

# Many North Island rural general practitioners appear not to use Internet websites as a frequent source of health information

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## ABSTRACT

The Internet offers rural general practitioners (GPs) flexible access to a wealth of health information without the need to travel to an urban location. This study surveyed all New Zealand (NZ) North Island rural GPs, practice nurses, and pharmacists to assess their self-reported use of the Internet to obtain health information. It specifically asked respondents for their favourite Internet websites for health information. Of the 175 rural GPs who returned completed questionnaires, 53 reported using the Internet at least once a week at home or work in regard to patients. Fifty-one GPs listed a total of 122 websites that they access frequently for health information. After accounting for duplications, 54 separate websites were used by the rural GPs. Internet websites appear to be underutilised by many rural GPs as a source of health information.

## Key words

Rural general practitioner, Internet, health websites.

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## Introduction

With only the click of a mouse, the rapidly growing Internet provides GPs and others with access to vast amounts of health-related information.<sup>1</sup> Distance, cost and locum availability put rural GPs at a disadvantage in accessing urban-based professional development. However, the Internet provides them with the opportunity to electronically obtain information and education while at work or home. Distance education is not a new concept, but it has rapidly progressed from a paper-based system to delivery over the Internet, as information technology has quickly

evolved. Studying at a distance can be as effective as traditional face-to-face instruction, as long as the delivery technology is appropriate to the content offered and everyone has access to the same technology.<sup>2</sup>

Studies of NZ GPs show that Internet usage to access information for patient care has increased from 4% in 1995<sup>3</sup> to 56% in 1999<sup>4</sup>. Moreover, by 1999, most NZ rural GPs had access to the Internet at home (73%) or work (39%).<sup>4</sup> However, the majority of rural GPs in 1999 stated there was a lack of accessible, high quality postgraduate medical education.<sup>5</sup> Providing such

education for all rural health professionals is one aspect of the package of support recommended by the Rural General Practice Network<sup>6</sup> to address the 'recruitment and retention' problems currently afflicting many NZ rural areas. While use of the Internet to deliver 'continuing professional education' is rapidly increasing, there is little NZ research on the acceptability of this method to rural GPs and other health care professionals. Before investing in distance Internet education, it is important to ensure that this method is both effective and acceptable.

In April 2003, we surveyed all North Island rural GPs, practice nurses, and pharmacists to assess their self-reported use of the Internet to obtain health information. This paper summarises the websites used by the North Island rural GPs, and their comments about those websites.

## Methods

### Questionnaire

An anonymous postal questionnaire was sent to all North Island rural GPs, practice nurses, and pharmacists requesting self-reported information about their attitudes towards, and experiences of, computers, the Internet and distance learning. One question, under the heading of '*Your favourite Internet websites*', specifically asked for the names (up to three) of '*websites you access frequently for health information*'.

Ten volunteers from each professional group tested the penultimate draft of the questionnaire for clarity and ease of completion: the mean time for questionnaire completion was 10.7 minutes  $\pm$  3.7 (SD; range five to 20 minutes). Feedback from this group was used to improve the final questionnaire. Questionnaires were numbered, with only one au-

thor (RJ) having access to the list of names, to ensure both anonymity and that only non-responders were sent reminders. Ethics approval was obtained from the Auckland Ethics Committee (#AKY/02/00/263). Prior to mail out, the questionnaire was reviewed by both the Rural General Practice Network and the Pharmacy Guild of New Zealand and endorsed to their members.

### Distribution

The Institute of Rural Health, in Hamilton, has an accurate, current database of North Island rural GPs. A 'rural' GP is defined by a score of 35 points or greater on the Rural Ranking Scale.<sup>7</sup> As we had no accurate database of rural practice nurses, two questionnaires were mailed to each rural GP: one for the GP and one for his or her practice nurse. Although we did not have access to a database of rural North Island pharmacists, we were able to purchase a database of New Zealand pharmacies (names and addresses) from The Pharmaceutical Society of New Zealand. We defined a pharmacy as being 'rural North Island' when it was located in a town

with a North Island rural GP. Every North Island rural pharmacy was mailed two questionnaires and asked to indicate if only one pharmacist worked there. A phone survey of rural pharmacies was also conducted to ascertain accurate

numbers of pharmacists at each rural pharmacy.

Numbered postal questionnaires, with a self-addressed and stamped return envelope, were mailed out in April 2003. All responders were entered into a draw for a chance to win one of five bottles of premium NZ wine. Non-responders were initially

posted a reminder card in May, a reminder questionnaire in June, and another reminder card in July, and then had a final reminder by telephone. Recruitment to the study was closed on August 31, 2003. Written, narrative responses to the question requesting '*favourite Internet websites used frequently for health information*' were recorded and analysed using Microsoft Word<sup>®</sup> and Excel<sup>®</sup>.

## Results

A total of 735 questionnaires were sent out to 289 GPs, 289

practice nurses, and 157 pharmacists working in rural North Island towns. Completed questionnaires were received from 175 GPs (60.6%), 138 nurses (47.8%), and 117 pharmacists (74.5%) for an overall response rate of 58.5%. Fifty-three GPs reported using the Internet in regard to patients at least once weekly at home, work or in both settings. Favourite Internet websites, used '*frequently for health information*', were named by 51 GPs (29.1%), 17 nurses (12.3%) and 19 pharmacists (16.2%). The percentage of GPs reporting websites that they frequently accessed was significantly ( $p < 0.05$ ) higher than that of pharmacists (difference of 12.9%, 95% confidence interval (CI): 22.4% to 3.4%) and nurses (difference of 16.8%, 95% CI: 8.1% to 25.5%).

Table 1 lists the names and addresses of the websites that were reported as frequently used by rural GPs, and records the number of nurses and pharmacists who also used these websites. There were 17 NZ websites out of the total websites of 54; with American, British, Canadian and Australian websites making up the remainder. Table 2 records the comments made by rural GPs about some of their favourite health websites.

## Discussion

This is the first NZ study to examine and compare, across a range of rural

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Table 1. Websites cited as 'frequently used for accessing health information' by rural North Island GPs, including an ordered tabulation of the number of GPs (practice nurses and pharmacists) using each website.

	Website name	Website address	GP	Nu	Ph
1.	Medscape*	www.medscape.com	21	5	8
2.	Google	www.google.co.nz	11	3	1
3.	British Medical Journal	www.bmj.com	7		3
4.	Cochrane Reviews	www.cochrane.org	6		
5.	E-medicine	www.emedicine.com	5	1	
6.	Centres for Disease Control and Prevention	www.cdc.gov	4	1	
7.	Medline	Multiple access sites*	4		
8.	NZ Guidelines Group	www.nzgg.org.nz	4		
9.	Pubmed*	www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=PubMed	4		3
10.	Bandolier: Evidence-based Healthcare	www.jr2.ox.ac.uk/bandolier	3		
11.	US National Library of Medicine*	www.nlm.nih.gov	3		
12.	AusDoctors.net	www.ausdoctors.net	2		
13.	Dermnet	www.dermnet.com	2		
14.	Doctors.net.uk	www.doctors.net.uk	2		
15.	Goodfellow Unit CME Club	http://cmeclub.auckland.ac.nz	2		
16.	New England Journal of Medicine	www.nejm.org	2		
17.	NZ Doctor	www.nzdoctor.co.nz	2		
18.	The Physician and Sports Medicine Journal	www.physsportsmed.com	2		
19.	Alberta Palliative Network	www.albertapalliative.net	1		
20.	All Health	www.healthanswers.com.au	1		
21.	American Family Physician	www.aafp.org/afp	1		
22.	American Medical Association	www.ama-assn.org	1		
23.	Asthma Clinical Research Network	www.acrn.org	1		
24.	Australian Menopause Society	www.menopause.org.au	1		
25.	BioMed Central	www.biomedcentral.com	1		
26.	British Medical Association	www.bma.org	1		
27.	Canadian Journal of Rural Medicine	www.srpc.ca/cjrm.html	1		
28.	Doctor Online	www.doctoronline.nhs.uk	1		
29.	Doctor's Guide	www.docguide.com	1		
30.	ePulse	www.rnzcgp.org.nz/e_pulse.php	1		
31.	Everybody.co.nz	www.nzhealth.co.nz	1		
32.	Evidence-based Medicine	http://ebm.bmjournals.com	1		
33.	Family Doctor	www.familydoctor.co.nz	1		
34.	Healthlink	www.healthlink.org.uk	1		
35.	MD Consult	www.mdconsult.com	1		

Table 1 continued overleaf

Table 1 cont.

	Website name	Website address	GP	Nu	Ph
36.	Medline Plus	www.nlm.nih.gov/medlineplus/	1		
37.	Medsafe Data Sheets	www.medsafe.govt.nz	1		11
38.	Merck Manual	www.merck.com/mrkshared/mmanual/home.jsp	1	1	1
39.	NetDoctor.co.uk	www.netdoctor.co.uk	1		
40.	New York Emergency Room RN	www.nyernr.com	1	1	
41.	NZ Dermnet	www.dermnetnz.org	1		
42.	NZ Medical Council	www.mcnz.org.nz	1		
43.	NZMJ (accessed via NZMA)	www.nzma.org.nz/journal	1		
44.	Omni: UK Gateway to Internet Resources in Health and Medicine	www.omni.ac.uk	1		
45.	Pharmac	www.pharmac.govt.nz	1	1	2
46.	Procare	www.procare.co.nz	1		
47.	RNZCGP	www.rnzcgp.org.nz	1		
48.	Scottish Intercollegiate Guidelines Network	www.sign.ac.uk	1		
49.	Southern Medical Journal	www.sma.org/smj/	1		
50.	University of Auckland Library	www2.auckland.ac.nz/lbr	1	1	
51.	University of Otago Library	www.library.otago.ac.nz	1		
52.	WHO SARS Site	www.who.int/csr/sars	1		
53.	World Health Organisation	www.who.int/health_topics/en	1	2	
54.	Xtra	www.xtra.co.nz	1		

GP = GPs, Nu = practice nurses, Ph = pharmacists.

TOTAL WEBSITES: 122 16 29

health professionals, use of the Internet to access health information, with specific reference to the websites they have used. Two recent NZ studies have examined GPs' use of the Internet<sup>4,8</sup> and Cochrane database<sup>8</sup>. We were unable to find any published studies identifying health-related websites used by NZ GPs, practice nurses and/or pharmacists, other than the one study of GPs' use of the Cochrane database.<sup>8</sup> Yet such information is needed to assist rural GPs and other health professionals to make better use of the Internet, for example by identifying high quality health sites.

We therefore undertook the survey reported here in order to identify current usage. Of the 175 rural North Island GPs responding to our questionnaire, only about one third

reported having favourite websites that they access frequently to keep up to date with new health information. However, rural GPs' reported usage of websites for accessing health information was significantly higher ( $p < 0.05$ ) than that for either rural pharmacists or practice nurses. The GPs mentioned 54 individual websites, some of which were also cited by 29 pharmacists and 16 practice nurses (Table 1). Five websites (Medscape, Google, British Medical Journal, Cochrane and eMedicine) constituted 41% of the 122 total websites cited by rural GPs, with Medscape alone being used by 39% or 51 rural GPs using the Internet. Of the 54 individual websites used by rural GPs, 42 (78%) were not cited by either the rural practice nurses or pharmacists.

These findings of low utilisation were somewhat unexpected because over the past decade, the Internet has virtually exploded with websites. As of February 2004, Google® searches over four trillion websites! For anyone looking for information on diseases and treatment, the Internet provides a huge resource of health-related websites, although the quality of individual websites can vary greatly.<sup>9,10</sup> The Internet also offers a range of support groups, which can be used, as well as misused, by individuals,<sup>10</sup> and a multitude of health companies available for business.<sup>11</sup>

For rural GPs, the Internet offers a huge opportunity for professional development and continuing education. It eliminates or reduces the usual barriers faced by rural health professionals accessing urban-based edu-

Table 2. Comments made by GPs about their favourite websites for accessing health information.  
(Numbers refer to the specific websites in Table 1)

	Website name	Comments made by GPs
1.	Medscape	'Regular "newsletter"'; 'Up-to-date information, CME available for physicians, could be used in NZ'; 'not a lot of experience with medscape.com yet'; 'Easy access to patient info and Medline'; 'Good for medical news and data searches'; 'Get their daily updates/small bits often, I have started doing their CME cases, this is good'; 'Easy to access'; 'Ease of use and comprehensive'
2.	Google	'Hone in on most appropriate site at the time'; 'Very wide access, free and easy to use'; 'Good for finding a variety of things'; 'Works for most things as easy first-line search'; 'The only one I use - for everything'; 'Easiest and quickest general engine, I learnt it from my kids, I use it everyday'; 'Still great for general searches'; 'Remains one of the best search mechanisms'
3.	BMJ	'Receive eBMJ weekly'; 'Used to it - familiar from UK'
4.	Cochrane Reviews	'For evidence-based information'
5.	E-medicine	'Broad range and good full text of potted topics'; 'Good range of topics'
6.	CDC	'For travel medicine'; 'For travel info/SARS advice'
7.	Medline	'Searches take forever'
9.	Pubmed	'Go get original articles'; 'Easy access medline etc'
10.	Bandolier	'Good evidence-based medicine site'
12.	AusDoctors	'For access to textbooks, guidelines'
13.	Dermnet	'Very user friendly'
14.	Doctors.net.uk	'Good library access'; 'Now has Oxford Textbook of Medicine on it, good links to other health sites'
19.	Alberta Palliative Network	'Textbook on practical palliative care'
20.	All Health	'For patient information'
21.	American Family Physician	'Excellent matter'
22.	American Medical	'Good for in-depth articles'
25.	BioMed Central	'Open access publishing'
28.	Doctor Online	'Good CME/clinical scenarios'
30.	ePulse	'Many links'
31.	Everybody	'Positive and practical stuff'
32.	EBM	'I have this online and a 6-months update, I use this everyday in the office'
33.	Family Doctor	'For patient information'
37.	MedSafe	'Drug profiles'
38.	Merck Manual	'Useful reference'
39.	NetDoctor	'Doctor and patient 'friendly' explanation of wide variety of conditions'
40.	NY Emergency Room	'Great patient simulators'
42.	NZ Medical Council	'Saves me phoning and good for downloading forms'
44.	Omni	'Good place to start'
45.	Pharmac	'Special Authority forms'
48.	Scottish Intercollegiate	'Many guidelines'
49.	Southern medical Journal	'Free access journals'
50.	U of Auckland	'Can use as have full access to library for searches'
51.	U of Otago library	'Currently doing diploma so have access'
53.	WHO	'To get resources'



cation, namely distance, cost, time and locum relief.<sup>5</sup> However, the Internet has its own barriers. While distance has been eliminated, specific monetary costs are associated with surfing the 'net': hardware, software, telephone (or other access), Internet Service Provider charges, and specific costs related to some websites. Also, to benefit fully from time spent on the Internet, users need the knowledge and skills to operate their computer, navigate their way around it, locate possible sites and assess the quality of the information and education offered. That so few websites were reported in this study as being used frequently by rural GPs, suggests that many may lack the confidence and skills to access and utilise this resource or that they do not yet feel that it is worth the effort. Although travelling time has been eliminated, rural GPs still need to make time in their busy schedules to surf the Internet, and any work or home educational activity can be easily interrupted.

The websites listed in Table 1, along with the comments in Table 2, give GPs who are new to the Internet some suggestions on where to begin, and for more seasoned 'web-surfers' may suggest a few new sites to explore. Many of the websites were not mentioned by any of the practice nurses or pharmacists, and these appear to be more doctor-specific. Further research is needed to identify why

only a third of rural GPs on the North Island reported frequently using the Internet to access health information, why this level of usage is higher than that reported by North Island rural nurses and pharmacists, and whether the results of this survey are replicable in rural areas of the South Island and in NZ urban centres.

### Strengths/Limitations

This study surveyed all North Island rural GPs, practice nurses and pharmacists. The listing by 51 GPs of favourite websites for health information is likely to be unbiased because almost the same number of GPs reported using the Internet at least once a week at work or home in regard to patients. The name and address database of the rural GPs was very accurate. By comparison, the means used to survey pharmacists and practice nurses, might have achieved lower coverage. In particular, the lower response rate for practice nurses may reflect the survey method, which relied on each rural GP passing on a questionnaire to his or her practice nurse. While the 75% response rate for rural pharmacists was encouraging, the lower response rates for GPs

and nurses may also relate to 'questionnaire fatigue' in the rural sector, where certain providers have been exposed to increasing research and policy interest in recent years.

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and return the questionnaire. We thank the Rural General Practice Network and the Pharmacy Guild of New Zealand for reviewing the questionnaire and endorsing the study to their members. We acknowledge and thank Irene Chaudhari for all her work organis-

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### References

1. Ferguson T. Digital doctoring – opportunities and challenges in electronic patient-physician communications. *JAMA* 1998; 280:1361–2.
2. Willis B. Distance Education at a Glance (Guide #9) 'Distance Education – research'. <http://www.uidaho.edu/evo/dist9.html>
3. Thakurdas P, Coster G, Gurr E, Arroll B. New Zealand general practice computerisation; attitudes and reported behaviour. *NZ Med J* 1996; 109:419–22.
4. Kerse N, Arroll B, Lloyd T, et al. Evidence databases, the Internet, and general practitioners: the New Zealand story. *NZ Med J* 2001; 114:89–91.
5. Janes RD, Dowell A, Cormack D. New Zealand Rural General Practitioners 1999 Survey Part 1: An overview of the rural doctor workforce and their concerns. *NZ Med J* 2001; 114:492–5.
6. Rural General Practice Network. Recommendations for recruiting and retaining doctors to work in rural New Zealand. Rural General Practice Network (Inc), Christchurch, March, 2001.
7. Health Funding Authority. Variation of Advice Notice Pursuant to Section 51 of the Health and Disability Services Act 1993 (Schedule 2, Appendix 11). 1999, Wellington, New Zealand.
8. Eberhart-Phillips J, Hall K, Herbison GP, et al. Internet usage amongst New Zealand general practitioners. *NZ Med J* 2000; 113:135–7.
9. Baur C, Deering MJ. Proposed framework to improve the quality of health web sites: review. *Medscape General Medicine* 2000. (<http://www.medscape.com/viewarticle/403656>)
10. Feldman MD. Munchausen by Internet. *Southern Med J* 2000; 93(7):669–672.
11. Edlin M. Plan websites reach out. *Healthplan* 2000 41(3):14–21.