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Information Technology, Health and Health Care:
A View to the Future

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Executive Summary

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In the next 25 years, the information society and the information economy will change our way of life, including some of the most fundamental cultural, social, economic and other determinants of our health. It also will dramatically alter the way in which health care is delivered and medicine is practised.

Recognizing these profound impacts, CPRN's Towards a New Perspective on Health Policy project included a look at some of the ways in which information technology may affect health status and the delivery of health care in Canada in the 2020s. This part of the project involved a scan of the literature and a one-day workshop in which participants considered a set of four alternative societal scenarios, and the implications for health and health care of the deployment of information technology in each of these scenarios.

Information Technology (IT) includes computer-based technologies and the communications technologies that make computers available to people in their homes, workplaces and communities all over the world. Because the capacity and speed of computers per unit cost doubles every two years (Moore's Law), the cost of connection, computing power, memory and sensing will become trivial, while the methods of sensing and connecting will be beyond count.

By looking at the leading edge of technology today, we can begin to anticipate the technologies that will be fully deployed by the 2020s.

This paper is designed to help readers imagine the consequences of this technological revolution for the world in which we live. It focuses especially on the way these technologies are likely to transform the economic, social, and biological determinants of health and to revolutionize the practice of health care.

The Scenarios Workshop

Building on previous scenario exercises in Canada and abroad, the CPRN team developed four alternative scenarios for use in the workshop:

- "The Market Triumphs," a future dominated by powerful private sector corporations;

- "Evidence-based Government," a future of rational and regulated change;

- "Healthy Communities," a more decentralized, environmentally sustainable and diverse future; and

- "Harder Times," in which the worst fears of the pessimists of the late 1990s have come true.

Through a consideration of these four alternative scenarios, workshop participants were able to consider the implications of information technology for health and health care in very different value contexts. Nonetheless, certain common themes emerged:

- There will be continued technological change and continued social inequality, with tension between local values and local control on the one hand, and global values and global control (corporate or governmental) on the other.

- While information technology holds out a hope of greater knowledge, power and participation – its liberating potential – there is also the potential for either the government or private sector to play a Big Brother role.

- Above all, it is not possible to look at information technology in isolation without recognizing that it is contextualized by societal values and by social and economic conditions.

The dialogue in the workshop made it clear that there is no pre-ordained future embedded in these technologies. Much will depend on how we choose to use them. The exercise does serve to highlight the nature of these choices and can, therefore, be used to anticipate key turning points in public policy and in social and economic decision making. These implications are divided into two groups: "socio-cultural" issues, and a set of health care system issues.

Socio-cultural Issues

Information technology has the potential to heighten inequality in knowledge, power, wealth and access to services. At the same time, IT could increase access, particularly in remote rural and northern communities.

- New forms of non-spatial and virtual communities, and increased connectedness, are emerging, although, at the same time, there may be increased social isolation for some.

- Knowledge and power will increase for people in their communities and society as well as within the health care system. However, this raises the spectre of information overload.

- The role for the private sector in health care will increase because of its domination of the information technology sector. Not only does this threaten universal access to health care, it may also reduce access to technology and databases that the private sector considers to be proprietary. Simultaneously, the private sector may be in the best position to provide universal access to the IT demands of the health care sector, and fostering such linkages and exchanges may be an important direction for future policymakers to consider.

- Information technology will increase choice and customization of products and services for individuals in society as a whole, and in health care in particular.

The potential for abuse of information technology by both the public and private sectors increases because of their ability to control access, and increase monitoring and surveillance of individuals and communities.

Health Care System Issues

The key driver for change in the health care system is the ability to know what is happening and what works. For example:

- Increased knowledge of what is happening and what works may lead to better system management through better outcomes and lower costs.

- The availability of better information could lead to significant shifts in power and control within the system, and to changes in the ways that health professionals do their work, are educated and trained, and conduct research.

- The quality of information will become a concern for both providers and for patients, with attention focused on information within the system itself as well as the information provided through the Internet and other sources; how valid and reliable is the information, and who decides?

- This also raises issues of liability – in a global system, how is it possible to manage and control liability and ensure accountability within provincial and national contexts?

Policy Concerns

The current momentum in the development of information technology suggests that rapid changes in society are going to happen, and that they could accelerate beyond anything we currently experience or can even imagine What then are the policy choices facing countries like Canada? These choices have to do with how information technology is used, to what end, and what values and principles will guide its use. Some of the significant policy considerations are:

- How can we avoid the potential negative impacts of information technology on mental and social well-being?

- How can information technology be used to enhance local democracy, social networking and social support?

- How can we ensure that information technology enhances rather than harms the health of the workforce? This has implications for labour and occupational health policies.

- How will the wealth that is created by technology be redistributed in society, if there is indeed a reduction in the amount of time spent working and if automata increasingly replace workers?

- How will public policy avoid the further polarization of income in society that may result from the development and application of information technology?

- How – if at all – will the content of the Internet be judged both in terms of its content and its values? Is there a role here for public policy?

In the health care sector, some key policy issues include:

- Since a universal health care system in the future will require universal access to information technology, will it be necessary to amend or re-interpret the *Canada Health Act*? How will universal access to information technology be ensured?

- How will the potential for enhancing the capacity of Canadians for self-care be realized? What

changes are needed to public education, what policies are needed to support the development of the appropriate software and hardware technologies?

- Can and should the funding of self-care be included as part of the publicly funded health care system and how can funds be shifted from professional care to self-care?

- What standard national databases and information collection systems will be needed to ensure local flexibility and autonomy, and strong safeguards for confidentiality?

- What support is needed, in the form of education and incentives, to ensure that health care providers actually use the information technology that is available?

- How will issues of transnational regulation, accountability and liability for health professionals and providers of health information and services be addressed?

- Since information technology will change how services are provided, where and by whom, how should policies governing the payment for such services be changed?

In summary, this effort to anticipate future impacts of information technology on health and health care has revealed a number of apparent contradictions:

- between the maintenance of public sector involvement in health care and forces pushing toward increased private sector involvement;

- between individual privacy and confidentiality of information on the one hand and the public need to know, through access to aggregate data, on the other;

- between the old primacy of location and geographical determinism on the one hand and the fact that cyberspace is not geographically located or clearly demarcated with borders;

- between the potential for increased democratization and empowerment and the threat of greater social control by either government, big business or both; and

- between the old view that more information leads to greater uncertainty, and our growing understanding that increased information, while often leading to a greater depth of understanding, does not necessarily lead to precision or certainty.

Canadians should be reassured that they can influence the extraordinary forces for change unleashed by information technologies. There is no predetermined future in these scenarios. At the same time, it is essential for the public and for policy advisors to begin to think through what values and principles, what priorities and constraints we wish to impose on the implementation of these technologies to ensure that they lead to the greatest possible good for future generations.