

**I**n last month's edition of this magazine Sigrid Schirdewahn from Health Canada provided an overview of a report that they had commissioned on the views of key stakeholders regarding the use of information and communications technologies (ICTs) in the health sector. Within the physician community in Canada some survey work has been carried out that gives a more revealing view on ICTs. This article presents an overview of the findings.

## Brief review of the surveys

At present, there are only a small number of Canadian surveys of physician use of health information and communication technologies (ICTs). At a national level, the Canadian Medical Association (CMA) conducts an annual survey, the *Physician Resource Questionnaire* (PRQ), which has asked a limited number of questions on physician use of computers and the Internet since 1997. At a provincial level, the Alberta Medical Association (AMA) in partnership with Alberta Wellnet, the College of Physicians and Surgeons of Alberta and the Alberta Chapter of the College of Family Physicians of Canada conducted a dedicated *Physician Automation Survey* in 1998 and 2000. At an institutional level, the Toronto University Health Network *e-1000 Project* surveyed all its healthcare professionals (7 clinics) in 2001 around e-health innovations.

Looking at the types of questions posed, 3 broad categories emerge: usage characteristics (computers and Internet), information exchange (email, discussion groups, online health information, practice websites), and practice applications (focusing on EMRs and PDAs). Early surveys were exploratory in nature - do physicians have computer or internet access, where is this access, how much time do they spend, is it for personal or professional reasons, do they like using it, what sites do they visit. Once it was determined that Canadian physicians were coming onboard in this area, as indicated by the growing numbers of users, surveys began to probe specific types of usage and services, e.g., what types of applications are being used, and what are the barriers and incentives to use. These later efforts are as yet in the early stages and there are limited data available.

## What the data tell us thus far

The *Physician Resource Questionnaire* (PRQ) is Canada's largest annual survey of physicians' professional activities. It is the only national survey that asks doctors about their computer and Internet use and the results are generalizable to all Canadian physicians. The questions on internet use thus provide insight into general trends. Other surveys conducted at provincial or community levels (such as the Alberta surveys and the UHN e-1000 survey) provide supplementary information that, while not generalizable to all physicians in Canada, provide additional insights to support and expand on the PRQ findings.

Apart from national trends identified by PRQ, the UHN survey data will offer a unique perspective - it reflects physician internet use in a work environment at the cutting edge of connectivity and this provides a glimpse of what the future might hold were such usage to become widespread among physicians and other providers. There is an opportunity to build on the results from this and other such experiences to identify what applications, work environments, support mechanisms, incentives, etc., best fit or meet physicians' interests and work flow requirements, what

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# OVERVIEW OF CANADIAN SURVEY RESEARCH: Physician use of health information and communication technology (ICTs)

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change management issues need to be planned for, and what other areas need to be addressed to facilitate this process.

### Do physicians use the internet?

The 2002 PRQ indicates that almost 90% of Canadian physicians personally use computers - a 20% increase since 1997. More significantly, the proportion of Canadian physicians who personally use the Internet has more than doubled over the same period - going from 41% in 1997 to 89% in 2002 - and physician use of computers and the Internet converges at this point (90% penetration). These results demonstrate beyond any doubt that the overwhelming majority of Canadian physicians are connected now to the internet - and that at least part of the groundwork is in place to support making ICT-embedded physician practice a reality.

### Do they use it at work?

In what environments and to what ends are physicians making use of these technologies? The 2002 PRQ data reveal that although only 57.4% of Canadian physicians have Internet access at work, of those who do, an impressive 93% access the internet from that location. Interestingly, this almost exactly matches preliminary UHN results, where all physicians in the network have Internet access at work.

### Where do they spend the most time online?

The 2002 PRQ tells us that of the 90% or so of Canadian physicians who are Internet users, 73% spend the bulk of their online time at home. Only 20% indicate that they spend more time online at a professional/work location. Even among those 57% of physicians

with Internet access at a professional/work location, the majority (60%) say they do most of their surfing at home, and only 28% report being more active online at work. If we want to reverse this trend - and an ICT embedded practice would require this - more work needs to be done to determine the impact of practice setting or work environmental on physician internet usage.

Preliminary results from the UHN survey suggest that physicians within the network tend to do the bulk of their Internet activities while at work, which suggests that the UHN-type institutional environment (a high acuity world) lends itself to doing more online inquiries from a professional/work location than does a primary care setting. It would be worth exploring this hypothesis further to determine if this is indeed a contributing factor to physician internet usage.

The American Medical Association (AmMA) 2002 survey on *Physician Use of the World Wide Web* found differences in internet use among different demographics of physicians, such as between specialists and general practitioners. If practice type and setting is a variable in physician uptake, ICT solutions and incentives will have to be adjusted for different subsets of the physician community. And it would be worth exploring these sooner rather than later in the interests of building solutions that match the end users' particular set of needs.

### What are they using it for?

Results from a 2001 PRQ question on Internet use by specific activity suggest that at the national level about three-quarters of all Canadian physicians use the Internet to find health-related information. <sup>2</sup>From the 2002 PRQ we know that about 60% of

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***“Results from the 2000 Alberta study suggest that the main areas of concern are time, change/knowledge management, and cost, and if these barriers play out across the national stage, the question becomes how to break them down to facilitate a higher level of adoption.”***

Canadian physicians refer their patients to medical Web sites. On the patient side, a growing number bring information from the Internet to their medical appointments. Data from the 2002 PRQ indicate that 90% of Canadian physicians have had patients present information from the Internet at least occasionally, up from 84% in 2000. Clearly, use of the Internet as a tool for searching out or sharing health-related information is a clear trend among both Canadian physicians and the public.

## What lies ahead?

A number of observations emerge from this review. For the most part, Canadian physicians are now using both computers and the internet, and while it might have been argued 5 years ago that physician acceptance of these technologies would be problematic due to low levels of usage, this is clearly no longer the case. At this time, there is only a small and arguably insignificant number of physicians (10%) who remain unconnected.

With the majority of the physician community having access to and using ICTs, we are continuing to see increases in adoption of internet applications and are positioned now to investigate precisely how the internet is being used in clinical practice. The 2003 PRQ will ask these questions and provide some insights in this regard. It is our expectation, based on anecdotal evidence and the literature review conducted by Deloitte Consulting, that a relatively small proportion of physicians currently use the Internet as a tool in direct patient care.

It is time to investigate in greater detail and at a national level, the barriers that frustrate more widespread use of the internet as a tool in clinical practice. Results from the 2000 Alberta study suggest that the main areas of concern are time, change/knowledge management, and cost, and if these barriers play out across the national stage, the question becomes how to break them down to facilitate a higher level of adoption. Perhaps we can look to the UHN approach/expertise to guide us. There are promising indications from this ICT-intensive hospital-based environment that when provided with the appropriate access and support to technologies, physician uptake can be encouraged.

## Directions for further work

Before we can break down any barriers, or design solutions, further work is needed to assess the nature of the obstacles and how they can be best managed. There are no data to guide us with respect to whether these are solely a function of attitudes and behaviours, whether demographics (age, gender, practice type, practice setting) play a significant role, whether it is simply a question of costs, or some combination of these.

At the end of the day, what makes physicians see value in moving to an electronic-based system? And what would spur them on or accelerate uptake? Apart from broad indications, we do not really understand the determinants of physician uptake of ICTs. The following provides a very general outline of where we need to go from here:

1. Gather detailed information at the national level about the use of ICTs in clinical practice
2. Also at the national level, identify barriers to the uptake of ICTs and possible incentives
3. Assess the nature of the barriers and begin to develop strategies to manage/break them down (focus groups followed by survey)

Outcomes of step 3 will guide the operational stage - design and implementation of solutions.



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- 1 The UHN e1000 survey explores the use and perception of the Internet by patients and healthcare providers at the University Health Network (UHN). Three cross-sectional surveys (two for patients and one for healthcare providers) were run in seven high-volume ambulatory clinics. Researchers have analyzed the patterns of use of the Internet by these providers and their views towards using this technology to find health related information and to communicate with patients, colleagues or general public. Data from the UHN e1000 survey will be published soon.  
Link to the UHN e1000 abstract on the web site of the Centre for Global eHealth Innovation:  
[http://www.uhnres.utoronto.ca/ehealth/html/what/eh\\_what\\_projects\\_e1000.shtml](http://www.uhnres.utoronto.ca/ehealth/html/what/eh_what_projects_e1000.shtml)
- 2 From the 2001 PRQ: any respondent who engages in MEDLINE searches, reading or browsing online journals, accessing the CMA Infobase, visiting other physician-oriented Web sites, reading news in medicine or health care, visiting other physician-oriented sites, or visiting patient-oriented sites was deemed to be using the Internet to find health-related information