2nd Quarter May 2000 Vol. XIV No. 2

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Official Journal of "Canada's Health Informatics Association"

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Health Care of the Future: Vision 2020 Leads the Way - PART 1

- Michel Lèger -

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Picture a borderless, seamless, fully integrated health care system, accessible anywhere in Canada to health care providers, decision makers and individuals alike - and you"ll have an idea of the vision Canadians are putting forward for health care.

Sound like a pipedream? Not if the stakeholders Health Canada's Office of Health and the Information Highway (OHIH) are consulting have anything to do with it.

In recognition of the growing importance of information and communications technologies (ICTs) for transforming Canada's health care system (through innovative applications such as electronic health records, telemedicine, telehomecare and Internet-based health information), OHIH is leading a series of consultations across the country to define a vision for a Canadian health infostructure until the year 2020.

The focus of the "Vision 2020" workshops OHIH is undertaking with its partners in several health sectors - child health professionals, physicians, nurses and health care administrators - is to:

- describe their vision for the ideal health system in the year 2020 and the role that ICTs will play in that system;
- discuss the challenges that stand in the way and the opportunities that present themselves for realizing this vision; and
- identify concrete next steps that might be taken at the federal, provincial, territorial, regional and individual organizational levels to promote the use of information and communications technologies in health care.

Four one-day workshops have been held, to an overwhelmingly enthusiastic response. The ideas generated from the workshops will be shared within Health Canada as well as with the Department's provincial and territorial partners. The workshops' recommendations will serve as the basis for future planning by OHIH. This article describes the discussions and actions from the first two workshops.

A Vision for Children's Health Care

The first Vision 2020 workshop, held in Toronto in January 2000, addressed children's health care. Participants included pediatric nurses, pediatricians, pediatric surgeons and intensivists, child health and telehealth network administrators and child health researchers from pediatric and general hospitals, with a strong interest in ICT use.

Participants predicted a shift in the focus of children's care from intervention to prevention: "Healthy children in healthy homes in healthy communities". This child/family-centered health care system would enable more children to be cared for in their home or community, and result in less family disruption. Even children staying in hospital for prolonged periods would remain connected to their families, easing their reintegration into the community.

An integrated health care delivery system would seamlessly link all points of care - homes, schools, family practitioners, community clinics and urban hospitals - and reduce the likelihood of "children falling through the cracks". Geographic barriers to medical expertise would be erased. Children and families in rural or remote communities would have access to care by specialists, and "just-in-time" information would be available for referrals. Children with developmental delays could be evaluated within their own environment, making assessments more valid.

Children and families would own and control access to their electronic health records (EHRs) and would no longer have to repeat their medical history to a series of practitioners. These would be available in digital format, on a need-to-know basis, to health care providers to whom the patient had given consent. Access to on-line clinical information would do away with duplicate tests or interventions. Practitioners could better understand family trends by viewing linkages between siblings' and parents' EHRs.

Privacy legislation would ensure the confidentiality of patient records but not unduly limit information-sharing among practitioners, who would have been granted access. The public would realize that EHRs are more secure than paper records because of security-enhancing technologies and built-in measures to ensure confidentiality.

Health researchers would use privacy-protected, aggregated data to investigate trends, evaluate treatments, and suggest ways of preventing illness and disabilities, and uniform, discipline-specific standards would be used to enter and interpret EHR data.

Reliable health information, available on-line via the Internet, would enable children and families to maintain and improve their health; participate more fully in health care decisions; and communicate with other families with similar concerns.

Practitioners would have access to a large body of health information to support clinical decision-making and continuing education. The cost-effectiveness of ICTs in the health care system would be evident, and funding would be available to maintain these systems. Practitioners would be reimbursed for using ICT-supported services such as telemedicine or teleconsultation.

Real-time access to teletriage would prevent children and their families from having unnecessary encounters with the health system, and offer alternative solutions.

The infrastructure to support a child/family-centered health system (computers, scanners, cameras, audio and video platforms, cable, satellites, optical fibres), and competent professionals to operate it, would be widespread. Affordable telecommunications rates would augment its use. Practitioners would have access to user-friendly, non-threatening technology, and new technology would be introduced based on client (not industry) needs.

Challenges and Opportunities

ICTs offer an enormous opportunity to improve the health of Canadian children and the general population. To be successful, however, this vision requires grassroots support.

Many rural or remote communities that would benefit the most from ICT-supported health care do not have reliable access to the Internet or sufficient bandwidth to support this system. In many parts of the country, telecommunications rates are too high, and personal access to electronic health information too limited for widespread ICT use.

The full potential of ICTs can only be realized when traditional professional hierarchies are eliminated and health professionals share information and decision-making.

To instill public confidence, national policies and standards are needed to ensure the privacy, confidentiality and security of EHRs and prevent their exploitation for commercial purposes. Clear principles must be established as to who has access to EHRs and under what conditions, and protocols created to audit health record transactions. Information standards are also required, but institutions and practitioner groups that have built their own databases may resist the imposition of a standard national protocol for collecting information.

With the increased use of ICTs in health care, patients' expectations will likely rise dramatically, and may surpass the capacity of the system to deliver, especially as the population ages and demands more in-home or in-community care.

To sustain an ICT-based health system, standardized, interprovincial reimbursement and licensing policies would need to be in place for services such as teleconsultation, and billing procedures adjusted accordingly.

Implementing an ICT-supported child health care system will initially require a significant investment for: infrastructure development and purchase; database development; business process and protocol development; research; communications; and practitioner remuneration. Public-private partnerships can help offset these costs and achieve economies of scale. Institutions can also reduce costs by sharing resources.

Investment in training will also be required. Many health professionals are unskilled in the use of ICTs and will need to acquire these skills through distance learning or continuing education. However, the opportunity exists to train a new generation of ICT-savvy health practitioners by building this training into professional education curricula.

Technical challenges that need to be addressed include resolving compatibility and interoperability problems with different technologies, and developing an adequate infrastructure in rural and remote communities.

Implementing the Child Health Care Vision: Key Actions

Collaboration between health practitioners, governments, and the public and private sectors is key to achieving ICT-supported child health care. No one group will act alone. Migration to this system would begin among small groups of cross-sectoral collaborators, whose successes will lead to more investment and collaboration. Only by communicating and marketing these successes to local governments and communities, and publicizing them in the media, can we convince Canadians of the benefits of an ICT-based child health care system. A national inventory of Canadian and international initiatives that use ICTs for child health could also be created on the Web, to publicize best practices.

Government funding will be required in the short term, with the prospect of long-term cost benefits for health care. A critical success factor is the willingness of provincial governments to support ICT initiatives.

A federal-provincial-territorial working group should draft security and confidentiality guidelines and national legislation for EHRs, so they can be shared among health professionals, with safeguards to ensure patient consent and privacy.

Governments need to agree on priorities for ICT use in health care and develop a coordinated plan of action, as well as national policies on reimbursement, liability and licensing. A large-scale demonstration project, involving all levels of government, could help establish a business case for ICT initiatives. Evaluation frameworks must also be created to demonstrate the costs, benefits and effectiveness of ICTs in health care.

"A consensus is needed, among stakeholders, that ICTs are integral to an improved health care system. Key decision-makers and politicians, as well as the general public, have to be made aware of and support the value and opportunities that ICTs offer."

Professional schools must train students to use ICTs and work in a technological and "democratic" ICT-supported environment. Hospitals, clinics and private practices will also have to invest in infrastructure, to participate in an ICT-based system.

The private sector will play a key role in developing the hardware and software that forms the backbone of an ICT health system. Funding arrangements must be developed for local infrastructure and technical support. Partnerships with industry and telecommunications companies could facilitate information-sharing and yield economies of scale.

Collaborative efforts will be required to promote the adoption of a unique identification number for each individual, so that various modules of the health record can be linked. The capacity must be developed to translate existing databases to a common information platform. Likewise, technologies such as Public Key Infrastructure or an electronic record signature are needed to ensure that only authorized individuals can access EHRs.

Health Services Executives' Vision for Health Care

The second Vision 2020 workshop, which OHIH held in Ottawa in March 2000 with health services executives from across Canada brought together by OHIH and the Canadian Healthcare Association (CHA), also looked at ICTs in health care.

Participants saw ICTs and telehealth as a way to equalize and improve individual Canadians' access to health care - with health care delivery moving beyond traditional institutions to a wide range of delivery sites: individuals' homes, shopping malls, schools and workplaces. The spectrum of health care, across all geographic areas, would include acute care, long-term care, home and community care and public health.

Telehealth services would allow health professionals to deliver care more easily. Individuals would travel to highly specialized, metropolitan care centres for complex health services. Health professionals would educate individuals and local communities in prevention.

ICTs and an electronic health record would offer seamless, borderless, privacy-protected, user-friendly access, 24 hours a day, seven days a week, for providers and individuals, and the technology would evolve as the health system evolved.

Canadians would be knowledgeable and empowered, and have access to a full continuum of care at their point of entry into the health system. Their medical histories would follow them wherever they went.

Databases would help health care providers and decision-makers make informed clinical and management decisions based on evidence, so they could choose care appropriate to the individual, and share knowledge and experience. Data mining and data warehousing capabilities would give health managers new knowledge and insights into a wide range of health trends and enable them to manage resources better.

Workshop participants foresaw a shift in health care towards prevention. With the reduced need for acute care, funds would be freed up for other services, such as for low-income or poorly educated populations.

Health care professionals would have access to more data on prevention, health hazards and diseases, and be better equipped to understand the impact of lifestyle, environmental hazards and socio-economic status on the health of the population.

A balance would be achieved between protecting individuals' privacy and allowing health professionals to share relevant information about them for research purposes. Innovative, privacy-enhancing technologies such as thumbprint technology, DNA scanners and retina recognition devices would give individuals greater control over their health records by enabling them to grant access to health professionals.

The long-term viability of the renewed health system would be ensured with sustainable ongoing funding and support for ICT-enhanced health care delivery.

Challenges and Opportunities

A key challenge will be to close the gap between the vision articulated and the present lack of fiscal resources and skills, and competition for scarce resources.

The gaps in information, poor communications and disparity in standards that exist between organizations must be addressed, as well as the lack of common information systems. Currently, operating dollars are spent on short-term, ad hoc software and hardware "fixes", rather than long-term solutions. Especially critical is the "lack of will", at all levels, to impose agreement on or adherence to common standards, or to create new standards.

Harmonization of privacy legislation among governments is needed, as well as a consensus among national health care groups on privacy concerns.

Professional "turf" issues among federal, provincial and local authorities and resistance to change, as well as lack of a common vision, are fragmenting Canada's health care system. Some health care providers have a low level of ICT knowledge and a fear of technology, and there are few incentives to encourage them to use the technology available.

A consensus is needed, among stakeholders, that ICTs are integral to an improved health care system. Key decision-makers and politicians, as well as the general public, have to be made aware of and support the value and opportunities that ICTs offer.

New management and governance structures in many provinces and territories offer an opportunity to build an integrated system and resolve cross-boundary issues. Opportunities exist to share knowledge and practices within existing partnerships, and to create new partnerships: between government and the private sector, and with non-traditional partners such as the retail sector.

Although an initial investment in infrastructure is required, ICTs will result in real savings in the long term. If Canada is successful in resolving cross-border licensing and liability issues, we may be able to market our ICTs, organizational structure and health systems' knowledge to the rest of the world.

Implementing the Health Care Vision: Key Actions

Federal, provincial and territorial ministers should be urged to commit to the vision that has emerged from these consultations, and work together to implement it. It is essential that funds for ICTs be allocated to the provinces and territories and be earmarked specifically for the development of common core elements such as standards and unique identifiers. The creation of a "Health Information Systems" accord may be one way to focus the attention of governments on ICTs and create a platform to ensure a "buy-in".

Also needed are government funding for research into privacy and the protection of personal information related to EHRs and telehealth; and privacy legislation - across federal, provincial and territorial jurisdictions - based on a consensus among national health care groups on privacy concerns.

For telehealth to move forward, Canada also needs to invest in its telecommunications infrastructure, and improve telecommunications access to remote and rural areas.

A national coordinating committee, or think tank of standards specialists and users, could be established to create standards for health care. Members would consult with a broad range of stakeholders reflecting the Canadian "mosaic", as well as "non-traditional" partners, to learn from their knowledge and expertise.

To integrate Canada's health system, the Canadian Institute for Health Information (CIHI) should assume responsibility for establishing and maintaining health ICT data standards, minimum data sets and unique identifiers. CIHI could partner with the Canadian Standards Association and the CHA, and its provincial/territorial members, and consult with organizations such as the International Standards Organization (ISO) to develop models of integrated standards. All stakeholders must be involved in the development and implementation of standards.

The establishment of an ICT "best practices inventory database", accessible to all health managers, would advance knowledge within the health system.

Health care professionals and managers should utilize existing technologies (such as teleconferencing) to exchange information and launch agreed-upon initiatives, and move innovations in ICTs or standards more quickly from the conceptual to the delivery stage.

Individuals and health care professionals must become involved in making consumers and caregivers aware of the benefits ICTs can offer. However, special consideration must be given to individuals who, because of their age or other factors, may oppose technological enhancements to the health care system.

Participants of both workshops were enthusiastic in sharing their knowledge, practices and uses of ICTs within their own organizations and energized by the opportunity to contribute to the vision of an ideal health system.

Said one of the participants: "If we focus on (health) outcomes, this is the way to the future."