop appeared to be effective for increasing an exchange of information between health care decision-makers and family practitioners, and for reducing health system barriers to implementing the recommendations.

Explanation of the findings

Family physicians work within the context of the rural health district where they provide care. The importance of context in health care provision has been supported by other research.[26–30] Our results confirm the role of the rural context in the implementation of evidence into practice,[31] and have identified unique contextual barriers such as lack of interprofessional communication that also affect implementation. These findings demonstrate the importance of considering contextual barriers when assessing the implementation of evidence into practice.

Fewer opportunities for informal contact between rural family physicians and specialists, who are often clustered in central locations,[32,33] may decrease communication between health professions,



interprofessional understanding,[34] coordination of health services and trust between individuals.[29,35,36] Trust and good communication are key to fostering social capital among professionals. Social capital is about relationship-building and is commonly assessed by the level of trust, amount of reciprocity and number of associations with other professionals. High levels of social capital have been linked to better access to care,[37] cooperative behaviours and information exchange across professions.[38,39] Low social capital can also affect a practitioner's ability to get timely access to specialist care for their patients.[40] Social capital may have affected family physicians' coordination with other health services and compounded miscommunications with administrators, who may have different health system priorities and use different language than practitioners.[20]

Study limitations

Despite heavy recruitment efforts to enlist 100% of family physicians in the district, our participation rate was much lower, at 39%. This rate reflects the heavy workload family physicians in that health district must balance, as well as mandatory on-call hospital responsibilities and limited support staff for individual practices. Given the study setting, our response rate was relatively good. This may have been because of the honorarium, the interest generated by invited speakers and the local family physician who championed the workshop to her colleagues.

Our evaluation of the workshop and the identification of barriers were largely based on qualitative interviews with individuals from one health district. These interviews were rich and informative, but may only represent the views of our participants. To increase the credibility and trustworthiness of our study, we conducted interviews with the health district administrator and stroke clinic nurse practitioner, and we asked family physicians on our research team to review our findings. To determine whether our findings can be generalized to other rural health districts, a larger quantitative study would need to be conducted. We believe our mixed methodology (sequential explanatory mixed methods) helped us identify barriers to recommendation implementation that were not straightforward or easily quantified. Mixed methods evaluations are very applicable to assessing the implementation of recommendations in rural locations because they allow for a deeper understanding of the contextual influences specific to an area. Despite the study limitations, we believe our research has revealed important barriers family physicians face when trying to implement recommendations in a rural setting.

Future directions

Creating venues where recommendations can be discussed with specialists and administrators is important to facilitating their implementation. Open forums involving practitioners and health district representatives may help reduce communication barriers and optimize patient care.[41] In addition, interprofessional educational opportunities could improve communication between health sectors and decrease barriers to the implementation of recommendations.[12]

CONCLUSION

The workshop successfully improved participants' awareness and acceptance of the recommendations, and identified challenges to implementing recommendations in rural locations that can be addressed by the health system.

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REFERENCES

1. Vital Statistics. Service Nova Scotia and Municipal Relations. *Nova Scotia annual report 2002*. Halifax (NS): Province of Nova Scotia; 2002. Available: www.gov.ns.ca/snsmr/pdf/ans-vstat-2002-annual-report.pdf (accessed 2005 Nov. 29).

2. Burn J, Dennis M, Bamford J, et al. Long-term risk of recurrent stroke after a first-ever stroke. The Oxfordshire community stroke project. *Stroke* 1994;25:333-7.

3. Coull A J. Lovett JK, Rothwell PM. Population based study of early risk of stroke after transient ischaemic attack or minor stroke: implications for public education and organisation of services. *BMJ* 2004;328:326.

4. Kolominsky-Rabas PL, Weber M, Gefeller O, et al. Epidemiology of ischemic stroke subtypes according to TOAST criteria: incidence, recurrence, and long-term survival in ischemic stroke subtypes: a population-based study. *Stroke* 2001;32:2735-40.

5. Lindsay P, Bayley M, McDonald A, et al. Toward a more effective

approach to stroke: Canadian Best Practice Recommendations for Stroke Care. *CMAJ* 2008;178:1418-25.

6. Canadian Stroke Strategy. *Canadian best practice recommendations for stroke care (2006)*. Ottawa (ON): Canadian Stroke Network; 2006.

7. Dickerson LM, Carek PJ, Quattlebaum RG. Prevention of recurrent ischemic stroke. *Am Fam Physician* 2007;76:382-8.

8. Cranney M, Warren E, Barton S, et al. Why do GPs not implement evidence-based guidelines? A descriptive study. *Fam Pract* 2001;18:359-63.

9. Grol R. Successes and failures in the implementation of evidence-based guidelines for clinical practice. *Med Care* 2001;39(8 suppl 2): 1146-54.

10. Grol R, Grimshaw J. From best evidence to best practice: effective implementation of change in patients' care. *Lancet* 2003;362: 1225-9.

11. Grimshaw J, Eccles M, Tetroe J. Implementing clinical guidelines: current evidence and future implications. *J Contin Educ Health Prof* 2004;24:S31-7.

12. Ploeg J, Davies B, Edwards N, et al. Factors influencing best-practice guideline implementation, lessons learned from administrators, nursing staff, and project leaders. *Worldviews Evid Based Nurs* 2007; 4:210-9.

13. Joubert J, Prentice LF, Moulin T, et al. Stroke in rural areas and small communities. *Stroke* 2008;39:1920-8.

14. Parsons JE, Merlin TL, Taylor JE, et al. Evidence-based practice in rural and remote clinical practice: Where is the evidence? *Aust J Rural Health* 2003;11:242-8.

15. Taylor J, Wilkonson D, Blue I. Towards evidence-based general practice in rural and remote Australia: an overview of key issues and a model for practice. *Rural Remote Health* 2001;1:106.

16. Estabrooks CA, Scott-Findlay S, Winthier C. A nursing and allied health sciences perspective on knowledge utilization. In: LeMieux-Charles L, Champagne F, editors. *Using knowledge and evidence in health care; multidisciplinary perspectives.* Toronto (ON): University of Toronto Press; 2004. p. 242-80.

17. Dobbins M, Robosen P, Ciliska D, et al. A description of a knowledge broker role implemented as part of a randomized controlled trial evaluating three knowledge translation strategies. *Implement Sci* 2009;4:23.

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1. Prevnar® 13 Product Monograph. Wyeth Canada, December 21, 2009. 2. Prevnar® Product Monograph, Wyeth Canada, December 22, 2008. 3. Synflorix™ Product Monograph, GlaxoSmithKline, May 5, 2009.

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18. Ginsburg LR, Lewis S, Zackheim L, et al. Revisiting interaction in knowledge translation. *Implement Sci* 2007;2:34.

19. Grimshaw JM, Shirran L, Thomas R, et al. Changing provider behavior: an overview of systematic reviews of interventions. *Med Care* 2001;39:2-45.

20. Lomas J. Using "linkage and exchange" to move research into policy at a Canadian foundation. *Health Aff (Millwood)* 2000;19:236-40.

21. Kitson A, Harvey G, McCormack B. Enabling the implementation of evidence based practice: a conceptual framework. *Qual Health Care* 1998;7:149-58.

22. Kitson AL, Rycroft-Malone J, Harvey G, et al. Evaluating the successful implementation of evidence into practice using the PARiHS framework: theoretical and practical challenges. *Implement Sci* 2008;3:1-12.

23. Hayden A, Jones S, Sketris I, et al. Secondary prevention of stroke: an evaluation of rates of use of preventative medications in rural post-stroke patients in Southwestern Nova Scotia [poster]. Sixth Annual Poster Session of Summer Studentship Projects and Student Research Projects, College of Pharmacy, Dalhousie University; 2004 Sept. 28, Halifax, NS.

24. Creswell JW, Clark VP, Gutmann M, et al. Advanced mixed methods research designs. In: Tashakkori A, Teddlie C, editors. *Handbook of mixed methods in social and behavioural research.* Thousand Oaks (CA): Sage; 2003. p. 209-40.

25. Creswell JW. *Qualitative inquiry and research design; choosing among five traditions*. Thousand Oaks (CA): Sage; 1998.

26. Cabana MD, Rand CS, Powe NR, et al. Why don't physicians follow clinical practice guidelines? *JAMA* 1999;282:1458-65.

27. Davis DA, Taylor-Vaisey A. Translating guidelines into practice: a systematic review of theoretic concepts, practical experience and research evidence in the adoption of clinical practice guidelines. *CMAJ* 1997;157:408-16.

28. Fink R, Thompson CJ, Bonnes D. Overcoming barriers and promoting the use of research in practice. *J Nurs Adm* 2005;35:121-9.

29. Jensen GM, Royeen CB. Improved rural access to care: dimensions of best practice. *J Interprof Care* 2002;16:117-28.

30. O'Neill NP, Godden DJ. Stroke outcomes in Northern Scotland: Does rurality really matter? *Rural Remote Health* 2003;3:243.

31. Silagy CA, Weller DP, Lapsley H, et al. The effectiveness of local adaptation of nationally produced clinical practice guidelines. *Fam Pract* 2002;19:223-30.

32. Hanlon N, Skedgel C. Cross-district utilization of general hospital care in Nova Scotia: policy and service delivery implications for rural districts. *Soc Sci Med* 2006;62:145-56.

33. Mungall U. Trend towards centralisation of hospital services, and its effect on access to care for rural and remote communities in the UK. *Rural Remote Health* 2005;5:390.

34. Louw J, Myburgh C. The knowledge and perception of general practitioners about chiropractic as a factor that may influence interprofessional communication: a South African perspective. *J Interprof Care* 2007;21:221-4.

35. Gilson L. Trust and the development of health care as a social institution. *Soc Sci Med* 2003;56:1453-68.

36. Jackson LA, Putnam W, Twohig PL, et al. What has trust got to do with it? Cardiac risk reduction and family physicians' discussions of evidence-based recommendations. *Health Risk Soc* 2004;6:239-55.

37. Hendryx MS, Ahern MM, Lovrich NP, et al. Access to health care and community social capital. *Health Serv Res* 2002;37:87-103.

38. Bernard P, Charafeddine R, Frohlich KL, et al. Health inequalities and place: a theoretical conception of neighbourhood. *Soc Sci Med* 2007;65:1839-52.

39. Geepu Nah Tiepoh M, Reimer B. Social capital, information flows, and income creation in rural Canada: a cross-community analysis. *J Socio-Economics* 2004;33:427-48.

40. Thind A, Freeman T, Thorpe C, et al. Family physicians' satisfaction with current practice: What is the role of their interactions with specialists? *Health Policy* 2009;4:e145-58.

41. Orrantia E. Marathon works: How to thrive in rural practice. *Can Fam Physician* 2005;51:1217-21.

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