
An Input for Health System Strategy Development, Policy Development and Planning

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Ministry of Health and Long-Term Care

Copies of this report can be obtained from the Health System Planning and Research Branch

INFOline: 1-866-532-3161

TTY 1-800-387-5559
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ADM's Foreword

Welcome to the third edition of the Ministry of Health and Long-Term Care's Externally-Informed Annual Health Systems Trends Report, in which updated references and examples are provided for the trends identified in the January 2009 edition.

The trends discussed in this report are occurring internationally, largely independent of the activities of governments and health system managers. The Trends Report was designed to raise awareness of the trends among health system policy professionals and managers in order to support evidence-informed policy development across the health system. For example, the person-centred care trend is relevant to, and already reflected in, the activities of hospitals, providers, LHINs and the ministry.

Since its inception, the Trends Report has been guided by input from external experts. One of their key recommendations was to organize the trend information around growing challenges and emerging responses; this way the Trends Report can help us learn from the experience of others in Ontario and internationally. In the face of a myriad of important issues, the Trends Report may help us to decide what to focus on, research, and analyze in more detail. The emerging responses to the issues discussed in this report are not solutions in themselves, but they do complement existing tools and reports, such as those prepared by the Medical Advisory Secretariat, the Health Analytics Branch, and external organizations, such as the Institute for Clinical Evaluative Sciences.

We hope that you will find the information in the Trends Report both interesting and helpful. The Trends Report is one in a series of planning tools produced by The Health System Planning and Research Branch of the Health System Strategy Division, where we are committed to providing research evidence to provide a better foundation for cooperative policy development. Other planning tools prepared by our branch include the Health Horizon quarterly newsletter, an electronic repository of research reports, and rapid literature reviews on request. We would be pleased to provide additional research on the trends and other important topics for ministry and LHIN clients.

I would like again to thank the panel of external experts for their continued help in shaping and informing this report. Since the publication of the first edition of the Trends Report, there have been several major developments associated with each of the trends identified by the expert panel; their foresight in the selection of the trends has ensured the report's relevance for health system policy.

Vasanthi Srinivasan
Assistant Deputy Minister (A), Health System Strategy Division

Trends Report Contacts
Health System Planning and Research Branch:
Director (A) – Alison Paprica Ph.D. (416) 327-0951
Manager (A) – Catia Creatura-Amelio (416) 327-7948
Staff Lead – Andrea Proctor (416) 327-8320
INTRODUCTION

This report is designed to provide actionable information supporting planners and decision makers throughout the health system. The report development process incorporated input from external experts to bring in perspectives from outside the Ministry of Health and Long-Term Care.

Most of the content is drawn from research evidence. However, trend information was also obtained from other sources including government publications, websites and mainstream media. We have presented the information as emerging issues and challenges followed by the responses of various jurisdictions to address the trend.

An External Expert Advisory Panel generously provided their time and identified ten important trends for strategy development, policy development, and planning. Once these were researched, six of the experts used a modified Delphi process to rank them. The four trends with the highest ranking are the focus of this report. However, we have included all trends and we can provide detailed background briefs for each one. It is important to note that these trends would naturally vary depending on the participating experts. Therefore, the ten trends identified represent an informed outlook, as opposed to a definitive list.

In this third edition of the Trends Report, the trends identified by the External Expert Advisory Panel in 2008 have not been changed, but more recent research evidence related to growing challenges and emerging responses has been added. The ministry’s Health System Strategy Division looks forward to expanding the process and expert input in future. Current plans are to continue to update these ten trends annually and to conduct the complete modified Delphi process, with the possibility of identifying new trends, every three years.

The ministry thanks the following members of the Trends Report External Expert Advisory Panel:

- Harvey Schipper: Principal, Minden Schipper Associates
- David Henry: CEO, Institute for Clinical Evaluative Sciences
- Jonathan Guss: CEO, Ontario Medical Association
- Brenda Zimmerman: Director, Health Industry Management Program, Schulich School of Business
- Peter A. Singer: Director, Rotman-McLaughlin Center for Global Health, University Health Network and the University of Toronto
- Jack Cashman: Venture Partner, Genesys Capital
- Neil Wilkinson: Former Chair, Capital Health: Edmonton Area
- Imogen Evans: Former Executive Editor of Lancet Journal
- John Evans: Chair, MaRS Discovery District
- Gabe Sékaly: Former CEO, Institute of Public Administration of Canada
- Judy Middleton: Former CIO, Osler Health Center

Trends Report Process

Year 1
Top 10 health trends identified by external experts using modified Delphi

Years 2 & 3
Updated references and examples are provided for the trends identified in

New external expert advisory panel convened with the possibility of identifying new trends.
The ten health systems trends identified by the expert panel were:

1. Person-Centred Care
2. Sustainability, Productivity, and Innovation in the Health Care System
3. Chronic Disease Prevention and Management
4. Health Human Resources Management
5. Mental Health and Addictions
6. eHealth
7. Public and Population Health
8. Disparities in Health
9. Consumerism in Health Care
10. Health Care Facility Infrastructure
PERSON-CENTRED CARE

Why is this trend important?

Person-centred care, sometimes referred to more narrowly as patient-centred care, encompasses: respect for people’s values, preferences, and expressed needs; coordination and integration of care; information, communication, education; physical comfort; emotional support and alleviation of fear and anxiety; involvement of family and friends; and transition and continuity.1 According to the declaration on patient-centred health care by the International Alliance of Patients’ Organizations (IAPO), to achieve patient-centredness, health care must be based on the principles of respect, choice and empowerment, patient involvement in health policy, access and support, and information.2

One of the observable forces contributing to the shift in viewing patients as consumers of health care is searchable health information that is quickly and easily accessible through the Internet3, 4, 5 and through new media tools such as weblogs, instant messaging platforms, video chat, and online social networks.6

Growing Challenges

Growing challenges related to person-centred care include:
- an aging population
- vocal patient groups
- increased demand for alternative medicines
- changing patient expectations

In Canada, the aging baby boomer generation may significantly alter health services usage pattern through:
- increased use of homecare
- increased visits to doctors
- additional diagnostic testing
- a demand for shorter waiting lists, advanced technology, advanced surgical procedures, and alternate services such as elder care, palliative care and respite care.7

Data from a 2008 survey by Ipsos Reid and the Canadian Medical Association indicated that only half (55%) of Canadians agreed that the health care services in their community were patient-centered, while three in ten (31%) disagreed.8 Recent reviews of the literature note that the implementation of patient-centered care has been hampered by the lack of a clear definition and consistent method of measurement.9, 10 Research has shown that patient-centered interactions promote adherence and lead to improved health outcomes.11

Internationally, the European Foundation for the Improvement of Living and Working Conditions refers to the increasing number and influences of vocal patient groups as an example of increasing involvement of patients in decision making.12 A Swedish population-based study on the influence of perceived health on health utilization notes increasing demand for alternative medicine in the country and recommends the investigation of a relationship between alternative medicine and patients with multiple symptoms.13 A survey of Australians in Perth identified two expectations of the public for major changes in the development of future health services:14 shifting services from inner to outer metropolitan hospitals.
wherever possible in order to provide care closer to where most people live and assuring high quality equivalents from inner metropolitan hospitals for locally delivered services.

**Emerging Responses**

**Involvement of Patients in Decision Making**

The public can be involved in health care decision making in many ways including: as representatives on priority-setting committees, as representatives on executive committees and boards (i.e., hospital boards and regional health authorities), as members of citizens' councils to provide ongoing advice on specific matters, and as participants of surveys, citizens' juries, community meetings, focus groups and the like, to provide feedback on all elements of priority setting. In Canada, organizations that consult citizens include: hospital boards, the Health Council of Canada, The Canadian Agency for Drugs and Technologies in Health, and The Canadian Cochrane Musculoskeletal Group.

**Person-Centered Initiatives**

On June 3rd, 2010, the Ontario Legislature passed the Excellent Care for All Act, which emphasizes the role of patients and their caregivers in their own health and in a sustainable health care system. The act further recognizes that a high quality health care system is one that is, among other things, accessible, appropriate, equitable, integrated, patient centred, and states that the government is committed to ensuring that health care organizations are focused on creating a positive patient experience.

Other Ontario-based patient-centered initiatives that have been introduced by the government include:

- Ontario’s Emergency Room Wait Times Strategy.
- An Aging at Home Strategy that enables seniors to continue living in their homes.
- The Ontario Diabetes Strategy was launched in July 2008 which includes tools and education to empower patients.
- The Health Care Options website was introduced in 2009 which provides information that will enable Ontarians to make informed decisions about where to go for their front-line health care needs.
- The recently passed Excellent Care for All Act requires that health care organizations conduct surveys to assess patient and employee satisfaction, and to have a patient relations process (to address patient, client and caregiver relations and patient declaration of values).

In 2007, the Institute for Healthcare Improvement in the US developed a new health care framework – “The Triple Aim” – that simultaneously addresses the (1) patient experience, (2) the cost per capita and (3) the health of specific populations.

In the US, the “medical homes” concept has evolved to embrace different patient populations including patients under state Medicaid and Children’s Health Insurance Programs (CHIP). A medical home is an enhanced model of primary care in which care teams attend to the multi-faceted needs of patients and provide whole person comprehensive and coordinated patient-centred care. Since 2006, more than 30 states have initiated projects to improve Medicaid and CHIP to advance medical homes. In the past year, the US Department of Veterans Health Affairs (VA) has embraced the medical home model as the future standard of care for Veterans, and has implemented a care management model which uses a platform of standardized, software-aided mental health assessments and clinical care managers to deliver evidence-based treatments for depression, anxiety, and substance abuse in primary care settings.
A 2008 parliamentary review of the UK NHS highlighted the importance of locally led, patient-centred and clinically driven health care.\textsuperscript{30} Recently, the new coalition government has unveiled a plan to make structural changes to the NHS in an effort to develop “a more responsive, patient-centred NHS.”\textsuperscript{31} The plan is controversial,\textsuperscript{32, 33, 34} but if enacted, patients would be granted greater access to information and greater flexibility in choosing health care providers. HealthWatch England, a new independent consumer organization would be created with the goal of strengthening the collective voice of patients by ensuring that the views and feedback from patients and caregivers are an integral part of local service acquisition of health and social services care. There would also be a shift in how success is measured; focus would shift from process targets (e.g., wait times) to outcome measures (e.g., improving cancer survival rates).\textsuperscript{35}

**Consumer Driven Changes to Health and Health Care Delivery**

Increased interest in health care consumerism has created an environment conducive to growth in the use of decision aids to support patient decision making. Decision aids are evidence-based tools designed to prepare individuals to participate in making specific and informed values-based choices about disease management and treatment options, prevention, or screening.\textsuperscript{36} Decision aids have been developed in several countries including Australia, Canada, China, Finland, Netherlands, United States, and the United Kingdom.\textsuperscript{37}

In the US, Consumer Driven Health Plans (CDHPs) are one tool in a consumerism strategy, wherein consumers take more responsibility not only for costs but also for lifestyle choices and treatment decisions.\textsuperscript{38} Consumer driven health plans are typically a high-deductible health plan (HDHP)\textsuperscript{39} and employers often offset the higher out-of-pocket costs of CDHPs by offering employees a health reimbursement arrangement (HRA) or a health savings account (HSA) and contributing funds.\textsuperscript{40} A recent survey of 11,413 employers in the US found that CDHPs experienced continued growth in 2010, though at a slower rate than in 2009; the rate of growth in 2010 was found to be 18.1%, about half that of 2009.\textsuperscript{41}

**Retail-Based Medical Clinics**

In response to US consumer demand, there are now a number of retail-based medical clinics including the health centres of CVS pharmacies, Target Corporation, Wal-Marts, and MinuteClinic.\textsuperscript{42} The American Association of Family Physicians identified the following attributes as important to the patient care offered in retail clinics: scope of services, evidence-based medicine, team-based approach, referrals, and electronic health records.\textsuperscript{43} According to one study, ten routine procedures* encompassed more than 90% of US retail clinic visits.\textsuperscript{44} These same ten routine procedures made up 13% of adult primary care physician visits, 30% of paediatric primary care physician visits, and 12% of emergency department visits. It is unknown whether there will be a future shift of care from emergency departments or primary care physicians to retail clinics. However, a 2007 US poll indicated that 15% of children and 19% of adults were “very likely” or “likely” to use a retail clinic in the future.\textsuperscript{45} As of July 2009, there were approximately 1,107 retail clinics in operation in the US. The annual growth rate of retail clinics from 2000-2007 was 65%; while the growth rate

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* The ten most routine medical problems included: upper respiratory infection, sinusitis, bronchitis, pharyngitis (sore throat), immunizations, otitis media (middle ear infection), otitis external (outer ear infection), conjunctivitis (pink eye), urinary tract infection, and screening lab/blood pressure test.
currently sits at 10-15%, it is expected to accelerate above 30% from 2013-2014, with the market topping out at 4,000 clinics in 2015.46

A background document is also available for this trend. See: “Trend 1 – Person-Centred Care”
SUSTAINABILITY, PRODUCTIVITY, AND INNOVATION IN THE HEALTH CARE SYSTEM

Why is this trend important?

Health system sustainability is critical in order to have a system that is able to meet current and future obligations and expected outcomes; adjust to meet new demands and unexpected system pressures; improve and be capable of sustaining improvement; and provide increasing values in both economic and health outcomes.47

Four indicators can be used to measure characteristics of health system sustainability: health spending, productivity, health human resource supply, and investment in information management.48 Productivity is estimated by comparing the fluctuations of inputs and outputs. Inputs are any resources invested in the system, and outputs refer to the services provided to patients.49 However, estimating productivity in health is complex50, and health care quality (e.g., safety, efficiency and timeliness) and innovation are also important to sustainability.51, 52, 53

Growing Challenges

Sustainability

Ontario public health care spending is projected to increase over the long-term due to:
- increased utilization of services,54
- increases and aging in the population,55
- inflation, and new, more expensive treatments,56, 57
- increased consumer expectations,58
- new diseases,59 and
- an increasing prevalence of chronic disease.60, 61

The Ontario Ministry of Finance projects a 6.0% annual growth rate for provincial government health care expenditure from 2009/10 to 2024/25, which will account for 55% of Ontario’s budget.62 Health costs currently make up 46%63 of Ontario’s total program spending and are expected to make up an even larger proportion of program spending in the future.64 In Canada, total health expenditure was 10.7% of the gross domestic product (GDP) in 2008, and is forecast to reach 11.7% in 2010.65 The trend of increased health spending has been seen internationally as well; health spending as a proportion of gross domestic product (GDP) is expected to increase in countries such as Australia,66 the US, 67 and the UK68 in the coming years.

There is also concern that the current budgeting system for Canada’s hospitals (block grants or global budget) is not providing enough incentives for efficient and high quality hospital care, particularly in Canada’s publicly funded health care system.69 This trend has also been observed internationally.70, 71
Productivity and Quality in the Health Care System

Evidence in Canada and the US suggest that productivity and quality rates have not kept pace with health care investments.\textsuperscript{72, 73, 74}

A report by the Ontario Health Quality Council found that in 2009, 43\% of family physicians in Ontario had electronic medical records (EMRs), compared to 49\% in Alberta and British Columbia and 95-99\% in Australia, New Zealand, the UK, Norway and the Netherlands. Further, the report found that Ontario doctors with EMRs are not fully utilizing available tools to improve quality, such as electronic reminders for guideline based interventions of screening tests (16\%) or checks for drug errors (28\%). In Australia, nearly all doctors use these tools.\textsuperscript{75}

Innovation as a Driver of Cost in the Health Care System

Despite Canada’s investments in innovation,\textsuperscript{76, 77} salaries, patent output, and R&D per capita is lower than in the US.\textsuperscript{78} It has been suggested that making a large investment in biotechnology may create a paradox since Canada’s federal and provincial governments – as the main buyers of biopharmaceuticals – are focused on cost containment and may not be able to purchase these new drugs.\textsuperscript{79} From 2001 to 2005 biopharmaceutical sales increased (between 82\% and 235\%) in the US, Canada, France, Germany, Italy, Spain, the UK, Australia, and Japan.\textsuperscript{80}

Emerging Responses

Sustainability

Priority-setting and rationing of services have led to savings in health care expenditures in Oregon\textsuperscript{81} and has been recommended as an alternative approach to health care reform in the UK.\textsuperscript{82}

Sustainability can be addressed through assuring appropriateness of medical treatments. The Ministry of Health and Long-Term Care and the University Health Network, in partnership with St. Joseph’s Healthcare Hamilton, have developed an MRI and CT online decision support tool for use by physicians to determine appropriateness of testing.\textsuperscript{83}

Similarly, private insurers in the US are increasingly contracting with radiology benefit management programs (RBMs) to reduce overall use and expenditures for radiology services. In most RBMs, referring physicians are required to submit requests for advanced imaging to the RBM and obtain approval before such procedures are performed. The RBM uses algorithms and clinical decision–support criteria, based on evidence from published clinical literature, to determine the medical necessity of the diagnostic exam or to suggest whether an alternative treatment is clinically indicated.\textsuperscript{84} A recent study comparing the records of 459 CT and MRI examinations to the guidelines used by a RBM found that 26\% of the examinations were considered inappropriate by the RBM’s standards.\textsuperscript{85}

In addition, as part of the 2009 US economic stimulus package, $1.1 billion of the package was designated for comparative-effectiveness research. Comparative-effectiveness research compares clinical outcomes, effectiveness, and appropriateness of items, services, and procedures that are used to prevent, diagnose, or treat diseases, disorders, and other health conditions.\textsuperscript{86}

Moving towards a prospective fee-for-service (i.e., Diagnostic Related Group – DRG) is another approach being used to address sustainability. DRG requires a government to pay a fee to the service provider
(hospital) for each individual cared for based on the average expected costs of treating the patient’s condition. This model has led to cost reductions and increased productivity in Sweden, Denmark, and Australia.87

Productivity and Quality

In 2010, Ontario passed the Excellent Care for All Act, which will make health care providers and executives accountable for improving patient care. The legislation requires that health care organizations publish annual quality improvement plans, create quality committees to report on quality related issues, and link executive compensation to quality plan performance improvements.88

The Ontario Health Quality Council reports that the province has made significant improvements in the use of information technology, particularly in the use of electronic medical records (EMRs). The proportion of family doctors who have an EMR system has risen from 26% in 2007 to 43% in 2009 in part due to the OntarioMD program,89 which funds and assists physicians to acquire, implement and adopt IT.

Lean initiatives to achieve productivity and quality (patient safety) gains have been demonstrated with success in various jurisdictions including the University Health Network,90 North York General91 and St. Joseph’s92 hospitals in Toronto, a Quebec93 hospital surgical ward and the UK government.94 North York General hospital won a national patient safety award in 2008 due to its implementation of Lean methodology to improve patient flow.95 The implementation of Lean healthcare in one Quebec hospital resulted in a 30% reduction in usage of medical equipment, a potential reduction of costs ($500,000),96 and waiting time reductions.97, 98

Surgical checklists are a tool being studied to determine if they can improve team communication and consistency of care to reduce complications and deaths associated with surgery. The World Health Organization funded an eight country study (including one site in Canada) which found implementation of a surgical checklist program was associated with concomitant reductions in the rates of death and complications among adult patients,99 and a recent study found that facilities using a training program which included the use of checklists in the operating room had an 18% reduction in annual mortality rate.100 A recent cost analysis, found that the checklist would generate cost savings once it prevented at least five major complications per year.101

Innovation Focused on Sustainability in the Health Care System

In Canada, the National Research Council’s aims include concentrating R&D on developing solutions to national challenges in health and wellness, and strengthening Canada’s innovation system.102 The Canadian government is supporting innovation through R&D investments103 and raising awareness of Canadian R&D.104 Patient self-management innovation tools are also new ideas being proposed to reduce costs and improve the quality of care around the world.105 For example, patient decision aids are being used in various clinical situations in several countries to prepare individuals to participate in making specific and informed values-based choices about disease management and treatment options, prevention, or screening.106, 107 Furthermore, the communication properties and the growing market penetration of mobile phones are creating opportunities for innovation in promoting cardiovascular disease self-management in developing countries through support of lifestyle and behaviour modification. 108

The US health care reform law mandates the creation of a Center for Medicare and Medicaid Innovation (CMI) by January 2011. The purpose of the of the CMI is to test innovative payment and service delivery
models to reduce program expenditures under Medicare and Medicaid, while preserving or enhancing the quality of care furnished to individuals under the programs.\textsuperscript{109} The $10 billion worth of grants distributed by the CMI from 2011 to 2019 will be used to test promising models and expand successful pilot programs.\textsuperscript{110}

A background document is also available for this trend. See: “Trend 2 – Sustainability, Productivity and Innovation in the Health Care System.”
CHRONIC DISEASE PREVENTION AND MANAGEMENT

Why is this trend important?

In 2005, chronic diseases accounted for 35 million deaths worldwide, or 60% of all deaths.\textsuperscript{111} This is projected to rise to 69% in 2030.\textsuperscript{112, 113} In 2008, 39% of Canadians reported having at least one of seven common chronic health conditions.\textsuperscript{114} In 2005, 50% of Ontarians age 45-64 years had at least one of nine common chronic conditions; the rates among 65-74 year olds and those 75 years and over were 77% and 84%, respectively.\textsuperscript{115} As more people suffer from chronic disease, the costs associated with these diseases also increase.\textsuperscript{116, 117}

Opportunities for chronic disease prevention and management in Ontario/Canada may emerge if and when stakeholders are connected to funding opportunities, research findings, data, surveys, and clinical, patient, and public health information. Examples of this approach include the Agency for Healthcare Research and Quality (AHRQ)\textsuperscript{118} and the American Association of Retired Persons (AARP).\textsuperscript{119}

Growing Challenges

The increasing incidence of chronic diseases in children and adolescents\textsuperscript{120, 121} and the burden of co-morbid chronic diseases\textsuperscript{122, 123} along with the associated high costs to treat chronic diseases\textsuperscript{124} are trends observed in Canada and internationally.

Children and Adolescents

Diabetes mellitus is one of the leading chronic diseases of childhood and youth.\textsuperscript{125} In Canada, three out of every 1,000 one- to 19-year-olds (over 24,000 individuals) had diabetes in 2006-2007, and it is predicted that this figure will increase by more than 10% to almost 28,000 by 2012.\textsuperscript{126} In Ontario, there has been an annual three percent increase in the rate of children diagnosed with diabetes. Most children with diabetes have Type 1, but a growing number of children are being diagnosed with Type 2 diabetes.\textsuperscript{127} Asthma\textsuperscript{128, 129} and Inflammatory Bowel Disease\textsuperscript{130} are also chronic conditions that have been increasing among children in Ontario and in other international jurisdictions.

Co-morbidities

Of those Ontarians over 45 with one chronic disease, 70%, or 2.6 million Ontarians, have multiple chronic conditions.\textsuperscript{131} The most commonly occurring co-morbidities in Ontario include\textsuperscript{132}:

- arthritis/rheumatism and hypertension
- heart disease and hypertension
- heart disease and arthritis/rheumatism
- diabetes and hypertension
- diabetes and arthritis/rheumatism

Statistics Canada’s Canadian Community Health Survey (CCHS) reports on chronic disease prevalence in Ontario. Recorded co-morbid afflictions show that people with diseases such as asthma, cancer and chronic bronchitis had a high prevalence of mood disorders/depression co-morbidity (> 10.0%), while some other chronic diseases had approximately 6% co-morbidity (see Figure 1).\textsuperscript{133}
Recent data highlight the link between diabetes and cardiovascular disease. Compared to non-diabetic Canadians, adult diabetics are hospitalized almost four times more often for heart failure and about three times more frequently for ischemic heart failure, heart attack and stroke. In 2006-2007, 62.8% of adults (aged 20 years and older) with diabetes also had hypertension, such that 5.1% of Canadian adults were living with both conditions.

Emerging Responses

According to the WHO, a healthy diet, regular physical activity and tobacco avoidance could potentially avoid 80% of premature heart disease, stroke, and type 2 diabetes, in addition to 40% of cancers.

Some examples of programs and initiatives aimed at preventing/improving chronic disease outcomes include:

- Family health teams and multidisciplinary health teams (e.g., Ontario’s Family Health Teams, British Columbia’s Abbotsford and Mission Seniors Clinic). These teams are composed of doctors, nurses, nurse practitioners, and other health care professions who will work together to provide more coordinated health care and improved management of chronic diseases. The Quality Improvement and Innovation Partnership (QIIP) helps Ontario’s Family Health Teams learn and adopt quality improvement techniques. QIIP recently launched Learning Communities, a quality improvement program supporting primary care providers; the first wave of the program focused on six areas: diabetes, asthma, hypertension, chronic obstructive pulmonary disease, integrated cancer care and office practice redesign.

- Legislation (e.g., The Smoke-Free Ontario Amendment Act 2008 came into effect in January 2009 and makes smoking in any motor vehicle illegal when passengers under the age of 16 are present).

- Prevention programs (e.g., Ontario’s Chronic Disease Prevention and Management Strategy which starts with diabetes, The Canadian Heart Health Initiative, The US Diabetes Prevention Program which is based on strong evidence showing the effectiveness of diet and exercise in pre-diabetic populations, and British Columbia’s ActNow BC, a cross-government health promotion initiative, whose strategies were recently identified as “promising best practices” by the WHO).

- Programs aimed at addressing co-morbidities (e.g., The CDC Arthritis Program).
Global initiatives (e.g., in June 2009, The Global Alliance for Chronic Disease was formed by six of the world’s foremost health research agencies, including the Canadian Institutes of Health Research (CIHR), to collaborate in the fight against chronic, non-communicable diseases: cardiovascular disease, several cancer, chronic respiratory conditions, and type 2 diabetes).148)

Health care case management approaches (e.g., Chronic Care Model149) help coordinate care to improve both its continuity and quality with lower costs.150, 151, 152

A background document is also available for this trend. See: “Trend 3 – Chronic Disease Prevention and Management.”
HEALTH HUMAN RESOURCES MANAGEMENT

Why is this trend important?

Health human resources (HHR) is a critical factor in health policy planning across Canada and internationally. The Pan-Canadian Health Human Resource Strategy states that: “appropriate planning and management of HHR is key to developing a health-care workforce that has the right number and mix of health professionals to serve Canadians in all regions of the country.”153 The changing nature of medical practice represents both a challenge and an emerging solution, and investments in increasing the number of health practitioners are beginning to produce results.

Growing Challenges

Planning for HHR Supply

Trends in Ontario show that in the future the average physician will deliver fewer hours of care than today’s average physician.154 An increase in the number of female medical students (57.8% in 2007) and current trends in female physician work hours suggest that an overall decrease in doctor productivity is to be anticipated in Canada which may further compound Canada’s HHR shortages.155 An aging workforce may also affect supply. In 2008, the average age of the physician workforce was 49.8 years; the average family medicine physician was 49.0 and the average specialist was 50.6; prior to 1994, there was very little change in the average age of physicians, but since 1994, the average age of physicians has been increasing, particularly for family medicine physicians (the average age between 1994 and 2008 increased by 5.1 years).156 However, an increase in the number of elderly and the number of persons with chronic diseases157 will require more health care.158

Ethical Concerns with Recruiting Professionals from Abroad

There is a global shortage of approximately 4.3 million health workers, with the greatest shortages in the poorest countries.159 Many developed countries rely on recruiting health professionals from developing countries to meet their HHR supply needs. For example, Canada recruits many International Medical Graduates from India and South Africa to the physician workforce.160 The number of full time equivalent International Medical Graduates (IMGs) in Ontario increased from 67.43 in 2000 to 719.76 in 2009; proportionally, this corresponds to an increase from 2.0% to 13.3% of all postgraduate medical trainees.161

Distribution of HHR

Aside from the issues of training and recruiting physicians, there is the problem of efficient distribution. Geographical differences create numerous challenges for health care providers and planners. Rural areas in Canada162, the United States163, and New Zealand164 are experiencing difficulties recruiting and retaining adequate medical professionals. In 2006, approximately 20% of the Canadian population was located in rural areas, while less than 10% of physicians were located in these areas165 and only 12.2% of registered nurses resided in rural and remote areas (in 2007).166
Emerging Responses

Increasingly Efficient use of HHR

In Canada, there are a number of efforts underway to make the most of scarce health professionals. Multidisciplinary teams, such as Ontario’s Family Health Teams, maximize the efficiency of HHR, providing improved access and better health outcomes. Pharmacists and physiotherapists are examples of allied health professionals that are being studied to determine their roles in primary health care teams in Ontario. The use of physician assistants, acute care nurse specialists and primary health care nurse practitioners in emergency department teams are being piloted by Ontario to address the lack of physician resources.

Several Canadian jurisdictions have passed legislation to expand health care professionals’ scope of practice to give patients more options for care and allow health professionals to deliver more services. In 2009, Ontario passed legislation to allow nurse practitioners, pharmacists, physiotherapists, dieticians, midwives and medical radiation technologists to deliver more services. The legislation also changed the rules for administering, prescribing, dispensing, compounding, selling and using drugs in practice for chiropodists and podiatrists, dental hygienists, dentists, midwives, nurse practitioners, pharmacists, physiotherapists and respiratory therapists.

Increasing Current and Future Capacity

Significant increases in the training of health professionals are underway in Canada. The entering class of medical students in Canada in 2008/09 was 68.3% larger than the class of 1998/99; for nursing, the increase from 1997 to 2007 was 51.4%. The workforce itself is also changing to meet increased demand through such initiatives as extending the careers of health care providers (e.g., Ontario’s Late Career Nurse Initiative) and increasing the opportunity for full-time employment of new nursing graduates (New Graduate Guarantee).

There are also efforts to move HHR planning beyond models based on simple population-provider ratios. For example, the Ottawa Hospital has developed a program logic model to more accurately predict the number of nurses the hospital would have to hire annually for three and five years. This workforce planning initiative moved the organization from a reactive to a proactive mode, supported innovative recruitment strategies and helped to justify budget requests, thus aligning hiring with the business plan of the hospital.

Responses to HHR Management by Other Jurisdictions

The United Nations launched the eight Millennium Development Goals to increase health levels globally. These include explicit recognition of the need to train more health professionals annually. Title V of the US health reform law addresses that nation’s health care workforce; it outlines plans to increase the supply of a qualified health care workforce and enhance health care workforce education and training through specific initiatives such as state healthcare workforce development grants, public health workforce recruitment and retention programs, and increasing teaching capacity. In India, the government’s responses to rural doctor shortages have included a mobile health program that travels to rural areas with a few basic medical tools and over-the-counter medications, private sector medical colleges and nursing schools, a move towards community health insurance schemes, and compulsory rural placements for medical students. Norway has had success in retaining doctors in rural areas by developing a training
model which allows for postgraduate medical training to occur in remote areas, rather than in large centres. In Australia, there is suggestion that physician assistants (PAs) could help to address medical workforce shortages in rural and remote settings by practicing with remote physician supervision. There has been further suggestion that the introduction of PAs into the rural medical workforce could serve to delay the retirement of existing rural doctors, and help to recruit and retain new, younger doctors.

A background document is also available for this trend. See: “Trend 4 – Health Human Resources Management”
MENTAL HEALTH AND ADDICTIONS

Why is this trend important?

One in five Canadians will experience mental illness in their lifetime. Mental illness is accompanied by significant costs to the health care system, employers, as well as the individuals affected by mental illness themselves. In Ontario, approximately one third of claims for short and long-term disability benefits (70% of total costs) are due to mental illness, which amounts to an estimated $15 billion to $33 billion annually. The World Health Organization estimates that depression will be the second leading cause of disability by the year 2020.

Growing Challenges

A national survey found that between 1994 and 2004, the proportion of Canadians who reported having used an illicit drug in their lifetime rose from 28% to 45%. Cannabis was found to be the most widely used type of drug, followed by hallucinogens, cocaine (or crack), speed and heroin. According to 2005 survey data, 2.6% of Ontarians had moderate gambling problems while 0.8% had severe gambling problem. A 2009 survey of Ontario students in grades seven to twelve conducted by the Centre for Addiction and Mental Health found a 31% prevalence rate of psychological distress, a 12% prevalence rate of self-reported poor mental health, a 21% prevalence rate of hazardous drinking, and a 16% prevalence rate of drug use problems.

It has been suggested that depressive disorders are highly prevalent in the workplace and have a negative impact on performance, productivity, absenteeism, and disability costs. Some of the challenges of dealing with mental illnesses in the workplace include addressing misconceptions about mental illness and overcoming both the stigma and discrimination of living with mental health issues. Access to mental health services is a critical issue facing consumers nationwide. In a 2010 report, Ontario's Select Committee on Mental Health and Addictions found that one of the main problems in Ontario's mental health and addictions system is that there is no coherent system; services are provided by hundreds of agencies, costs of services are frequently not covered by public health plans and no one person or organization is responsible for connecting these various parts. As a result, many people do not access care because of the complexity of the system.

It has also been suggested that anxiety disorders and affective disorders are more prevalent among caregivers than non-caregivers.

Emerging Responses

In Canada and many other countries, the harm reduction philosophy of treatment which emphasizes the provision of specific interventions (e.g., needle exchange, drug substitution, safe injection sites) has emerged and evolved over the past two decades as a response to growing concerns about the adverse consequences of substance abuse for both the individual and society – namely the spread of HIV and other blood borne infections. On an international scale, the UN has recently committed to combat HIV/AIDS and other diseases in part through use of harm-reduction techniques such as expanding access to sterile injecting equipment.
Various jurisdictions have developed support programs to reduce the burden of mental illness in the workplace as a way to combat productivity loss.201, 202 “Supported employment” – a model that places clients in competitive jobs without extended preparation and provides on the job support from trained “job coaches” or employment specialists – has been found to be a best practice for employing people with a mental illness,203 and significantly more effective than pre-vocational training in helping severely mentally ill people obtain competitive employment.204

Approaches to improve access to mental health services include:

- ConnexOntario provides service information on alcohol, drug, gambling and mental health services under one umbrella205
- The Ottawa Court Outreach Program is a community support program for individuals with a mental illness who are involved in the legal system.206
- The “Fusion of Care” model207 of shelter based collaborative mental health care and the Annex Harm Reduction program208 for homeless men at Seaton House in Toronto.
- Nova Scotia’s Family Help telehealth program for children’s mental health services.209
- In Ontario, the Select Committee on Mental Health and Addictions recommended the creation of a new umbrella organization (Mental Health and Addictions Ontario (MHAO)) to ensure that a single body is responsible for designing, managing, and coordinating the mental health and addictions system, and that programs and services are delivered consistently and comprehensively.210

Scotland’s National Programme for Improving Mental Health has been noted as a successful public mental health policy that addresses the social determinants of mental health.211

Support for the psychological well-being of caregivers can be found in the form of respite care,212 financial support,213, 214 and community support.215

A background document is also available for this trend. See: “Trend 5 – Mental Health and Addictions"
eHEALTH

Why is this trend important?
eHealth is a consumer-centred model of health care where stakeholders collaborate, utilizing information and communication technologies, including Internet technologies to manage health, arrange, deliver and account for care, and manage the health care system.\textsuperscript{216} eHealth solutions are viewed as one of the key methods of modernizing the health care system, as they may be able to make care safer and more cost effective.\textsuperscript{217} In 2009, 21.7 million Canadians aged 16 and older (80\%), went online for personal reasons during the 12 months prior to the survey. Of those individuals, 70\% used the Internet to search for medical or health-related information, up from 59\% in 2007.\textsuperscript{218} In Canada, 61\% of consumers report wanting their physicians, hospitals and/or the government to provide them with a personal health record (PHR) or online medical record, while 6\% of consumers already maintain one.\textsuperscript{219}

Growing Challenges

The two key challenges for e-health include its high implementation costs,\textsuperscript{220, 221, 222} and resistance from health care professionals.\textsuperscript{223, 224} According to Canada Health Infoway—which is working in partnership with the country’s federal, provincial, and territorial governments to implement electronic health record (EHR) systems\textsuperscript{225}—achieving the full health “infrastructure” vision over the next 10 years will require a total incremental investment of $10 billion to $12 billion in capital and $1.5 billion to $1.7 billion in annual operating costs.\textsuperscript{226} In England’s NHS, nearly £13 billion is being spent to digitize their health system (Connecting for Health).\textsuperscript{227} In January 2009 a parliamentary report concluded that the project was at least four years behind schedule and that the costs might soar.\textsuperscript{228} In addition, it has been noted that some health professionals may be resistant to using information technologies.\textsuperscript{229} Reasons for resistance from health care professionals include the absence of secure and stable electronic systems that are compatible with current electronic systems,\textsuperscript{230} financial support,\textsuperscript{231} and organizational factors.\textsuperscript{232}

Emerging Responses

The Internet and mobile phone technologies are becoming an important medium in the delivery of care services, especially to patients with chronic conditions.\textsuperscript{233, 234}

Examples include:

- web-based public health interventions\textsuperscript{235, 236, 237}
- telemental health programs\textsuperscript{238}
- automated physical activity programs\textsuperscript{239}
- home monitoring programs after hospital discharge\textsuperscript{240}
- online pharmacist care\textsuperscript{241}
- remote diagnosis of health conditions\textsuperscript{242}
- integrated health management devices and online services\textsuperscript{243}

An increasing number of private sector companies such as Intel,\textsuperscript{244} Google,\textsuperscript{246} Microsoft,\textsuperscript{247} and Telus\textsuperscript{248} are developing e-health health applications and tools for both health care staff and patients.

A background document is also available for this trend. See: “Trend 6 – eHealth”
PUBLIC AND POPULATION HEALTH

Why is this trend important?

The Public Health Agency of Canada (PHAC) defines a population health approach as a strategy that aims to improve the health of the entire population and to reduce health inequities among population groups.\(^{249}\) Population health builds on a tradition of public health and health promotion. It has been known for decades that changes in lifestyles or social and physical environments would likely lead to more improvements in health than would be achieved by spending more money on existing health care delivery systems.\(^{250}\)

Growing Challenges

Between June 11, 2009 and August 10, 2010, there was a global H1N1 pandemic. In June 2009, when the WHO declared the start of the H1N1 influenza pandemic, there were 30,000 confirmed cases reported in 74 countries.\(^{251}\) As of August 1, 2010, worldwide, more than 214 countries and overseas territories had reported laboratory confirmed cases of H1N1, including over 18,449 deaths.\(^{252}\) In Canada, the impact of the H1N1 influenza on Aboriginal communities was of particular concern.\(^{253}\) Although aboriginal people account for fewer than one in 25 people in Canada, they accounted for more than one in 10 recorded cases of H1N1 during the first wave of the outbreak, more than one in five H1N1 hospitalizations, almost one in six intensive care cases and more than one in 10 H1N1-related deaths.\(^{254}\)

Infectious diseases such as \textit{Clostridium difficile} and Methicillin-resistant \textit{Staphylococcus aureus} are also of concern because of their increasing resistance to antibiotics and the difficulty of preventing these infections from spreading amongst patients in hospitals and other health care facilities.\(^{255}, \text{256, 257}\) It has also been suggested that climate change will start to have a greater impact on health, affecting weather patterns and environmental conditions, thus supporting new disease vectors and environmental stresses on health.\(^{258}\)

Obesity and smoking are among two of the major contributors to lifestyle associated diseases such as diabetes\(^{259}, \text{260}\), cancer\(^{261}, \text{262}\), asthma\(^{263}, \text{264}\) and cardiovascular disease.\(^{265}\) Despite the fact that the negative consequences of obesity and smoking are agreed on, obesity rates are increasing\(^{266}, \text{267, 268}\) and the significant investment in cessation programs and prevention efforts\(^{269}\) have not decreased smoking rates in Canada.\(^{270}\) In addition, health concerns related to alcohol consumption are surfacing in the international public health field,\(^{271}, \text{272}\), with one study on the harmfulness of 20 types of drugs identifying alcohol as the single most harmful drug.\(^{273}\)

Emerging Responses

Various initiatives in North American and Europe are aimed a promoting healthy lifestyle choices\(^{274}, \text{275, 276}\) such as physical activity\(^{277}, \text{278}\) and diet\(^{279}, \text{280}, \text{281}, \text{282}\) to address lifestyle associated diseases. Internationally, organizations and programs have been established to research and monitor infectious diseases such as H1N1 influenza\(^{283}, \text{284, 285}\) and nosocomial (hospital acquired) infections like \textit{Clostridium difficile}.\(^{286}\) The role of climate change on human health is currently being investigated to determine potential impacts and management strategies.\(^{287}, \text{288, 289, 290}\)

A background document is also available for this trend. See: “Trend 7 – Public and Population Health”
DISPARITIES IN HEALTH

Why is this trend important?

Health disparities are the differences in health status among population groups, often as a result of inequalities in the distribution of the social determinants of health across populations, such as income, gender, and ethnicity. It has been suggested that it is not the absolute level of income of a society that determines health, but rather how evenly that income is distributed that affects mortality and health in an industrialized society.

Growing Challenges

Recent reports from the Wellesley Institute and the Project for an Ontario Women's Health Evidence-Based Report (POWER) point to health disparities between low and high income Ontarians and between men and women living in Ontario. Health disparities also exist for different immigrant groups, people living in rural or remote communities, Lesbian, Gay, Bisexual, and Trans people, and Aboriginal Peoples. Similar findings were reported in two US reports on health disparities.

Emerging Responses

In Canada, various governmental and non-governmental initiatives have been introduced to reduce health disparities and disseminate knowledge of these barriers. Initiatives include the The Sick Kids Translation Project, Integrated Pan-Canadian Healthy Living Strategy, The Eskasoni Primary Care Project, the POWER study, Rainbow Health Ontario, Toronto's Women's Health in Women's Hands community health centre, and the Aboriginal Association of Nurses Framework for First Nations, Inuit, and Métis nursing. Several US, Australian, and European-based initiatives have the same goals, including: the UN's Global Strategy for Women's and Children's Health, the US's Office for Research on Disparities and Global Mental Health, New York City's Cancer Awareness Network for Immigrant Minority Populations, Australia's initiative to train Aboriginal and Torres Strait Islander Health Workers, counsellors and other clinic staff in Indigenous-specific health services, US-based US CLEAN Look checklist (Culture, Literacy, Education, Assessment, and Networking), and the emergence of Immigrant Friendly Hospitals in the EU.

In addition, tools such as the Health Equity Impact Assessment (HEIA) have been implemented in Australia, New Zealand, and the UK to identify the potential impacts a policy or project may have on the health of marginalized or disadvantaged populations. The Ontario Ministry of Health and Long-Term Care has developed a HEIA tool for the province which can be applied at the ministry, LHIN, or health-service provider level.

On 6 November 2008, the Secretary of State for Health in the UK announced that Professor Sir Michael Marmot was to lead a Post 2010 Strategic Review of Health Inequalities. The review proposes evidence-based strategies for reducing health inequalities in England from 2010 onwards; it presents evidence and advises on the development of a health inequalities strategy in England.

A background document is also available for this trend. See: “Trend 8 – Disparities in Health”
CONSUMERISM IN HEALTH CARE

Why is this trend important?

Consumerism in health care is the process of enabling and engaging consumers more directly in the selection and purchase of health care services. While increased consumer choice allows individuals to make better-informed choices about when, where, and from whom to seek health care, consumerism in health care may be lead to inequity, needless consumption of resources, and compromised quality of care. As well, perhaps the most serious consequence of implementing consumer choice in a publicly funded health care system, is that it could lead to a change in motivation among health care professionals (i.e., health care professionals will be more motivated to satisfy the consumer's requirements at the lowest possible cost to the provider, rather than be motivated to improve the overall welfare of the consumer).

Growing Challenges

Direct-to-consumer advertising (DTCA) is an area that may reflect an unchecked expansion of consumerism in health care that should be addressed. In 2006, US spending on DTCA reached almost $5 billion. A reduction in spending to $4.4 billion in 2008 was the first reduction in DTCA spending since the late 1990s. There are arguments both for and against DTCA. Proponents argue that it increases appropriate consultation for undiagnosed or untreated health conditions and a 2002 Ipsos Reid survey found that 68% of Canadians support direct-to-consumer prescription drug information. Opponents of DTCA claim that it can cause damage by instigating rapid, widespread use of new drugs before harmful effects are fully known, confuse and mislead consumers, and interfere with the physician-patient relationship. It may also contribute to higher costs through substitution of new expensive drugs without treatment advantages. With the ever increasing expansion of the internet and other media outlets, there is concern with the reporting accuracy of medical findings in DTCA.

As well, there has been an observed increase in complementary and alternative medicine (CAM) usage that creates potential safety risks for patients, especially those who do not share this behaviour with other health care providers. Canadians are high users of CAM compared to several European nations and the US, with one survey reporting that 25% had used CAM to treat a health problem with an alternative or natural therapy, whereas 19% had used CAM in the US, and only 13% in France.

Emerging Responses

Initiatives have been launched to influence and prevent the negative consequences of health care consumerism. Regulations and guidance on drug advertising have been put forth by the American Medical Association, the US Federal Food and Drug Administration, and the European Union. In Canada, a recent court challenge on DTCA† may provide guidance for future challenges against the Canadian Food and Drug Act that prohibits advertising to the public a drug as a treatment or cure for certain diseases or disorders contravenes “freedom of thought, belief, opinion and expression including freedom of the press and other media of communication.” However, the Attorney General of Canada argued that the ban on prescription drug advertising is justified by section one of the Charter which guarantees rights and freedoms “subject only to such reasonable limits prescribed by law as can be demonstrably justified in a free and democratic society.”

† In June 2009, CanWest Mediaworks Inc. withdrew their Canadian Charter of Rights and Freedoms challenge case about direct-to-consumer prescription drug advertising. CanWest argued that the section of the Food and Drug Act that prohibits advertising to the public a drug as a treatment or cure for certain diseases or disorders contravenes “freedom of thought, belief, opinion and expression including freedom of the press and other media of communication.” However, the Attorney General of Canada argued that the ban on prescription drug advertising is justified by section one of the Charter which guarantees rights and freedoms “subject only to such reasonable limits prescribed by law as can be demonstrably justified in a free and democratic society.”
disorders. Websites such as Mediacal have been launched in Australia, Canada, the US, and most recently in Hong Kong to promote the accurate dissemination of medical information. The UK’s NHS has created a single-point of entry website for all health related information. The NHS Choices website provides a single ‘front door’ for the public to all NHS online services and information through the country’s biggest health website.

A background document is also available for this trend. See: “Trend 9 – Consumerism in Health Care”
HEALTH CARE FACILITY INFRASTRUCTURE

Why is this trend important?

Health care systems may need to renew their infrastructure in order to meet infection control standards and the demands and needs of a changing population. In 2005, Ontario announced that it would invest approximately five billion dollars over a five-year period to complete more than 100 hospital facility upgrade projects; the plan was completed in 2008/09, and a new long term plan will be developed in 2011. “Green" building designs and construction are a new trend in health care facility infrastructure.

Growing Challenges

Growing challenges in maintaining and upgrading health care infrastructure include:

- a major design challenge is to ensure that any new buildings stay as relevant for as long as possible, given an average use of 40+ years.
- accommodating various types of patients (e.g., individuals with mental illness and/or dementia) with a safe and secure environment.
- developing a culture of safety in nursing homes (e.g., providing enough hand washing stations, improving air flow, making surfaces less slippery to avoid falls).

Emerging Responses

Some responses related to health care facility infrastructure include:

- evidence-based design is a current trend where all relevant and proven design innovations to optimize patient safety, quality, and satisfaction as well as workforce safety, satisfaction, productivity, and energy efficiency are taken into consideration when a health care facility project is planned. For example, Kaiser Permanente—a large healthcare provider in the US—operates a facility that serves as a rehearsal ground to perfect proposed facility designs before they are rolled out to Kaiser’s hundreds of hospitals and clinics. These simulations have enabled Kaiser to reduce expenses in a variety of areas, including facility construction, while maintaining levels of doctor, nurse, and patient satisfaction.
- single patient rooms to improve patient safety and quality care and reduce nosocomial infections.
- ergonomic interventions in nursing homes and other health care facilities.
- green building designs and sustainable practices (e.g., using alternative methods of energy, green cleaning products, providing more natural light) are also emerging in the construction of health care facilities.

A background document is also available for this trend. See: “Trend 10 – Health Care Facility Infrastructure"
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Trend 1 – PERSON-CENTRED CARE

INTRODUCTION
Person-centred care – also referred to as patient-centred care – is defined in terms of the following attributes: respect for people's values, preferences, and expressed needs; coordination and integration of care; information, communication, education; physical comfort; emotional support and alleviation of fear and anxiety; involvement of family and friends; and transition and continuity. According to the declaration on patient-centred health care by the International Alliance of Patients' Organizations (IAPO), to achieve patient-centredness, health care must be based on the principles of respect, choice and empowerment, patient involvement in health policy, access and support, and information.

There is currently a shift towards empowering patients. This can be a positive force as noted by the World Health Organization's Declaration of Alma-Ata's statement, "The people have the right and duty to participate individually and collectively in the planning and implementation of their health care."

One of the observable forces contributing to the shift in viewing patients as consumers of health care is searchable health information that is quickly and easily accessible through the Internet and through new media tools such as weblogs, instant messaging platforms, video chat, and online social networks.

SUMMARY OF KEY FINDINGS

Growing Challenges
- Patient demands and expectations are predicted to be significant drivers of health care cost and utilization.
- Increased consumer demands in health care are occurring around the world.

Emerging Responses
- Patients are becoming more involved in the decision making processes regarding their health.
- There is an emergence of hospitals focusing on "care needs" rather than "cure needs".
- Increased interest in health care consumerism has created an environment conducive to growth in the use of decision aids to support patient decision making.
- The provision of consumer driven healthcare has led to increased private sector financing of health care and product offerings such as "Consumer Driven Health Plans".

GROWING CHALLENGES

Involvement of Patients in Decision Making:
- It is argued that the public has the right to make decisions in setting health care priorities because the public funds and uses the health care system, thus citizens are the most important stakeholders of the health care system. Public involvement in decision making also provides a crucial perspective about the values and priorities of the community, which should lead to higher quality, or at least greater acceptance of, priority-setting decisions.
- The European Foundation for the Improvement of Living and Working Conditions notes the increasing number and influences of vocal patient groups as an example of increasing involvement of patients in decision making.
Consumer Driven Changes to Health and Health Care Delivery:

- It is expected that the aging of the baby boomer generation may significantly alter patterns of use of health services. A 2000 Provincial and Territorial Ministers Report notes that this generation’s “sense of entitlement to health services” will lead to increased usage of homecare, increased visits to doctors, additional diagnostic testing, and demand for shorter waiting lists, advanced technology, surgical procedures, and alternate services.\(^{10}\)

- The Conference Board of Canada views patient demands and expectations as significant drivers of health care cost, seeing positive outcomes as a potential impetus for increased productivity. However, the report also cautions that too many rising expectations in health care are “uncoupled from increased productivity.”\(^{11}\)

- Coletti (2009) notes that many doctors consider patients who ask questions and do their own research “difficult.” These patients may challenge their diagnoses, request the newest drugs they have seen advertised, or ask questions about something they read online. They may go to a doctor halfway across the country who specializes in conditions such as theirs.\(^{12}\)

- A Swedish population-based study on the influence of perceived health on health utilization notes increasing demand for alternative medicine in the country and recommends the investigation of a relationship between alternative medicine and patients with multiple symptoms.\(^{13}\)

- A survey of Australians in Perth identified two expectations of the public for major changes in the development of future health services:\(^{14}\)
  - To shift services from inner metropolitan hospitals wherever possible in order to provide care closer to where most people live.
  - To assure high quality equivalents to inner metropolitan hospitals for locally delivered services.

Increasing Demand for Person-Centered Care

- Data from a 2008 poll by Ipsos Reid and the Canadian Medical Association indicate that only (55%) of Canadians agree that the health care services in their community are patient-centered. Three in ten (31%) disagree.\(^{15}\)

- Overall Canadians were more positive about their relationship with health care providers (such as being treated with respect and dignity, having potential risks or side-effects of treatment explained) than they were about access and wait time related questions (e.g. being able to see family physician quickly, easily access health services on evenings and weekends).\(^{16}\)

- Two recent reviews of the literature note that the implementation of patient-centered care has been hampered by the lack of a clear definition and method of measurement.\(^{17, 18}\) Research has shown that patient-centered interactions promote adherence and lead to improved health outcomes.\(^{19}\)

EMERGING RESPONSES

Involvement of Patients in Decision Making:

- The public can be involved in health care decision making in many ways including: as representatives on priority-setting committees, as representatives on executive committees and boards (i.e., hospital boards and regional health authorities), as members of citizens’ councils to provide ongoing advice on specific matters, and as participants of surveys, citizens’ juries, community meetings, focus groups and the like, to provide feedback on all elements of priority setting.\(^{20}\)

- In Canada, patients as consumers of health care have been represented in hospital boards, consulted for health reform initiatives, and participated in identifying health research priorities.\(^{21}\)

- In Ontario, legislation requires each LHIN to develop an integrated health service plan (IHSP) with input from the community and sets out requirements for community
engagement by LHINs and health service providers.22

- Based on the recommendation of the Commission on the Future of Health Care in Canada, the Health Council of Canada was established to support collaboration among governments, providers, and citizens in establishing system objectives, common indicators and benchmarks, measurement criteria and health tracking, and reporting to Canadians on system performance.23 24

- The Canadian Agency for Drugs and Technologies in Health (previously the Canadian Coordinating Office for Health Technology Assessment) has developed consumer involvement in decision-making committees where no opportunities previously existed for patients' input.25

- The Cochrane Musculoskeletal Group (CMSG), based in Canada, is an example of the movement to increase the involvement of patients and the public in health care. The CMSG has “dedicated resources for involving the consumers in all stages of the review process, from setting priorities for review topics to synthesizing the best evidence in systematic reviews. Consumers are also involved in transferring knowledge to people making health care decisions and in promoting uptake of the results of review.”26

- In the UK, the government has recently unveiled a plan to make structural changes to the National Health Service (NHS) in an effort to develop “a more responsive, patient-centred NHS”.27 The plan is controversial,28, 29, 30 but if it were enacted,
  - Shared decision-making would become the norm; patients would have access to information to make health care decisions, and would be able to choose which General Practitioner (GP) practice they register with, and choose between consultant-led teams.31
  - There would be a shift in how success is measured from process targets (e.g., wait times) to clinically credible and evidence-based outcome measures (e.g., improving cancer survival rates), and providers would be paid according to their outcomes.32
    - HealthWatch England, a new independent consumer organization would be created in an effort to strengthen the collective voice of patients. The organization would ensure that views and feedback from patients and caregivers are an integral part of local commissioning across health and social care.33

- Increased interest in health care consumerism has created an environment conducive to growth in the use of decision aids to support patient decision making. Decision aids are evidence-based tools designed to prepare individuals to participate in making specific and informed values-based choices about disease management and treatment options, prevention, or screening.34
  - Patient decision aids supplement (rather than replace) clinician's counselling about options. Decision aid such as pamphlets and videos that describe options are used when there is more than one medically reasonable option - no option has a clear advantage in terms of health outcomes, each has benefits and harms that people value differently.
  - Decision aids have been developed in several countries including Australia, Canada, China, Finland, Netherlands, United States, and the United Kingdom.35

- In the UK, “INVOLVE” is a national advisory group, funded through the National Institute for Health Research. It was established to: “promote public involvement in research in order to improve the way that research is prioritized, commissioned, undertaken, communicated and used.”36

- The Food and Drug Administration in the US has implemented consumer representation on their Human Drug Advisory Committee.37

- A Health Technology Assessment report found over 80 specific efforts to include consumers in identifying and prioritizing health research topics.38
Consumer Driven Changes to Health and Health Care Delivery:

- In Canada, consumerism has led to increased private sector financing of health care. Private sector financing of health care expenditures in Canada increased from 23.8% in 1975 to an estimated 30.0% in 2008.\textsuperscript{39}
- Certain services such as eye care are being de-listed and private practices are filling the gap. In addition, patients are being discharged to the community sooner, thereby transferring the cost of care from the public to the private realm.\textsuperscript{40}
- In the US, Consumer Driven Health Plans (CDHPs) are one tool in a consumerism strategy, wherein consumers take more responsibility not only for costs but also for lifestyle choices and treatment decisions. Consumer driven health plans are typically a high-deductible health plan (HDHP)\textsuperscript{41} and employers often offset the higher out-of-pocket costs of CDHPs by offering employees a health reimbursement arrangement (HRA) or a health savings account (HSA) and contributing funds.\textsuperscript{42}
- Enrolment in CDHPs constituted only 5% of total enrolment in employer sponsored health plans in 2007,\textsuperscript{43} but the number of employees covered by these plans increased to 12.4% in 2010. A recent survey of 11,413 employers in the US found that CDHPs experienced continued growth in 2010, though at a slower rate than in 2009; the rate of growth in 2010 was found to be 18.1%, about half that of 2009.\textsuperscript{44}

Retail-Based Medical Clinics

- In 2003, the US Congress enacted legislation allowing retail-based medical clinics. Found in the health centres of CVS pharmacies, Target Corporation, Wal-Marts and other high-traffic retail outlets in American cities, retail clinics provide health care services for patients with acute illnesses without an appointment. Patients see a nurse practitioner or a physician assistant.\textsuperscript{45}
- As of July 2009, there were approximately 1,107 retail clinics in operation in the US.

The annual growth rate of retail clinics was 65% from 2000-2007; while the growth rate currently sits at 10-15%, it is expected to accelerate above 30% from 2013-2014. The market is currently forecasted to top out at approximately 4,000 clinics in 2015.\textsuperscript{46} MinuteClinic is the largest of these retail clinics. The number of MinuteClinics increased from 22 clinics in two states in 2005\textsuperscript{47} to currently having 451 clinics and 41% of the market share.\textsuperscript{48}
- According to one study, ten clinical problems such as sinusitis and immunizations encompassed more than 90% of US retail clinic visits.\textsuperscript{49} These same ten clinical problems made up 13% of adult primary care physician visits, 30% of pediatric primary care physician visits, and 12% of emergency department visits. It is unknown whether there will be a future shift of care from emergency departments or primary care physicians to retail clinics. However, a 2007 US poll indicated that 15% of children and 19% of adults were very likely or likely to use a retail clinic in the future. It is estimated that by 2011, there will be 6,000 retail clinics in the US providing more than 50 million visits per year.\textsuperscript{50}
- A 2008 Deloitte survey found that women are more likely than men to explore alternatives to traditional health care services (e.g., alternative treatments and drugs, retail clinics).\textsuperscript{51}
- Some risks associated with growth and expansion of retail-based clinics include:\textsuperscript{52}
  - A potential for significant liability cases with associated expenses and adverse publicity for large corporations.
  - The risk of efforts to regulate clinics to the point that they are no longer economically viable.
- Although retail medical clinics are suggested as a “potential answer from the private sector” for the uninsured, a way for people without primary care physicians to avoid the emergency department, and an opportunity for the uninsured to spend less money on health care, the geographic distribution of retail clinics in the US seems to counter this claim. A 2008 study found that retail clinics
are currently located in more advantaged neighbourhoods and are less likely to be located in medically underserved areas which make them less accessible for those most in need.53

Other Person-Centred Initiatives:
- On June 3rd, 2010, the Ontario Legislature passed the Excellent Care for All Act, which emphasizes that the experience and the support of patients and their caregivers to realize their best health is a critical element of ensuring the future of the health care system. The act further recognizes that a high quality health care system is one that is, among other things, accessible, appropriate, equitable, integrated, patient centred, and states that the government is committed to ensuring that health care organizations are focused on creating a positive patient experience.54
  - The act requires that health care organizations conduct surveys to assess patient and employee satisfaction, and to have a patient relations process (to address patient, client and caregiver relations55) and a patient declaration of values.56
- In Ontario, other patient centered initiatives that have been recently introduced by the government include: Ontario’s Emergency Room Wait Times Strategy, 57 an Aging at Home Strategy that enables seniors to continue living in their homes, the Ontario Diabetes Strategy which includes tools and education to empower patients,58 and the Health Care Options website which provides information to Ontarians about where to go for front-line health care needs.59
- According to the most recent performance data on Ontario’s Wait Time Strategy, compared to baseline data, Ontarians continue to wait less time from the decision to treat, to treat for almost all wait time procedures as measured by the 90th percentile (i.e., the point at which nine out of 10 patients received their treatment). Cardiac bypass surgery patients are waiting longer but 100% of these procedures are completed well within the access target.60 Since 2005, wait times have been reduced by 22% for cancer surgery, 58% for knee replacement, and 57% for CT scans.61
- The National Health Service (NHS) in the UK launched a coordinated effort to improve patient centeredness of the system, including a wait time strategy which was moderately successful.62 Further, in response to a UK parliamentary report that highlighted the importance of locally led, patient-centred and clinically driven health care, more assistive technology and remote monitoring to help patients lead independent lives and plans to deliver more outpatient appointments in community settings have been initiated by local NHS authorities.63
- The Institute for Healthcare Improvement in the US has developed a new health care framework – “The Triple Aim” – that simultaneously addresses the (1) patient experience, (2) the cost per capita and (3) the health of specific populations.64
- In the US, the “medical homes” concept has evolved to embrace different patient populations including patients under state Medicaid and Children’s Health Insurance Programs (CHIP). A medical home is an enhanced model of primary care in which care teams attend to the multi-faceted needs of patients and provide whole person comprehensive and coordinated patient-centred care. Since 2006, more than 30 states have initiated projects to improve Medicaid and CHIP to advance medical homes. The lessons learned from these projects have shown that the provision of good, comprehensive primary care via medical homes has promise in achieving the goals of quality improvement and cost containment.65
  - The 2010 US health care reform law provides grants to help establish community health teams to support the patient-centred medical homes.66
- In the past year, the US Department of Veterans Health Affairs (VA) has embraced the medical home model as the future standard of care for Veterans. The Behavioral Health Laboratory (BHL) is a care management model that has been implemented in more than 20 VA facilities. BHL uses a platform of standardized,
software-aided mental health assessments and clinical care managers to deliver evidence-based treatments for depression, anxiety, and substance abuse in primary care settings.67

- In a current patient-focused hospital design, patients are pooled in wards according to either length of stay or by patient needs. One such redesign to meet patient needs was done at Mount Sinai Hospital of New York (US) which proved successful due to better staffing and improvement of nurses and physician’s relationships through the assessment of patient's needs and the specific training of nurses.68

- Planetree is an association of 100 hospitals in the US aimed at improving the patient experience: “The Planetree model of care is a patient-centered, holistic approach to health care, promoting mental, emotional, spiritual, social, and physical healing.”69

- In an effort to further patient-centered care, the American Hospital Association (AHA) has recently endorsed two products: Inpatient Flow Patient Progression solution consulting service and GetWellNetwork, a form of interactive patient care. More effective patient flow gives hospitals the ability to significantly increase effective capacity and improve their bottom line. GetWellNetwork is designed to engage and prepare patients to be active participants in their health care process; it transforms patient room televisions into interactive resources and daily guides during a hospital stay.70

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Trend 2 – SUSTAINABILITY, PRODUCTIVITY, AND INNOVATION IN THE HEALTH CARE SYSTEM

INTRODUCTION
Health system sustainability is critical in order to have a system that is able to meet current and future obligations and expected outcomes; adjust to meet new demands and unexpected system pressures; improve and be capable of sustaining improvement; and provide increasing values in both economic and health outcomes. Four indicators can be used to measure characteristics of health system sustainability: health spending, productivity, health human resource supply, and investment in information management. Productivity is estimated by comparing the fluctuations of inputs and outputs. Inputs are any resources invested in the system, and outputs refer to the services provided to patients. However, estimating productivity in health is complex, and health care quality (e.g., safety, efficiency and timeliness) and innovation are also important to sustainability.

SUMMARY OF KEY FINDINGS
Growing Challenges
- Sustainability: The key driver in escalating health care expenditure is increased utilization of services. Based on past trends, The Ontario Ministry of Finance estimates that utilization will grow at a rate of 1.5% per year.
- Productivity: Ensuring sufficient levels of health human resources (HHR) over time enables the system to provide care when it is needed. Labour productivity in Canadian Health and Social Assistance (CHSA) measured by real GDP dropped 0.69% per year from 1987 to 2006.
- Innovation: The Ministry of Health and Long-Term Care as well as other ministries such as the Ministry of Research and Innovation invest millions in research and development annually. Despite Ontario's efforts to support innovations in such areas as biotechnology, new drugs and biotechnology products are often too expensive for the government to purchase for the public.

Emerging Responses
- Sustainability: Adopting a prospective fee-for-service (i.e. Diagnostic Related Group “DRG”) or rationing of services.
- Productivity: Lean initiatives have been implemented in various organizations including the UK government and in one of Quebec’s Health and Social Service Centres to improve quality and efficiency and reduce costs.
- Innovation Focused on Sustainability:
  - Involving patients in decision making as a way to reduce the use of discretionary surgery.
  - Self-management as a new approach to dealing with chronic care.

GROWING CHALLENGES
Sustainability in the Health Care System Canada
- In Canada, provincial-territorial government health expenditures have risen considerably over the past 35 years; total provincial-territorial health expenditures increased from 5% of GDP in 1975 to 6.8% in 2007.
Ontario public health care spending increased from 4.6% to 6.8% of Gross Domestic Product (GDP) from 1981 to 2007. The Ministry of Health and Long-Term Care health spending has grown from $23.9 billion in 2001/02 to $46.1 billion in 2010/11, and is projected to increase by an additional $6.0 billion by 2012/13.

In 2005, the Ontario Ministry of Finance projected a 6.0% annual growth rate for provincial government health care expenditure from 2009/10 to 2024/25, accounting for 55% of Ontario’s budget.

Health costs currently make up 42% of the Ontario government’s total program spending and are expected to make up an even larger proportion of program spending in the future.

In 2005, the key driver in escalating health care expenditure was increased utilization of services. Based on past trends, The Ontario Ministry of Finance estimated that utilization would grow at a rate of 1.5% annually whereas costs attributed to the aging population were estimated to grow at a lower rate (1.1% annually).

Other contributing forces (besides utilization) to the escalating costs in health care spending are: increases in the population, aging in the population, inflation, and new, more expensive treatments, increased consumer expectations, new diseases and an increasing prevalence of chronic disease.

In Ontario, many health care programs and services are directed at seniors. Health care expenditures per person are approximately three times higher for seniors than for the average of the overall population. By 2030, seniors’ share of Ontario’s total population is projected to rise from 13.2 per cent in 2007 to 21.9 per cent.

According to an ICES study, for the time period 1996 to 2006, costs for cardiac medications increased by more than 200%, exceeding $5 billion per year in 2006. Increasing age, risk factors (such as hypertension and diabetes) and inflation accounted for about two-thirds of the increase in costs while use of new, relatively expensive medications accounted for one-third of the increase. If the use of cardiac medications continues to increase at the same rate, estimated costs could reach $10.6 billion by 2020.

There is also concern that the current budgeting system for Canada’s hospitals (block grants or global budget) is not providing enough incentives for efficient and high quality hospital care, particularly in Canada’s uncompetitive health care environment.

Global
- In the US, health care providers consumed approximately $1.9 trillion (USD) or 16% of the GDP in 2008. Currently, the US per capita health spending is $7538 (USD); approximately 161% of Canada’s spending and roughly double that of Spain, Italy and the UK. The US Congressional Budget Office estimates spending on programs such as Medicare and Medicaid will grow from roughly 5% of the GDP today to about 10% in 2035, and will continue to increase thereafter.
- In the US in 2006, expenditures on outpatient imaging were estimated to be about US $100 billion. Between 1995 and 2005, there was a fourfold increase in advanced imaging reimbursed under the Medicare Physician Fee Schedule.
- In the UK, age-related health spending is projected to increase from 7.4% of GDP in 2007/08 to 9.9% in 2057/58. The NHS has a finite budget, and, according to James Gubb, “will not be able to afford all the medical care that people want or need.” It has been suggested that, “efficiencies can only account for small savings; society will have to decide whether to fund this increase by paying higher taxes. If it does not wish to pay higher taxes, it must accept that it will be necessary to prioritise services.”
- In Australia, health spending is projected to grow from 4.0% of GDP in 2009/10 to 7.1% in 2049/50. An aging population, increased demand for health services and the funding of new technologies are all expected to contribute to spending growth. From 2009/10 to 2049/50, real health spending on those
aged over 65 years is expected to increase approximately seven-fold. Over the same period, real health spending on those over 85 years old is expected to increase around twelve-fold.  

Productivity and Quality in the Health Care System:

Canada
- Ensuring sufficient levels of health human resources (HHR) over time enables the system to provide care when it is needed. The Ontario government is accelerating growth in certain areas and is taking steps to increase HHR.  
  For example, the current Ministry of Health and Long-Term Care HealthForceOntario strategy aims to provide the right number and mix of qualified health care providers through such goals as introducing new and expanded provider roles to increase the number of providers working in health care and build on the skills of those already in the system. Continued growth in HHR supply should enable the system to meet expectations and improve future productivity.  
- During the 1990s, health care delivery focused on cost containment. Cutbacks in HHR and the restructuring of the hospital sector forced the system to meet obligations under duress. Between 2000 and 2004, significant investments were made to enhance quality of health care; however, evidence suggests that overall the system’s outputs have not kept pace with inputs in terms of productivity.  
- Labour productivity in Canadian Health and Social Assistance (CHSA), measured by real GDP, and dropped 0.69% per year from 1987 to 2006.  
- A report by the Ontario Health Quality Council concluded that though wait times have decreased for many surgeries, people in Ontario still wait too long for urgent cancer surgery, MRI scans, specialists, and a space in a nursing home. As well,  
  o In 2009, 43% of family physicians in Ontario had electronic records, compared to 49% in Alberta and British Columbia and 95-99% in Australia, New Zealand, the UK, Norway and the Netherlands.  
  o Ontario doctors with EMRs are not fully utilizing available tools to improve quality, such as electronic reminders for guideline based interventions of screening tests (16%) or checks for drug errors. (28%). In Australia, nearly all doctors use these tools.  

Global
- In the US, quality improvement rates are lower than increases in health spending. Health care expenditure increased 6.7% over 1994 to 2005. The quality of health care improved by an average of 2.3% between 1994 to 2005, showing important advances but an overall slowing in quality gains.  
- Efficiency is a global issue, as numerous studies have documented that rates of inappropriate hospital days in paediatric hospitals around the world range from 20% to 60%.  

Innovation as a Driver of Cost in the Health Care System:

Canada
- Despite Canada’s efforts to innovate, no leading companies have emerged, salaries are lower than the US, patent output is lower and R&D per capita is lower. A lack of venture capital investments needed to turn R&D ideas into successful business initiatives has also been blamed for limiting Canada’s ability to fund innovative companies in their early stages.  
- A comparative analysis of Toronto’s biopharmaceutical cluster concluded that the extent of the provincial and federal governments’ impact on buyers of biopharmaceuticals and their focus on price leads to reduced opportunities for innovation in the cluster and indirectly prevents the development of a healthy supplier infrastructure that can provide the specialized support.  
- A large investment in biotechnology may create a paradox where new
biopharmaceuticals are developed but Canada will not be able to afford them.38

Global
- The OECD New and Emerging Health Related Technologies (NEHRT) project concluded that more work must be done to align health system objectives with policy decisions in new technology sectors. They stress the importance of government communication in order to coordinate with and between multiple departments.39
- Since governments are a main pharmaceutical purchaser, the rising costs of pharmaceuticals are important for future budgeting. From 2001 to 2005 biopharmaceutical sales have increased in the US (127%), Canada (213%), France (227%), Germany (235%), Italy (189%), Spain (190%), UK (158%), Australia (230%), Japan (82%).40

EMERGING RESPONSES

Sustainability in the Health Care System
- If Canada’s tax revenue rose to 36% of the GDP (average for OECD countries) there would be much more revenue available to fund health care spending. This new funding would make the argument for unsustainable health care spending less viable.41
- Moving towards a prospective fee-for-service (i.e., Diagnostic Related Group “DRG”) requires the government to pay a fee to the service provider (hospital) for each individual cared for, based on the average expected costs of treating the patient’s condition. Swedish councils that adopted a DRG system achieved 13% cost savings. In Denmark the DRG system led to increases in productivity. In Italy the DRG system resulted in a 32% cost reduction in the cost per discharge. Prospective fee for service programs have also been successful in Australia, where Victoria hospitals achieved a 25% reduction in costs per patient.42
- The Oregon Health Plan (OHP) in the US was the first public insurance program to ration medical care explicitly, systematically, and openly by denying coverage of some health care services. During its first five years of operation, the OHP saved the state 2% of total expenditures. Lessons from the Oregon experience include: Explicit service delisting is unlikely to produce substantial savings and the process of rationing services makes it harder to control costs due to public pressure during the delisting process.43
- The British Medical Association recommends a fair and open approach to priority setting and the rationing of services, while at the same time, providing a mechanism to review and change priorities according to public views. This can enable the creation of core services and define a process for patients to access additional services.44
- As part of the 2009 US economic stimulus package, $1.1 billion is designated for comparative-effectiveness research. Comparative-effectiveness research compares clinical outcomes, effectiveness, and appropriateness of items, services, and procedures that are used to prevent, diagnose, or treat diseases, disorders, and other health conditions.45 The funding was allocated to the Agency for Healthcare Research and Quality ($300 million), the National Institutes of Health ($400 million), and the Office of the Secretary of Health and Human Services ($400 million).46
- Sustainability can be addressed through assuring appropriateness of medical treatments. The Ministry of Health and Long-Term Care and the University Health Network, in partnership with St. Joseph’s Healthcare Hamilton, have developed an MRI and CT online decision support tool for use by physicians to determine appropriateness of testing.47
- In the UK, the government has recently announced plans to make structural changes to the National Health Service (NHS). Stating that layers of national and regional organisations have resulted in excessive bureaucracy, inefficiency and duplication, the government intends to delayer and simplify the number of NHS bodies, and expects to reduce the management costs by more than 45% over the next four years as a result.48 The nation’s 152 primary care trusts (PCTs) will be gradually phased out,
and replaced by several hundred general practice consortia, a transition which would pass control from health service managers to general practitioners. Similarly, private insurers in the US are increasingly contracting with radiology benefit management programs (RBMs) to reduce overall use and expenditures for radiology services. In most RBMs, referring physicians are required to submit requests for advanced imaging and obtain approval before such procedures are performed. The RBM uses algorithms and clinical decision-support criteria, based on evidence from published clinical literature, to determine the medical necessity of the diagnostic exam or to suggest whether an alternative treatment is clinically indicated. 

- One recent study in the US found that the result of using a three-tiered RBM was that 4% of the total requests for CT or MRI scans submitted to the RBM company in 2008 were either cancelled or changed to more appropriate scans.
- A study comparing the records of 459 CT and MRI examinations to the guidelines used by a RBM found that 26% of the examinations were considered inappropriate by the RBM's standards.

Productivity and Quality in the Health Care System:

- On June 3rd, 2010, the Ontario Legislature passed the Excellent Care for All Act, which will make health care providers and executives accountable for improving patient care. The legislation requires health care organizations, starting with hospitals, to:
  - publish annual quality improvement plans
  - create quality committees to report on quality related issues
  - link executive compensation to quality plan performance improvements
  - implement patient and employee satisfaction surveys and a patient complaints process.
- The Agency for Healthcare Research and Quality’s (AHRQ) annual companion Quality and Disparities reports measure quality in four areas – effectiveness of care, patient safety, timeliness of care and patient centeredness. This is a starting point for defining what quality is in health care.
- Furthermore, the AHRQ has developed specific quality indicators in prevention (PQI), inpatient (IQI), patient safety (PSI) and paediatric sectors (PDI). There is also a growing consensus and collaboration among diverse stakeholder groups involved in the measurement, development and implementation of quality standards and specific measures.
- In 2008, Medicare was offering bonuses to hospitals that excelled in the use of best-practice guidelines and was phasing out payments for treatments that were caused by improper hospital care.
- In the UK, government Lean techniques achieved double digit productivity gains in documents processed per hour and improved customer service by decreasing lead times and eliminating back logs. The use of Lean techniques in other government organizations may prove to be a future solution to improve quality/efficiency and reduce costs.
- The Ontario Health Quality Council reports that the province has made significant improvements in the use of information technology, particularly in the use of electronic medical records (EMRs). The proportion of family doctors who have an EMR system has risen from 26% in 2007 to 43% in 2009 due to the OntarioMD program, which funds and assists physicians to acquire, implement and adopt IT, helps them transition from paper records to EMRs and providing them with easy access to information and resources to improve the quality of patient care and practice efficiency.
- In the province of Quebec, the Health and Social Service Centre (CSSS) of the Valée-de-l’Or successfully implemented a Lean initiative in the CSSS’ Surgical Ward at Val-d’Or hospital. Specifically, the reorganization of the patient journey for day surgery (including physical space usage, reorganization of medical equipment, and
waiting lists) was targeted. Implementation of Lean Healthcare in the Surgical Ward led to a 20% improvement in productivity and capacity; 50% reduction in waiting times, 40% reduction in waiting room waits, 30% reduction in usage of medical equipment, and a potential reduction of costs ($500,000). More recently under the same initiative, the hospital met and surpassed its goal to drop wait times for ambulatory patients in the emergency department to between two and three hours.

- Lean initiatives are also being rolled out in many Ontario hospitals. The University Health Network, North York General and St. Joseph’s hospitals in Toronto have all implemented Lean techniques to increase productivity and quality (patient safety). North York General hospital won a national patient safety award in 2008 due to its implementation of Lean methodology to improve patient flow.

- Surgical checklists are a tool being studied around the world to determine if they can improve team communication and consistency of care to reduce complications and deaths associated with surgery.
  - The World Health Organization funded an eight country study (including one site in Canada) which found implementation of the checklist program was associated with concomitant reductions in the rates of death and complications among adult patients.
  - A recent cost analysis, based on the WHO study took into account implementation and per-use costs associated with the checklist. The study found that, for a US hospital with a baseline major complication rate after surgery of at least 3%, the checklist would generate cost savings once it prevented at least five major complications per year.
  - A 2010 study of a medical team training program in Veterans Health Administration (VHA) facilities, which included the use of checklists in the operating room, found that facilities in the training program had an 18% reduction in annual mortality rate, compare with a 7% reduction at facilities that had not yet undergone training.

Innovation Focused on Sustainability in the Health Care System

- The Ministry of Health and Long-Term Care invests over $80 million in health services research annually. This figure does not include health-related investments made by other parts of the Ontario government. Since 2001, the Ministry’s research spending has increased by 38% cumulatively.

- In November 2010 the Ontario Ministry of Health and Long-Term Care and Health Achieve will host the fifth annual Celebrating Innovations in Health Care Expo. The event is centered around six innovation themes that relate to the province’s Excellent Care for All Strategy, and provides an opportunity to discuss current achievements and approaches underway as they relate to improving integration, patient-centeredness, evidence-based practice, access, safety, and efficiency.

- The US Patient Protection and Affordable Care Act, signed into law in 2010, mandates the creation of a Center for Medicare and Medicaid Innovation (CMI) by January 2011. The purpose of the CMI is to test innovative payment and service delivery models to reduce program expenditures under Medicare and Medicaid, while preserving or enhancing the quality of care furnished to individuals under the programs. The $10 billion worth of grants distributed by the CMI in 2011-2019 will be used to test promising models and expand successful pilot programs.

- In 2003 the Canadian government supported the biotechnology industry by giving $1.7 billion in new funds for R&D and innovation.

- The National Research Council’s (NRC) aims include concentrating R&D on developing solutions to national challenges in health and wellness, helping key sectors of Canadian industry to increase their innovation capacity and compete more
effectively in world markets, and strengthening Canada’s innovation system.\(^7\)

- In 2009, the Canada Foundation for Innovation, an independent corporation created by the Government of Canada to fund research infrastructure, granted over $665 million for new grants and infrastructure at dozens of Canadian research institutes including $262.8 million for Ontario-based institutes. The funding supports a wide range of research, including biomedical and biotechnology studies involving genomics, molecular imaging, proteomics, and other areas.\(^7\)

- In 2010, the Government of Canada announced the first group of Canada Excellence Research Chairs (CERC). The CERC program aims to attract and retain the world’s most accomplished and promising researchers in four priority areas, including health and related life sciences and technologies. The chair holders, each of whom will be awarded up to $10 million over seven years, are considered to be world-class leaders in research and innovation.\(^8\)

- Patient decision aids are being used in various clinical situations in several countries to prepare individuals to participate in making specific and informed values-based choices about disease management and treatment options, prevention, or screening.\(^8\) Patient decision aids supplement (rather than replace) clinician’s counselling about options. According to one systematic review, patient decision aids can reduce the use of discretionary surgery without apparent adverse effects on health outcomes or satisfaction.\(^8\)

- Self-management is a new idea being proposed to reduce costs and improve the quality of care. It is defined as (1) engaging in activities that protect and promote health; (2) monitoring and managing signs and symptoms of illness; (3) managing impacts of illness on function, emotions, and interpersonal relationships; and (4) adhering to treatment regimens. User innovation toolkits could be shifted to medical toolkits devised for patient self-management of chronic medical conditions (i.e. self-management tools for type-1 diabetes).\(^8\)

- The growing market penetration and the communication properties of mobile phones create opportunities for innovation in promoting cardiovascular disease self-management in developing countries through support of lifestyle and behaviour modification. Mobile phones support various modes of communication and interaction, have fewer adoption barriers, and are more prevalent than other available technologies in developing countries.\(^8\)

- The Health Care Innovations Exchange is an AHRQ program designed to support health care professionals in sharing and adopting innovations that improve the delivery of care to patients.\(^8\)

- The X PRIZE Foundation encourages radical breakthroughs by creating and managing prizes that drive innovators to solve some of the greatest challenges facing the world today.\(^8\) There are plans to launch ten new prizes, in four prize groups, within the next five years.\(^8\) The focus of the life sciences prize group is to identify and address the obstacles between cutting-edge scientific, technological and distributive understanding and the capture of those benefits by societies worldwide to improve health and ameliorate suffering.\(^8\)

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Trend 3 - CHRONIC DISEASE PREVENTION AND MANAGEMENT

INTRODUCTION
According to the World Health Organization, chronic diseases are those diseases of long duration and generally slow progression\(^1\) such as cardiovascular diseases (heart disease and stroke), diabetes, arthritis, asthma, chronic obstructive pulmonary disease, and depression. Many chronic conditions can be prevented through lifestyle changes that can reduce one’s risk factors.\(^2\)

SUMMARY OF KEY FINDINGS
Growing Challenges
- Rising prevalence and costs associated with chronic disease
- Increasing incidence of chronic disease in children and adolescents
- The burden of co-morbid chronic diseases

Emerging Responses
- There are a number of national and local prevention efforts in adults and children
- Self-management and team-based care approaches have proven successful
- Programs and interventions are beginning to address co-morbid chronic diseases

GROWING CHALLENGES
Rising Prevalence and Costs
Within the last decade, the prevalence rates of numerous chronic diseases have increased significantly, both internationally and in Canada.\(^3\), \(^4\) As more people suffer from chronic disease, the costs associated with these diseases also increase.\(^5\), \(^6\)

- In 2005, chronic diseases accounted for 35 million deaths worldwide, or 60% of all deaths.\(^7\) This is projected to rise to 69% in 2030.\(^8\)
- In 2008, 39% of Canadians reported having at least one of seven common chronic health conditions (arthritis, cancer, chronic obstructive pulmonary disease (COPD), diabetes, heart disease, high blood pressure, and mood disorders including depression)\(^9\) and in 2003, almost 80% of Ontarians over age 45 – 3.7 million people – had at least one chronic condition.\(^10\)
- In 2006/07, 22.7% of Canadian adults aged 20 years and older were living with diagnosed hypertension, and the true prevalence of the condition is likely higher.\(^11\) The lifetime risk for developing hypertension among adults aged 55 to 65 years with normal blood pressure is 90%. Hypertension is both the most common reason to visit a doctor, and the number one reason for taking medication – over four million prescriptions for antihypertensive medication are written each month.\(^12\)
- In 2003, over $2.3 billion was spent on physician, medication and laboratory costs for hypertension.\(^13\)
- Between 2002-2003 and 2006-2007, the age-standardized prevalence of diagnosed diabetes increased 21% in Canada. In 2006-2007, approximately 2 million Canadians, or about one in 16 people, had been diagnosed with diabetes. Projections indicate that by 2012, nearly 2.8 million Canadians will be living with diagnosed diabetes, representing an estimated annual percent increase of about 6% per year, with an overall increase of approximately 25% from 2007.\(^14\)
After adjusting for differences in age distributions between provinces and territories, the age-standardized prevalence of diagnosed diabetes in 2006-2007 was slightly higher in Ontario (5.6%) than the national average (5.2%). Management of diabetes can be very expensive, and given Canada’s aging demographic, it is projected that the direct health care costs associated with diabetes will total over $8 billion annually by 2016.

Strokes are a main cause of both mortality (accounted for 5% of deaths in 2005) and morbidity in Canada. The costs of stroke are high as over 50% of stroke survivors require rehabilitation to regain functional skills and there is a frequent need for hospitalization.


In 2004, over 100 million people in the US were living with chronic diseases, and spending on hospitalizations and chronic care management exceeded up to $500 billion per year. This represented over 75% of all health care costs at the time. More than 50% of Medicaid and Medicare beneficiaries were living with a chronic disease or disabling condition.

Chronic Disease Among Children and Adolescents

- Diabetes mellitus is one of the leading chronic diseases of childhood and youth; in the US it affects 1.82 out of every 1,000 young people. Moreover 92% of youth with type 2 diabetes have two or more cardiovascular disease risk factors in addition to diabetes.

- In Canada, 3 out of every 1,000, one- to 19-year-olds had diabetes in 2006-2007, and it is predicted that almost 28,000 members of this age group will be living with diabetes by 2012; an overall increase of approximately 10% from 2007.

- A 2009 study found that, from 1994 to 2004, there was an increase of approximately 3% annually in the rate of diabetes in children of all ages in Ontario. The incidence rate overall has gone from 24.5/100,000 in 1994 to 32.3/100,000 in 2003. The study notes that most children with diabetes have Type 1, but a growing number of children are being diagnosed with Type 2 diabetes.

- In Canada, 13% of children aged 11 and under had asthma in 2000-2001. Boys were significantly more likely than girls to have asthma, though childhood asthma is not related to income or urban/rural residence.

- One study tracking children under 10 with asthma in Ontario found that the prevalence of childhood asthma increased by 35% between 1994 and 1998. Children with asthma had a higher healthcare utilization and cost over $100 more per child per year than the general population, and contributed to over one third of the total OHIP expenditures.

- In 2003, asthma was the leading cause of burden of disease in Australian children, contributing 17.4% of total disability-adjusted life years (DALYs) and the eleventh-leading contributor to the overall burden of disease in Australia, accounting for 2.4% of the total number of DALYs.

- A recent ICES study found that the number of children living with Crohn's disease and ulcerative colitis, collectively known as Inflammatory Bowel Disease (IBD) in Ontario has increased by 50 per cent since 1994. The prevalence in under 18-year-olds has increased from 42.1 per 100,000 children in 1994 to 56.3 per 100,000 in 2005. The study concluded that Ontario has one of the highest rates of pediatric IBD in the world.
Co-morbidities

- Of those Ontarians over 45 with one chronic disease, 70%, or 2.6 million Ontarians, had multiple conditions.\(^{27}\) The presence of multiple chronic diseases makes treatment plans more complex and often requires care from numerous providers and specialists.\(^{28}\)
- In the UK, 15% of people with three or more chronic conditions account for almost 30% of inpatient hospital days.\(^{29}\)
- The 2004-2005 National Health Survey reported that almost all Australians 65 years old or over had at least one chronic condition, with over 80% having at least three chronic conditions.\(^{30}\)
- Comorbidity is associated with a decline in many health outcomes and increases in mortality and use of health care resources. An Australian review found that over half of the elderly patients with arthritis also had hypertension, 20% had cardiovascular disease (CVD), 14% diabetes and 12% mental health problem. Over 60% of patients with asthma reported arthritis as a comorbidity, 20% also had CVD and 16% diabetes. Of those with CVD, 60% also had arthritis, 20% diabetes and 10% had asthma or mental health problems.\(^{31}\)
- Recent data highlight the link between diabetes and cardiovascular disease. Compared to non-diabetic Canadians, adult diabetics are hospitalized almost four times more often for heart failure and about three times more frequently for ischemic heart failure, heart attack and stroke.\(^{32}\) In 2006-2007, 62.8% of adults (aged 20 years and older) with diabetes also had hypertension, such that 5.1% of Canadian adults were living with both conditions.\(^{33}\)
- Depression is a commonly comorbid with chronic conditions and recent research suggests it tends to worsen outcomes. One in three heart attack survivors and 20% of those with ischemic heart disease or stroke suffer from clinical depression. Depression can also retard the process of returning to daily life and self-care among stroke survivors, increase odds of re-hospitalization and death among heart disease patients, and increase the odds of developing ischemic heart disease in diabetics.\(^{34}\)
- A 2007 study challenged the idea of an ‘all or nothing’ relationship between depression and high risk for non-adherence to diabetes care. Instead, the authors noted a continuous relationship between depression and non-adherence to diabetes self-care, evident by symptoms at sub-clinical levels. Major depression was significantly associated with poorer diabetes self-care behaviours, specifically lower adherence to: general diet, consumption of fruits and vegetables, spacing carbohydrates, exercise recommendations, glucose monitoring and prescribed medications.\(^{35}\)

EMERGING RESPONSES

Prevention Efforts in Adults and Children

- The Canadian Heart Health Initiative is a multilevel strategy, linking national, provincial and local health departments. It combines research with the implementation of community-based heart health programs. The Initiative has created extensive intersectoral partnerships and networks as a means of developing and disseminating prevention knowledge and its efforts are directed primarily at the general population and concentrate on achieving environmental changes supportive of “heart-healthy” habits and lifestyles.\(^{36}\)
- The EUROACTION study examined the impact of a nurse-coordinated, multidisciplinary, family-based, preventative cardiology program delivered to those at the highest risk of developing cardiovascular disease. Those who received the intervention were more likely to quit smoking, reduce consumption of saturated fat, increase consumption of fruits and vegetables, and experience a greater decline in total cholesterol within 1 year than those receiving usual care.\(^{37}\)
- In 2010, the Sodium Working Group released a sodium reduction strategy for Canada which sets out recommendations aimed at achieving an interim goal of reducing the population mean daily intake of sodium from the current mean – 3,400 mg –
to 2,300 mg by 2016; the ultimate goal is to lower sodium intakes to a population mean whereby greater than 95% of the population have a daily intake below 2,300 mg. The strategy sets out six overarching recommendations, as well as 27 specific recommendations in four areas: food supply, awareness and education, research, and monitoring and evaluation.

- In 2005, British Columbia launched ActNow BC, a cross-government health promotion initiative seeking to improve the health of British Columbians by taking steps to address common risk factors and reduce chronic disease. The provincial program supports schools, employers, local governments and communities to develop and promote programs that ease British Columbians' healthy choices. The program set five goals relating to physical activity, healthy eating, obesity, tobacco use and health during pregnancy. A case study of the program by the World Health Organization found that the integrating mechanisms and strategies initiated and adopted as part of ActNow BC were “promising best practices” that can inform other jurisdictions in the development of similar whole-of-government initiatives.

- The US Patient Protection and Affordable Care Act, signed into law in 2010, targets chronic disease in several ways. The act establishes the National Prevention, Health Promotions and Public Health Council, which will provide recommendations to achieve national wellness, health promotion, and public health goals and consider and propose evidence-based models, policies, and innovative approaches for prevention, integrative health, and public health across the US. An advisory group will develop policy and program recommendations and advise on lifestyle-based chronic disease prevention and management, integrative health care practices, and health promotion. A Prevention and Public Health Fund will be established to provide for expanded and sustained national investment in prevention and public health programs to improve health and help restrain the rate of growth in private and public sector health care costs. Funding was set at $500 million for 2010, and is scheduled to increase year-over-year until it reaches $2 billion in 2015, and thereafter.

- The American Association of Retired Persons (AARP) is a nonprofit organization for people over 50 dedicated to enhancing quality of life by providing information, advocacy and services. Along with the AHRQ, the AARP has created two new checklists that outline the steps men and women over age 50 need to take to stay healthy and prevent disease. The checklists outline daily steps to health (such as being tobacco free, eating a healthy diet), what preventive medicines should be considered (aspirin, immunizations), and what screening tests are needed and when (e.g., for Abdominal Aortic Aneurysm, colorectal cancer, diabetes).

- The American Diabetes Association has launched My Health Advisor, an online tool that helps people understand their personal risk for developing type 2 diabetes, heart disease and stroke. My Health Advisor takes into account a person's specific risk factors, such as family history and lifestyle choices, as well as other factors like access to health care, to determine their risk for developing diabetes, heart disease and stroke. To encourage preventative measures, the online calculator immediately reflects and readjusts a person's risk.
outcome based on small changes they make in their lives, such as losing 5-10 pounds, quitting smoking or taking a daily aspirin.53

- In the US, the NIH-funded HEALTHY study is currently being conducted in 42 middle schools to determine if changes in school cafeterias, vending machines, and physical education classes, along with activities that encourage healthy behaviors, can lower risk factors for type 2 diabetes in youth.54

- The Smoke-Free Ontario Amendment Act 2008 came into effect in January 2009 and makes smoking in any motor vehicle illegal when passengers under the age of 16 are present.55 This and other anti-smoking efforts might help the development of childhood asthma, as parental second-hand smoke is a risk factor for the disease56, and exposure to cigarette smoke in cars doubles the risk of developing asthma.57

Self-Management and Provision of Education

- Ontario has developed a framework for the prevention and management of chronic disease, which identifies a cluster of practice and system changes that have been found to improve chronic care delivery. These elements – which include personal skills and self-management support as well as delivery system design, provider decision support, and information systems – have been applied successfully in many jurisdictions.58

- A randomized control trial in the UK examined the effectiveness of diabetes education on improving outcomes amongst newly diagnosed type 2 diabetics. As compared to the control group, individuals who received a 6-hour group educational program from health care professional educators lost more weight, maintained this lower weight, experienced a greater decline in Hemoglobin A1C, had a greater understanding of diabetes and were less likely to be depressed during the 12-month follow-up period.59

- The Expert Patients Programme (EPP) is a skills training program to help develop patients' self-care skills, confidence and motivation to take more effective control over their long-term conditions. A central element of chronic disease management policy in the United Kingdom, a national randomized controlled trial found the program to be effective in improving self-efficacy and energy levels among patients with long-term conditions, and reductions in service use (especially expensive inpatient stays) offset the costs of providing the self-management skills course.60

- A recent Ontario study of a web-based diabetes tracker found those who had access to it experienced greater declines in systolic and diastolic blood pressure and glycated hemoglobin after 6 months than those in usual care. The tracker, which can be access by both the patient and a primary care provider, provides sequential monitoring values for 13 diabetes risk factors, their respective targets and brief, prioritized messages of advice.61

- A US study found that a tailored hypertension self-management intervention delivered by a nurse over the telephone had a modest effect on blood pressure control, but also had unintended positive effects on glycemic control. Patients with diabetes who received the intervention for blood pressure also had significant improvements in their HbA1c.62

Team-Based Care

- A recent review of chronic care treatment models concludes that integration of service delivery is key to chronic disease care and there is strong evidence that multidisciplinary teams providing care for chronic disease patients improve patient satisfaction, reduce health-care resource use and have a minimal impact on quality of care and clinical outcomes.63

- In Ontario, the Ministry of Health and Long-Term Care has created 170 Family Health Teams in various Local Health Integration Networks (LHINs), with an additional 30 teams announced in August, 2010.64 These teams are composed of doctors, nurses, nurse practitioners, and other health care professions who will work together to provide more coordinated health care and improved management of chronic diseases.65
To help Ontario Family Health Teams learn and adopt quality improvement techniques in their practices, the Quality Improvement and Innovation Partnership (QIIP) has been established. QIIP recently launched Learning Communities, a quality improvement program supporting primary care providers; the first wave of the program focused on six areas: diabetes, asthma, hypertension, chronic obstructive pulmonary disease, integrated cancer care and office practice redesign.

A randomized control trial in 14 community pharmacies in Alberta, Canada, found that even in patients who have diabetes and hypertension that are relatively well controlled; a pharmacist and nurse team-based intervention resulted in a clinically important improvement in blood pressure.66

The Health Council of Canada examined five case studies of effective team-based primary health care for chronic disease and found that key ingredients for success include: effective leadership, clear roles and responsibilities for team members, an electronic health/medical record system; and patient-centred programs and support services, combined with effective (usually electronic) self-assessment and self-management tools.67

In Finland, a successful team-based approach to chronic disease management involves primary health teams usually made up of five family physicians and five nurses. The approach includes annual health assessments of patients, quality assessments of primary health teams, and an emphasis on self-management. Financial incentives are also offered to providers who meet specific targets and goals relating to a patient’s management of the chronic disease.68

Addressing Co-morbidities

A US study indicates patients with several chronic conditions use fewer health care resources and cost less when they are closely supported by a nurse-physician primary care team that tracks their health and offers regular support. The research found that in the first eight months of a randomized controlled trial, patients in a primary care enhancement program called "Guided Care" had 24% fewer hospital days, 37% fewer skilled nursing facility days, 15% fewer emergency department visits and 29% fewer home health care episodes.69

The CDC Arthritis Program is using two different approaches to address the needs of people with arthritis as well as another chronic condition. The CDC has provided states with more funds to extend effective, evidence-based interventions, such as implementing and disseminating arthritis-specific physical activity and self-management education programs, the Chronic Disease Self-Management Program (CDSMP), and EnhanceFitness, a multi-component physical activity program appropriate for people with chronic conditions.70

A recent systematic review found that although the number of studies in this area is small, antidepressants appear to be effective for treating depression and/or anxiety in patients with heart disease, stroke, cancer and arthritis, and a range of psychological and behavioural treatments are also effective in improving mood in patients with cancer and arthritis.71

Although more controlled trials clearly are needed, existing studies suggest that depression in patients with neurological disorders (such as Alzheimer disease, stroke, Parkinson disease, and multiple sclerosis) responds to antidepressant medication and, in some disorders, to psychotherapeutic approaches.72

A 16-week psychotherapy trial in patients with multiple sclerosis (MS) and depression compared telephone-administered cognitive behavior therapy (CBT) with telephone-administered supportive emotion-focused therapy (SEFT); the results showed significant improvements from baseline in depression and concomitant decrease in disability and fatigue for both interventions. Compared with SEFT, CBT was associated with significantly greater reductions in disability and fatigue even after controlling for reduction in depression, suggesting additional benefits of CBT for patients with
MS Independent of its effects on depression.73

- A recent study on a coordinated disease management program for Medicaid patients with one or more chronic diseases found the program was effective in managing comorbidities, reducing adverse drug events and the use of medical care and drugs. The three-year study involved mailing participating physicians and pharmacists educational materials updated state-of-the-art practice guidelines, feedback sheets, and clinical summaries and having them consult with their patients about their lifestyles, treatments and drug uses.74

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Trend 4 – HEALTH HUMAN RESOURCES MANAGEMENT

INTRODUCTION
Health human resources (HHR) has emerged as a critical factor in health policy planning across Canada and the world. Current and emerging HHR trends in Canada and the world have a significant impact on the health system of Ontario. The Pan-Canadian Health Human Resource Strategy stated that: “appropriate planning and management of HHR are key to developing a health care workforce that has the right number and mix of health professionals to serve Canadians in all regions of the country.”

SUMMARY OF KEY FINDINGS
Current and emerging health human resource (HHR) challenges in Canada and the world will have a significant impact on the health system of Ontario. The local and worldwide demand of trained health professionals is not matched by an adequate supply. An aging workforce, geography, and reliance on internationally trained workers are some of the challenges faced by many developed countries including Canada. However, many jurisdictions, including Ontario, have developed innovative strategies and programs to increase the supply of health practitioners and ensure that the right number and mix of health professionals are available to provide care.

Growing Challenges
- The worldwide supply of HHR is not enough to meet current demand.
- Despite ethical concerns with recruiting physicians from poorer countries, this remains a common response to HHR shortages in Canada.
- There is an unequal distribution of HHR between rural and urban areas.

Emerging Responses
- Expanded scope of practice for health professionals.
- Integrated health care teams.
- Increasing the capacity to train health professionals.

GROWING CHALLENGES
Supply of HHR

Canada
Canada has an aging health care workforce and shortage of key health professionals:
- In 2008, the average age of the physician workforce was 49.8 years; the average family medicine physician was 49.0 and the average specialist was 50.6. In 2008, more than 54% of Registered Nurses (RNs) and Registered Practical Nurses (RPNs) working in Ontario were over 45 years of age.
- An increase in the number of female medical students (57.8% in 2007) and current trends in female physician work hours suggest that an overall decrease in doctor productivity is to be expected in Canada which may further compound Canada’s HHR shortages.
- There was a shortage of nearly 11,000 full-time equivalent (FTE) registered nurses (RNs) in Canada in 2007 and this is projected to increase to almost 60,000 FTEs by 2022 if no action is taken.
- Canada appears to be losing many highly educated nurses (baccalaureate prepared) to the USA which is depleting Canada’s stock of nursing human capital. Full-time work opportunities and the potential for ongoing education are key factors that contribute to the migration of Canadian nurses to the USA.
Global

- There is a global shortage of approximately 4.3 million health workers, with the greatest shortages in the poorest countries. The causes of crisis are many, from a global rise in chronic disease and an aging population, to poor local working conditions and international migration. Increased demand from wealthier countries resulting from aging populations and medical advances has pulled large numbers of health workers from some of the world’s poorest countries — many of whom are left with acute shortages of health workers of their own.
- Indian government figures indicate that 60,000 doctors trained in India are now working outside the country, including nearly 9,000 in Canada. The Indian government has trained 2% of the Canadian physician workforce and 5% of that of the US and the United Kingdom.
- Today, there are 532 Ghanaian doctors practicing in the United States. Although they represent a tiny fraction of the 800,000 U.S. physicians, their number is equivalent to 20% of Ghana’s medical capacity. In other countries, the situation is even worse: 60% of Liberia’s physicians are in practice in the United States or Britain.

Recruitment Practices

Despite ethical concerns with recruiting physicians from poorer countries, this remains a common response to HHR shortages.

- In 2007, 22.4% of Canada’s physicians were graduates of foreign medical schools, compared to a high of 33.1% three decades earlier. The top countries that contribute the largest number of International Medical Graduates to the Canadian physician workforce are South Africa and India. Thirty years ago, Britain and Ireland were the top contributing countries to Canada’s physician workforce.
- In 2007/08, there were more South African-trained physicians working in Saskatchewan (277) than home-grown physicians (245). The province actively recruits in South Africa, and a recent ad in the South African Medical Journal boasts remuneration of $230,000 to $328,000 depending on qualifications and location of employment, “plus additional personal and professional benefits too numerous to mention.”
- The number of full time equivalent International Medical Graduates (IMGs) in Ontario increased from 67.43 in 2000 to 719.76 in 2009; proportionally, this corresponds to an increase from 2.02% of all postgraduate medical trainees to 13.32%.

Distribution of HHR

Aside from the issues of training and recruiting physicians, there is the problem of efficient distribution. Geographical differences create numerous challenges for health care providers and planners.

- Rural areas in Canada, the United States, Norway, and New Zealand are experiencing difficulties recruiting and retaining adequate medical professionals. The lack of rural opportunities for full-time positions, specialized nursing practice, and RPN expanded practice are attracting younger nurses to urban centres. Furthermore, government policies focussing on the retention of clinical expertise, the recruitment of new graduates, and expanding role of RPNs have been more difficult to implement in rural settings.
- In 2006, approximately 20% of the Canadian population was located in rural areas, while less than 10% of physicians were located in these areas. Similarly, only 12.2% of RNs resided in rural and remote areas in 2007.

EMERGING RESPONSES

Increasingly Efficient Use of HHR

There are a number of initiatives underway in Canada and other jurisdiction to make the most of scarce health professionals.

- In Canada, a new staffing model at blood donor clinics is expected to alleviate pressure from HHR shortages as well as allow clinics to run more efficiently. Canadian Blood Services is testing a model for fall 2009 in which trained clinic workers will perform standard blood screening at blood donor clinics instead of registered nurses. They estimate 400 registered nurses
will no longer be needed at blood clinics across Canada if the pilot is successful.

- Health care teams are also being used by various jurisdictions in an attempt to make care more efficient.
  - Multidisciplinary teams, such as Ontario’s Family Health Teams, maximize the efficiency of HHR, providing improved access and better health outcomes. Pharmacists and physiotherapists are examples of allied health professionals that are being studied to determine their roles in primary health care teams in Ontario.
  - The use of physician assistants, acute care nurse specialists and primary health care nurse practitioners in emergency department teams is being piloted by Ontario to address the lack of physician resources.
- In the United Kingdom, 81% of physicians routinely work in interdisciplinary teams and with non-physicians.
- The role of “physiotherapist practitioners” in the emergency department and primary care is evolving in such countries as the UK and Australia.

**Expanded Scope of Practice**

Expanded scope of practice of health care professionals gives patients more options for care and enables professionals to provide more services.

- Internationally, the UK has taken a leading role in exploring and supporting the expansion of health care professionals’ scope of practice by reviewing health professionals' roles and amending legislation.
- In Canada, several jurisdictions have passed legislation to expand health care professionals' scope of practice, such as pharmacists in British Columbia and Alberta. British Columbia has also announced legislation to expand the scope of practices for midwives, naturopathic doctors, and registered nurses to deliver a broader range of services. For example midwives with additional training will be able to initiate induction and augmentation of labour, naturopathic doctors will be able to prescribe certain medications, and registered nurses will be able to perform basic prescribing and ordering of tests when a primary care provider is absent.
- In 2009, Ontario passed legislation to allow nurse practitioners, pharmacists, physiotherapists, dieticians, midwives and medical radiation technologists to deliver more services. The legislation also changed the rules for administering, prescribing, dispensing, compounding, selling and using drugs in practice for chiropodists and podiatrists, dental hygienists, dentists, midwives, nurse practitioners, pharmacists, physiotherapists and respiratory therapists.

**Increasing Current and Future Capacity**

Canada

Strategies and programs are currently underway in Canada to address the HHR workforce and meet increased demands.

- Through the HealthForceOntario strategy, more than $20 million has been disbursed to two programs that emphasize interprofessional care and health workforce education: the Interprofessional Care/Education Fund and the Optimizing Health Providers Competencies’ Fund.
- Ontario has also introduced two programs to address nursing shortages. The Late Career Initiative provides opportunities for senior nurses to participate in projects away from the bedside and remain in the workforce. The New Graduate Guarantee increases the opportunity for full-time employment of 4000 new nursing graduates.
- In Canada, the entering class of medical students in 2008/09 was 68.3% larger than the class of 1998/99. For nursing, the increase from 1997 to 2007 was 51.4%. In Ontario, 280 more first year medical doctor positions were offered in 2008/09 than in 2000/01, an increase of almost 50%.
- The Ottawa Hospital has developed a program logic model to more accurately predict the number of nurses the hospital will have to hire over the next three, and also five years. This workforce planning initiative moved the organization from a reactive to a
proactive mode, supported innovative recruitment strategies, and helped to justify budget requests, thus aligning hiring with the business plan of the hospital.36

Responses to HHR Management by Other Jurisdictions:
To meet HHR demands and maldistribution of professionals, a number of strategies and initiatives have been developed by other jurisdictions.

- In 2006, the World Health Assembly called on all member states to contribute to a rapid scale-up in the production of health workers.37
- Title V of the US Patient Protection and Affordable Care Act, signed into law in 2010 concerns that nation’s health care workforce. The purpose of the title is to improve access to and the delivery of health care services for all individuals, particularly underserved populations by 1) gathering and assessing comprehensive data in order for the health care workforce to meet the health care needs of individuals, 2) increasing the supply of a qualified health care workforce, 3) enhancing health care workforce education and training, and 4) providing support to the existing health care workforce. Specific initiatives designed to help meet these goals include state healthcare workforce development grants, public health workforce recruitment and retention programs, and increased teaching capacity.38
- A systematic review of American medical school rural physician programs found that all identified programs have produced a multi-fold increase in the rural physician supply, and widespread replication of these models could have a major impact on access to health care in thousands of rural communities.39
- In 2008, New York State enacted an initiative, “Doctors Across New York”, which gives grants and enhanced pay rates to physicians and clinics in under-served communities. In addition, a new student-loan repayment program will be tied to service in under-served areas.40
- Norway has had success in retaining doctors in rural areas by developing a training model which allows for postgraduate medical training to occur in remote areas, rather than in large centres. Of the 53 physicians who completed their training in rural Finnmark from 1995 to 2003, 34 (65%) were still working in the county 5 years later.41
- In India the government's responses to rural doctor shortages have included: 1) a mobile health program that travels to rural areas with a few basic medical tools and over-the-counter medications; 2) private sector medical colleges and nursing schools; 3) a move towards community health insurance schemes; 4) and compulsory rural placements for medical students.42
- In Australia, there is a suggestion that physician assistants (PAs) could help to address medical workforce shortages in rural and remote settings.43, 44 Once PAs gain sufficient experience and professional development, it is expected they would be able to practice with remote supervision, allowing them to operate satellite clinics, make house calls, and undertake remote community outreach.45 There has been further suggestion that the introduction of PAs into the rural medical workforce could serve to delay the retirement of existing rural doctors, and help to recruit and retain new, younger doctors.46
- In Ghana, nurses face a fine if they want to work abroad before serving in a Ghanaian hospital for five years. In an effort to take into account the cost of training, if a nurse defaults for the whole five years he or she will have to pay around 12,000 Ghanaian cedis (i.e., $11,000 or £5,500).47

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Trend 5 – MENTAL HEALTH AND ADDICTIONS

INTRODUCTION
One in five Canadians will experience mental illness in their lifetime. Mental illness is accompanied by significant costs to the health care system, employers, as well as the individuals affected by mental illness. In Ontario, approximately one third of claims for short and long-term disability benefits (70% of total costs) are due to mental illness, which amounts to an estimated $15 billion to $33 billion annually. The World Health Organization estimates that depression will be the second leading cause of disability by the year 2020.

SUMMARY OF KEY FINDINGS
Growing Challenges:
- According to a 2009 survey by the Centre for Addiction and Mental Health there is a 31% prevalence rate of psychological distress, a 21% prevalence rate of hazardous drinking, and a 16% prevalence rate of drug use problems in Ontario students in grades seven to twelve.
- In 2003, the economic burden of mental health illness of persons over 20 in Canada was estimated at $51 billion.
- In 2003/2004, total mental health care spending in Canada was $6.6 billion, five percent of total health care spending, a rate below most comparable countries.
- A study using data from the population health supplement to the Ontario Health Survey found that anxiety disorders and affective disorders were more prevalent among caregivers than non-caregivers.

Emerging Responses:
- The harm reduction philosophy of treatment has emerged and evolved over the past two decades as a response to growing concerns about the adverse consequences of substance abuse for both the individual and society – namely the spread of HIV and other blood-borne infections.
- “Supported employment” – a model that places clients in competitive jobs without extended preparation and provides on the job support from trained “job coaches” or employment specialists – has been found to be a best practice for employing people with a mental illness.
- Scotland’s National Programme for Improving Mental Health is highlighted in the literature as a successful public mental health policy that addresses the Social Determinants of Health.
- The mental health of caregivers is starting to be recognized as an issue of concern. Several jurisdictions are setting up paid informal caregiver policies to help caregivers alleviate the burden of juggling work and caring for an individual.

GROWING CHALLENGES
A WHO report states that mental health is determined by socioeconomic and environmental factors, as the risk of mental illness is associated with indicators of poverty, including low levels of education, and in some studies with poor housing and low income.

Substance Abuse and Addictions
- Twin reports on a 2009 survey of Ontario students in grades seven to twelve found a 31% prevalence rate of elevated psychological distress, and 12% prevalence rate of self-reported poor mental health among students. Furthermore, the survey found that 21% of students reported drinking at a hazardous level, and approximately 16% of students may have a drug use problem.
According to 2005 survey data, 2.6% of Ontarians had moderate gambling problems while 0.8% had severe gambling problems.7

A national survey found that between 1994 and 2004, the proportion of Canadians who reported having used an illicit drug in their lifetime rose from 28% to 45%. Cannabis was found to be the most widely used type of drug, followed by hallucinogens, cocaine (or crack), speed and heroin.9

Between 1977 and 2007, the number of police-reported drug offences had increased, with the largest category of drug crimes involving cannabis and the second largest category involving cocaine. Although police-reported cannabis offences have been decreasing over the past 30 years, cocaine offences have been increasing over the past 30 years.9

According to a US survey, rates of current use of illicit drugs in 2008 were higher for young adults aged 18 to 25 (19.6%) than for youths aged 12 to 17 (9.3%) and adults aged 26 or older (5.9%). 4.6% of men and women ages 18 to 25 reported use of prescription pain drugs for non-medical reasons, a 12% rise from the previous year, continuing the rising trend of recent years while 1.5% in this age group used cocaine in 2008, a 23% drop from 2007.10

A US study found that of 8,455 Midwestern youth, 40% had at least some problems with gambling and 10% of the sample fit the profile for probable pathological gamblers.11

In 2002, nearly half a million employed Canadians aged 25 to 64 reported the occurrence of a major depressive episode in the previous 12 months. An additional one million workers had experienced depression during some other period in their lives.18

According to 2003 Statistics Canada data, 275,315 Ontarians living with a serious mental illness were unemployed.19

In 2003, the economic burden of mental health illness of persons over 20 in Canada was estimated at $51 billion.20

Some of the challenges of dealing with mental illnesses in the workplace include addressing misconceptions about mental illness and discrimination of living with mental health issues.21, 22

Access to Mental Health Services
Access to mental health services is a critical issue facing consumers nationwide. The need for timely access to integrated mental health services has been highlighted and identified by many including the Kirby and Keon Out of the Shadows at Last report23, the Canadian Mental Health Association, 24 and Ontario’s Select Committee on Mental Health and Addictions.25

In 2003/2004, total mental health care spending in Canada was $6.6 billion, five percent of total health care spending, a rate below most comparable countries.26

In a 2010 report, Ontario’s Select Committee on Mental Health and Addictions found that one of the main problems in Ontario’s mental health and addictions system is that there is no coherent system. Mental health and addictions services are funded or provided by hundreds of agencies, and no one person or organization is responsible for connecting these various parts. As a result, many people do not access care as a result of the complexity of the system.27

A study assessing mental health practices in Ontario used a sample of physicians from a mixture of rural, urban and university settings to determine access issues. Identified barriers to delivery of optimal mental health care included difficulties in accessing psychiatric care, poor

Employment and Mental Health

It has been suggested that depressive disorders are highly prevalent in the workplace and have a negative impact on performance, productivity, absenteeism, and disability costs.14, 15, 16

Mental illnesses have been identified as the leading cause of workplace disability in the US and Canada for persons aged 15 to 44.17

In 2007, 25% of youth aged 11 to 15 in England reported trying drugs at least once.12

The proportion of youth in England who took illicit drugs in the last year was 17% in 2007.13

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communication with mental health care providers, and difficult intake procedures for many mental health services.28

- A recent study found more than 80% of a sample of Saskatchewan family physicians saw at least six patients per week with mental health problems. Many family physicians were generally dissatisfied with the quality of mental health care they were able to provide because of issues of access to mental health professionals – especially psychiatrists.29

- According to a qualitative study that interviewed senior managers of children’s mental health centres across Ontario, the central challenges of access and delivering mental health care to children were: funding, case complexity, waitlists, staffing, and system integration. Senior managers noted that desires for system integration and collaboration were countered by competition for funding and the struggle to meet service demand.30

- A nationally representative survey of 6,600 primary care physicians (PCPs) in the US found that PCPs had far more difficulty obtaining mental health services for patients than they did obtaining other commonly used services. Two-thirds of PCPs reported that they were unable to get outpatient mental health services for patients; more than twice the rate reported for any of three other common referrals. Reasons cited for the difficulties included lack of insurance, lack of providers, and health plan barriers.31

**Mental Health of Caregivers**

- It has been suggested that caregiving can lead to increased rates of depression, stress, and anxiety.32

- A recent Ontario study found that anxiety disorders and affective disorders were more prevalent among caregivers than non-caregivers.33

- Despite the valuable contributions that are made by informal caregivers in Canada, they tend to be limited and are often provided through voluntary organizations.34, 35

- A US study examining caregiver burden found that 13% of caregivers met the diagnostic criteria for one or more psychiatric disorders.36 Additionally, 80.8% of participants had discussed a mental health concern with a health care provider before their loved one was diagnosed with cancer, but only 46.2% had sought professional help with their mental health after their loved one’s diagnosis.37

**EMERGING RESPONSES**

**Substance Abuse and Addictions**

- The harm reduction philosophy of treatment has emerged and evolved over the past two decades as a response to growing concerns about the adverse consequences of substance abuse for both the individual and society – namely the spread of HIV and other blood borne infections.38

  - The harm reduction philosophy emphasizes the provision of specific interventions (e.g., needle exchange, drug substitution, safe injection sites) in which the expectation of reduced drug consumption is secondary to changing patterns of consumption and related behaviour (e.g., sexual or criminal behaviour) to reduce the risks to the individual and society.39

  - Several countries have explicitly adopted harm reduction as a national drug policy and many jurisdictions including Ontario have woven this philosophy into treatment policy.40

  - In September 2010, the UN committed to combat HIV/AIDS and other diseases in part through the use of harm-reduction techniques such as expanding access to sterile injecting equipment.41

  - In Toronto, Ontario, the Annex Harm Reduction Program at Seaton House is home to 140 homeless men who have lived on the street and require help because of alcohol addiction and other serious illnesses. The Annex
helps the men get better through a harm reduction approach that helps them with alcohol addictions and health problems. At the Annex alcohol intake is closely supervised to make sure future harm is reduced.42

- A recent study found that Vancouver’s supervised injection site is associated with improved health and cost savings, even with conservative estimates of efficacy.43

- The development of treatments for gambling problems has been based largely on treatments for substance use problems. The decision to integrate substance use and gambling treatment services in Ontario is consistent with similarities in the neurobiology and treatments for these two problems, as well as their high rates of co-morbidity.44

- Recent evidence supports the effectiveness of Methadone Maintenance Treatment (MMT) for opioid dependence.45, 46, 47 A recent systematic review of 11 trials found that MMT retains patients in treatment and decreases heroin use better than treatments that do not use opioid replacement.48 A number of factors have been found to be associated with better MMT outcomes, including rapid access to treatment, higher methadone doses, flexibility regarding doses, a non-punitive attitude toward illicit drug use, an explicit orientation toward maintenance (as opposed to reduction), and the provision of ancillary psychosocial services.49

  - In April 2006, the Ministry of Health and Long-Term Care commissioned a task force to advise the ministry on how to improve MMT in Ontario. In 2007, the Task Force made 26 recommendations based on improving access to a range of integrated services at the community level, education for health professionals, and appropriate payment and support of MMT.50

  - In Australia, MMT programs have been available since 1985. A report on their national drug strategy notes that methadone is the most common pharmacotherapy used in Australia for opioid-dependence, and it is recognised nationally and internationally as an effective method for treatment of opioid dependence.51

  - A recent systematic review suggested that heroin should be provided to patients with histories of past treatment failures as a last resort. Patients who were prescribed heroin with flexible doses of methadone had reduced use of street heroin and reduced criminal activity, and were more likely to remain in treatment.52

Employment and Mental Health

- The Canadian Institute of Health Research offers funding to support research teams in creating innovative research programs designed to reduce the burden of mental illness in the workplace and foster the development of policy and program interventions.53

- A recent pilot study found that a collaborative mental health care team model (primary care physician and psychiatrist) may be more cost-effective than independent medical examinations for addressing workplace short-term disability leave related to psychiatric illness. The study found that with this model of care, for every 100 people on short-term disability leave, there could be $50,000 in savings related to disability benefits along with more people returning to work, and 1600 more workdays.54

- “Supported employment” – a model that places clients in competitive jobs without extended preparation and provides on-the-job support from trained “job coaches” or employment specialists – has been found to be a best practice for employing people with a mental illness.55

  - A recent systematic literature review found that supported employment is more effective than pre-vocational training in helping severely mentally ill people obtain competitive employment. Thirty-four percent of people who received supported employment were still employed after
one year, whereas only 12% of people who had received pre-vocational training were still employed.\(^{56}\)

- Individual placement and support, a model that emphasizes rapid job search and continued support to patient and employer from an employment specialist who is an integral member of the mental-health service team, has been extensively applied in the US and has been recommended to the Governments of England and Scotland as an approach to consider when developing employment programs for people with mental health problems.\(^ {57}\)

### Access to Mental Health Services

- In its final report, Ontario's Select Committee on Mental Health and Addictions' first recommendation was the creation of a new umbrella organization (Mental Health and Addictions Ontario (MHAO) to ensure that a single body is responsible for designing, managing, and coordinating the mental health and addictions system, and that programs and services are delivered consistently and comprehensively across Ontario. The Select Committee made 23 additional recommendations including that a basket of core institutional, residential and community services is available in every region of the province, that MHAO should facilitate the creation of more 24/7 mobile crisis intervention teams, and that more be done to publicize Telehealth Ontario's ability to respond to callers with mental health and addictions issues.\(^ {58}\)
- In Ontario, service information on alcohol and drug, gambling, and mental health services are now located under one umbrella – ConnexOntario.\(^ {59}\)
- Telehealth is a promising approach for delivering children's mental health services especially in underserved areas. According to one study, participants in Nova Scotia's Family Help telehealth program felt comfortable and safe in their own home; they did not feel stigmatized or judged; they had little apprehension about self-disclosure and they felt that treatment was delivered at their convenience. As well, attrition rates were low and children felt actively engaged in the structured treatment.\(^ {60}\)
- According to a recent literature review, collaborative mental health care (health care professionals with different specialties or sectors working together to treat patients) is associated with positive patient outcomes including improvements in overall symptoms, depression and anxiety free days, and adherence to medication and treatment plans.\(^ {61}\) For example, one review found that collaborative care was associated with a two-fold increase in anti-depressant adherence.\(^ {62}\)
- The Ottawa Court Outreach Program is a community support program in which individuals with severe and persistent mental illness are referred for outreach services at a time in which they are legally involved. Outreach workers perform a variety of functions, including assertive outreach, client and systems advocacy, symptom management, life skills teaching, supportive counselling, and family support and crisis intervention.
  - A recent evaluation of the Ottawa Court Outreach Program found it resulted in diminished severity of mental health symptoms, reduced homelessness, and more desirable legal outcomes for clients as perceived by program staff. However, the program is limited in its ability to respond to the large population who needs its services.\(^ {63}\)
- Although acting early may prevent future episodes of mental illness and reduce the health, social and economic costs of mental illness and addictions,\(^ {64}\) a Cochrane review of early interventions for psychosis was unable to find sufficient evidence about the effectiveness of such programs to draw any definitive conclusions.\(^ {65}\)
- Assertive Community Treatment (ACT) is a team treatment approach designed to provide comprehensive, community-based psychiatric treatment, rehabilitation, and support to persons with serious and
persistent mental illness. It has been widely implemented in the United States, Canada, and England and the Schizophrenia Patient Outcomes Research Team (PORT) has identified it as an effective and underutilized treatment modality.66

- The "Fusion of Care" model of shelter based collaborative mental health care for homeless men at Seaton House in Toronto is a service delivery model that offers physical and mental health care services at the shelter. Such collaborative care models may be a possible solution to the complex health needs of homeless individuals as primary care and mental health services are delivered in one place.68

- Scotland’s National Programme for Improving Mental Health is a successful public mental health policy that addresses the social determinants of mental health. The National Programme aims to influence and join up with policy areas outside of health in order to develop a cross-sectorial approach to mental health promotion in all sectors of government.69 Specifically, Scotland’s mental health strategy includes an anti-stigma campaign and focuses on six priority areas including children’s mental health and mental health in the workplace.70

Caregiver Supports

- Increasingly, more jurisdictions are setting up paid informal caregiver policies to help caregivers alleviate the burden of juggling work and caring for an individual.
  - The Netherlands provides a personal budget for caregivers, tax deductions, career interruption pay, and ten days of care leave at 70% of normal wage.71
  - In the UK, caregivers receive a caregiver’s allowance and direct payments, as well as pension protection, tax discounts, and second pensions.72

- Strategies to alleviate depressive symptoms among caregivers include:
  - Multi-component caregiver support interventions
  - Respite care to reduce caregiver burden
  - Financial support to alleviate economic stress of caregiving
  - Primary care interventions that address caregiver needs.73
  - In September 2008, the Ministry of Health and Long-Term Care began the Caring-About-Caregivers Long-Range Scenario Planning (LRSP) project to explore ideas that would better support family caregivers and other informal caregivers. After consulting with project participants, partners and stakeholders, the project’s final report recommends four strategic themes for further strategy and policy development: 1) adapting the definition of caregivers to changing families and communities, 2) competing and caring in shifting economies and demographics, 3) system navigation and education, and 4) building on social networks.74

- In the US, the Middle Class Taskforce has made supporting family caregivers a priority.75 The healthcare reform law contains the Community Living Assistance Services and Supports (CLASS) Act, which creates a voluntary insurance program for purchasing community living assistance services and supports;76 these benefits can be used to compensate family caregivers.77 Further, the US budget for 2011 provides tax relief of up to $2,100 for middle-class families to pay for the costs of caring for a relative, and $103 million for the Administration on Aging’s Caregiver Initiative, an effort to expand help to families and seniors so that caregivers can better manage their multiple responsibilities. The initiative provides new resources to support agencies that already provide help to caregivers.78

- The Caregiver Support Program run through Vancouver Coastal Health provides information to connect people to health care, community, and support services in Vancouver, and helps caregivers assess their needs.79
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INTRODUCTION

eHealth is a consumer-centred model of health care where stakeholders collaborate, utilizing information and communication technologies, including Internet technologies to manage health, arrange, deliver and account for care, and manage the health care system. eHealth solutions are viewed as one of the key methods of modernizing the health care system, as they may be able to make care safer and more cost effective. In 2009, 21.7 million Canadians aged 16 and older (80%), went online for personal reasons during the 12 months prior to the survey. Of those individuals, 70% used the Internet to search for medical or health-related information, up from 59% in 2007. In Canada, 61% of consumers report wanting their physicians, hospitals and/or the government to provide them with a personal health record (PHR) or online medical record, while 6% of consumers already maintain one. It is estimated that as soon as patients begin to bypass physical means of transferring and obtaining information, savings could be achieved.

Health care experts, policymakers, payers, and consumers consider health information technologies, such as electronic health records and computerized provider order entry to be critical to transforming the health care industry. Health information technology has also been shown to improve quality by increasing adherence to guidelines, enhancing disease surveillance, and decreasing medication errors. Both the Romanow and Kirby Reports (2002) highlight the importance of electronic health records to the future of health care. However, concerns remain about the high costs of implementing an effective electronic health records system and patient privacy.

SUMMARY OF KEY FINDINGS

Growing Challenges:
- Implementing eHealth technology is costly and may account for as much as 20% of all spending increases.
- Health professionals may be resistant to using information technologies, particularly with high rates of failure.
- Concerns over the protection of personal health information are associated with implementing electronic health records.

Emerging Responses:
- The use of the internet to deliver health care is growing around the world. Various public health and chronic disease interventions are being tested and implemented to improve health outcomes and decrease costs.
- Telehealth programs are increasingly being adopted to deliver health care in various regions of Canada.
- An increasing number of private sector companies are developing products to address health information needs of patients and consumers.

GROWING CHALLENGES

High Implementation Costs
- Canada Health Infoway (Infoway) is working in partnership with the country’s federal, provincial, and territorial governments to create and implement electronic health record (EHR) systems.
  - Support for Infoway was acknowledged in the 2009 federal budget with an additional $500 million designated for this initiative. This brings the Government of Canada’s total commitment to $2.1 billion.
According to Infoway, achieving the full health “infrastructure” vision over the next 10 years will require a total incremental investment of $10 billion to $12 billion in capital and $1.5 billion to $1.7 billion in annual operating costs. The upfront capital investment – approximately $350 per person – would bring Canada’s spending in line with comparable systems in other jurisdictions (e.g., the UK and US). The elements of the vision are expected to deliver an estimated $6 billion in annual benefits.

Since its inception, Infoway has approved 293 projects involving all provinces and territories in Canada. At the end of the 2009/10 fiscal year, $1.63 billion or 75% of Infoway’s $2.14 billion fund had been allocated for electronic health information systems projects.

A report by Booz Allen Hamilton estimated the cost of developing EHRs in Canada to be anywhere from $8 to 16 billion over a ten year period.

As part of the economic stimulus package passed in 2009, US President Obama proposed to modernize health care by making all health records standardized and electronic within five years. The price tag for this ambitious plan was estimated between $75 million to $100 million but would create 212,000 jobs.

In order to be eligible for incentive payments, providers must implement EHRs and demonstrate their “meaningful use.” In the first phase of the program (2011/12), meaningful use will be defined by meeting all 14 core objectives (e.g., maintain active medication list, record and chart changes in vital signs) and five of ten menu objectives of EHRs (e.g., perform medication reconciliation between care settings).

In 2009, 11.9% of US hospitals had adopted either basic or comprehensive EHR systems, however, only 2% of US hospitals report having EHRs that would allow them to meet the meaningful use criteria.

A 2004 survey of hospitals by PricewaterhouseCoopers found that US hospitals spend an average of 2.5% of their yearly operating budgets on health information technology, up from 2.2% in 2002.

Budget filings by the US Veteran’s Affairs Administration indicate an 18% annual increase in health care information technology spending from 2007 to 2009.

High implementation costs are consistent with the UK Auditor General report reviewing public infrastructure projects. The UK Auditor General found that IT projects are very risky with over 50% of successful projects requiring renegotiation of terms to better manage escalating costs.

England’s National Health Services (NHS) is spending nearly £13 billion to digitize their health system, Connecting for Health. In January 2009 a parliamentary report concluded that the project was at least four years behind schedule and that the costs might soar.

Slow Uptake and Resistance from Health Care Professionals

A 2008 US hospital survey found that less than 2% of acute care hospitals have a comprehensive electronic records system and between 8 and 12% have a basic electronic records system. It has been suggested that strategies to promote the adoption of EHRs by US hospitals should focus on financial support, interoperability, and training of information technology support staff.

A review of national EHR programs in five countries identified six critical areas which commonly result in problems: 1) acceptance and change management, 2) demonstration of benefits and funding, 3) project management, 4) health-policy-related goals and implementation strategy, 5) basic legal conditions and data protection, and 6) technical solutions and standards.
In a 2008 study, only 4% of US physicians reported having an extensive, fully functional electronic records system, and only 13% reported having even a basic system.

A 2010 review of national EHR programs notes that Australia has implemented small regional EHR pilot projects with real data in several territories. However, a recent news article describes that patients will have to wait at least two years before they can access and retrieve their personally controlled EHRs, available initially through a secure website or portal operated by Medicare.

According to one Canadian study, there is support from primary health care providers to deliver Internet-based chronic disease management in rural and remote regions of Canada; however the need for secure and stable electronic systems that are compatible with current electronic systems is essential before adoption of such technology will occur.

In 2002, staff forced Cedars Sinai Medical Center (Los Angeles) to stop the use of a $34 million Central Physician Order Entry system and revert back to paper-based records.

According to the National Health Information Network director, up to 30% of all EHR attempts have failed. This poor success rate may be a contributing factor toward persistent reluctance and resistance to switch to electronic solutions.

Researchers at Vanderbilt University have found that failure to succeed with early system users is not only costly, but also discouraging to users and developers alike and may damage the reputation of the tools and systems across the organization.

Kaplan suggests that organizational factors and workflow are significant factors that must be addressed to increase the odds of success for implementation and use of electronic health solutions.

Privacy Concerns

Virginia Sharpe, medical ethicist with Veteran’s Health Administration notes that a centralised database could increase the chances that health information would be misused and that “as patient records become the product of many users, any one provider’s or institution’s obligations to protect confidentiality could be eroded.”

According to a national survey of 2,304 Canadian adults, 54% of consumers are concerned about information privacy related to the storage of online health information. A public opinion survey of 2,469 Canadians in 2007 found that 77% of respondents would like audit trails that document access to their EHRs, 74% want strong penalties for unauthorised access, and 66% want clear privacy policies.

A US-based survey of 2,392 adults conducted in 2007 found that the majority of respondents did not believe current US law and organizational policies provide enough privacy protection.

EMERGING RESPONSES

The Internet as Means of Delivering Care

The use of the Internet to deliver health care is growing around the world. Various public health interventions are being tested and implemented in areas such as: smoking cessation, health promotion information for pregnant women, and alcohol reduction programs.

One Internet smoking cessation study found that certain features, such as the use of interactive quitting tools and one-to-one messaging with other members of the online community, were associated with increased abstinence rates among users.

Internet-based chronic disease programs are also emerging for treating depression and panic disorder, and managing COPD and hypertension.

A recent Lancet study demonstrated the effectiveness of cognitive behavioral therapy (CBT) for depression when delivered online in real time by a therapist. Although there is strong evidence of CBT’s effectiveness, it remains difficult to access because there is a need for trained therapists. The recent
randomized control trial of 297 patients in the UK found that after eight months, 42% in the online CBT group had recovered from depression, while only 26% of those in the control group who received usual care from their general practitioner had recovered. 47

- Remote Patient Management (RPM) of chronic diseases is evolving steadily in the US to improve chronic care management while reducing net spending on chronic diseases. RPM relies upon a reorganization of care processes that include physiologic monitoring, protocol driven decision support, newly defined roles for clinical and non-clinical providers, and telecommunications that place patients at a distance from the providers of their care. RPM has been shown to support patient self-management, shift responsibilities to non-clinical providers, and reduce the use of emergency department and hospital services. This method of chronic care management has been broadly deployed in the Veteran’s Health Administration (VHA) and in small trials elsewhere. It has been suggested that RPM technologies will be essential in meeting the dual challenges of an aging workforce and an aging population while offering a means of making care more affordable. 48

**Telemedicine**

- The University of Ottawa Heart Institute hospital home monitoring program for heart patients is helping to save lives and money by reducing the number of hospital readmissions. After being discharged from the hospital, patients measure their own vital signs -- such as weight, heart rate, blood pressure and side-effects of medication -- before reporting the results to the institute through an automated calling system. A nurse follows up immediately if the numbers indicate a problem. Before home monitoring began, 69.4% of patients were readmitted at least once in six months. In the next six-month period, when the patients were being monitored, readmission fell to 14.8%. 49

- Ontario operates Telehealth Ontario, a telephone service to provide health advice and general health information to Ontarians from a registered nurse. These types of interventions provide additional opportunities to access advice and potentially reduce unnecessary visits to the local emergency department. 50

- The greater use of telehealth services in rural areas is one of Alberta’s five goals in their Vision 2020 health strategy. Currently, Alberta has a telemental health program which has increased access to mental health services, especially in rural areas. Approximately 3,500 patients were seen in 2007/08 through telemental health and 96% of surveyed patients reported being satisfied with the session outcome. 51

- In cases of suspected myocardial infarction in Chile, examinations of patients can be carried out in ambulatory settings, and the electrocardiogram can be transmitted immediately to a national centre where specialists confirm the diagnosis via fax or email. This technology-facilitated consultation with experts allows rapid response and appropriate treatment where previously it was unavailable. 52

- The growing market penetration and the communication properties of mobile phones create opportunities for innovation in promoting cardiovascular disease self-management in developing countries through support of lifestyle and behaviour modification. Mobile phones support various modes of communication and interaction, have fewer adoption barriers, and are more prevalent than other available technologies in developing countries. 53

- Continua Health Alliance is a non-profit, open industry coalition of healthcare and technology companies that have joined together to improve the quality of personal healthcare. Continua-compliant health management devices and online services have been designed to make it easier for consumers to manage their own health. Consumers can obtain electronic personal health data from a variety of Continua Certified devices (including weight scales,
blood pressure monitors, and personal computers). Individuals can manage their health from home by accessing their stored personal health data via the online services and applications. The first Continua-Certified mobile phone was unveiled in Japan in October 2010; the phone will manage and transfer health data collected by other Continua certified healthcare equipment.55

- A UK-based randomized control trial evaluated the use of Internet and mobile phone technology as a means of increasing physical activity. During the nine week trial, the experimental group increased physical activity an average of 2 hours and 18 minutes per week (compared to the control group) more than the control group. The test group also lost more body fat (2.18% vs. 0.17%) than the control group during the same period.56

Private Sector Ventures into eHealth
- In the spring of 2009, Telus announced they will be developing electronic health services that will allow individual Canadians to access and manage copies of their lab results, X-rays, and other medical information online and share it with different health care providers. Telus will be developing a system over the next year to import health data from partners such as doctors' offices, hospitals, and pharmacies into an online platform called Telus Health Space (similar to Google Health in the US) where patients will be able to use online tools to manage the data.57

- HealthPartners, a health care organization, partnered with a digital advertising agency, to develop software for a remote diagnostic service called Virtuwell that is available to all Minnesota residents and visitors to the state. The online portal invites users to fill out a questionnaire about current medications, health status, medical history, and symptoms. A nurse practitioner then reviews the questionnaire and responds within 30 minutes, providing the patient with personalized diagnoses, prescriptions for common ailments; and treatment recommendations. If responses to the questionnaire point to a serious medical condition, Virtuwell will direct the user to call 911 or seek care from the nearest emergency department. The service costs up to $40 per virtual consultation, compared with $53 at a retail clinic and approximately $115 at a primary care physician’s office.58

- Intel has also announced the availability of the Intel Health Guide, a touch-screen computer that includes video conferencing capabilities and a multimedia health education library for patients. The device may initiate scheduled ‘check-ups’ with patients several times a day, asking health-related questions and collecting vital signs, which are sent digitally to medical providers.59, 60

- In June 2008, Bloomberg News reported an agreement between a large group of organizations advocating for the creation of personal health records. These organizations included health insurers, organizations representing physicians and consumers, electronic prescription benefit managers, government agencies, Google, Microsoft, Cisco Systems Inc., WebMD Health Corp., Intuit Inc. and Dossia. This group owns a comprehensive set of privacy protections. The agreed upon framework includes audit trails and policies distinct from existing federal requirements covering the exchange of information.61

- Medicine/Health 2.0 is a nascent area that utilizes many of the latest ‘Web 2.0’ Internet technologies that enable and encourage consumer-driven health care.62 Hughes et al. examined the research in this area and concluded there is “an emerging body of research into Medicine 2.0” with many issues yet to be explored.63

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Trend 7 – PUBLIC AND POPULATION HEALTH

INTRODUCTION
The Public Health Agency of Canada (PHAC) defines a population health approach as a strategy that aims to improve the health of the entire population and to reduce health inequities among population groups. Population health builds on a tradition of public health and health promotion. It has been known for decades that changes in lifestyles or social and physical environments will likely lead to more improvements in health than would be achieved by spending more money on existing health care delivery systems. Despite the medical miracles of vaccinations and disease cures, infectious diseases, as part of public health, is a topic that continues to be relevant in Canada and globally.

SUMMARY OF KEY FINDINGS
Growing Challenges:
• Increasing rates of preventable lifestyle associated diseases.
• A rise in infectious diseases among vulnerable populations and the development of drug resistance in microbes.
• The introduction of new environmental stresses and disease vectors as a result of climate change.

Emerging Responses:
• There are various health promotion initiatives aimed at helping individuals and society make healthier lifestyle choices. The internet is one tool that is becoming more widely used to deliver health promotion programs.
• Organizations and programs aimed at researching and monitoring infectious diseases have been established nationally and internationally.
• The role of climate change on human health is currently being investigated to determine potential impacts.

GROWING CHALLENGES
Lifestyle-Associated Diseases

Health Concerns Due to Obesity:
• An overweight person is classified as having a Body Mass Index (BMI) between 25 and 30, and an obese person is classified as having a BMI over 30. Rises in obesity rate have occurred in the US, Europe, and other developed nations due to a lifestyle shift that promotes sedentary activity.
• In 2009, 33.7% of Canadians 18 years and older were overweight, and close to 18% were obese, while nearly 20% of youth aged 12 to 17 years old were overweight or obese. In Ontario, direct and indirect costs associated with overweight and obesity total between $2.2 billion and $2.5 billion per year.
• In England, 67% of men and 56% of women were either overweight or obese in 2006. The prevalence of obesity in England increased from 13% in men and 16% in women to 24% in both men and women between 1993 and 2006.
• In the US, 133 million, or 66% of the adult population, are either overweight or obese. The prevalence of obesity has doubled since the 1960s, to an all-time high of 30 percent, and the rate of increase continues to trend up. A recent Center for Disease Control and Prevention (CDC) report states that direct spending on obesity related medical care costs may be as high as $147 billion annually in the US.
A 2008 systematic review reports that increased BMI is associated with an increased risk of several cancers in adults. The magnitudes of associations between increased BMI and cancer were similar across populations for most cancer sites. However, the association was particularly strong for breast cancer in Asia–Pacific populations.11

In a Swedish study that examined the health effects of obesity and smoking among male adolescents, being overweight was as hazardous as smoking 1-10 cigarettes a day, while obesity was as hazardous as smoking >10 cigarettes a day. Regardless of smoking status, overweight and obesity in late adolescence increases the risk of adult mortality.12

Obesity can also have serious health consequences such as an association with type 2 diabetes mellitus13 and asthma.14

Health Concerns Due to Smoking:
- Tobacco use is the leading cause of preventable death, and is estimated to kill more than five million people each year worldwide. The World Health Organization estimates that if current trends persist, tobacco will kill more than eight million people worldwide each year by the year 2030, with 80% of these premature deaths in low- and middle-income countries.15
- Tobacco use is the number one cause of preventable disease and death in Ontario, killing over 13,000 Ontarians every year. Tobacco-related diseases cost the Ontario economy $1.6 billion in direct health care costs annually, resulting in $4.4 billion in productivity losses and accounting for at least 500,000 hospital days each year.16
- In general, smoking rates have declined in most developing countries including Canada,17 the UK,18 and Denmark.19 The US is one exception, as a slight increase in smoking rates (from 19.7% to 20.9%) was noted in 2008. This may be attributable to the current economic recession as people who had previously quit have relapsed due to stress.20 However, despite the decreases in smoking rates, smoking is still a major contributor to illness and the latent period between smoking and disease outcomes means that smoking-attributable mortality may not always reflect recent declines in usage.21
- Tobacco exposure is an associated cause of lung cancer22, 23, 24 and is also a determinant of chronic obstructive pulmonary disease,25 asthma,26 myocardial infarction,27 and type 2 diabetes.28, 29
- According to a Scottish study, smokers of all social positions have poorer survival rates than those in low social positions who have never smoked. Smoking by women also cancels out their survival advantage over men. In essence, neither affluence nor being female offers a defence against the toxicity of tobacco. The authors suggest that the scope for reducing health inequalities related to social position is probably limited unless many smokers in lower social positions can be enabled to stop smoking.30

Health Concerns Due to Alcohol Use:
- A recent study of the harms caused by the misuse of various drugs in the UK found that alcohol was the most harmful, when both harm to user and harm to others was considered.31
- According to a Canadian study, alcohol contributes to four percent of total global mortality and between four percent and five percent of global disability-adjusted life-years and thus is one of the largest avoidable risk factors for many disease categories, including alcohol-use disorders, cancer, cardiovascular disease, liver cirrhosis, and injury. The study found that certain patterns of drinking, especially heavy drinking occasions, contribute to this disease burden.32
- According to a 2010 CIHI report, alcohol was involved in 13% of Ontario hospital trauma cases in 2008-2009; among these cases, 44% were admitted due to motor vehicle collisions, 29% were admitted due to unintentional falls and 21% were admitted due to injury purposely inflicted by another person.33
- Despite the harms of alcohol related morbidity and mortality, alcohol is not high
on the global health agenda and, unlike tobacco and illicit drugs, no international policy is in place.\textsuperscript{34}

\textbf{Infectious Diseases}

- On June 11, 2009, The World Health Organization (WHO) declared the start of the H1N1 influenza pandemic - with 30,000 confirmed cases reported in 74 countries.\textsuperscript{35} It had been 41 years since the last pandemic was recorded in 1968.\textsuperscript{36} The pandemic was declared over by the WHO on August 10, 2010.\textsuperscript{37}
  - Based on preliminary data, the H1N1 influenza was expected to affect young and middle aged persons between the ages of 30 and 50, pregnant women, and people with underlying chronic conditions. This pattern was significantly different from that seen in epidemics of seasonal influenza, when most deaths occur among elderly people.\textsuperscript{38}
  - As of August 1, 2010, worldwide, more than 214 countries and overseas territories had reported laboratory confirmed cases of H1N1, including over 18,449 deaths.\textsuperscript{39}
  - In Canada, the impact of the H1N1 influenza on Aboriginal communities was of concern because of crowded housing conditions, younger populations, and higher pregnancy rates compared to non-Aboriginal communities.\textsuperscript{40} Although Aboriginal people account for fewer than one in 25 people in Canada, they accounted for more than one in 10 recorded cases of H1N1 during the first wave of the outbreak in 2009, more than one in five H1N1 hospitalizations, almost one in six intensive care cases and more than one in 10 H1N1-related deaths.\textsuperscript{41}
  - Nosocomial infections (hospital-acquired infections) such as \textit{Clostridium difficile} (\textit{C. difficile}) and Methicillin-resistant \textit{Staphylococcus aureus} (MRSA) are of concern because of their increasing resistance to antibiotics and the difficulty of preventing these infections from spreading amongst patients in hospitals and other health care facilities.\textsuperscript{42, 43}
  - According to two US surveillance studies, MRSA infection is a major public health problem primarily related to health care but no longer confined to intensive care units, acute care hospitals, or any health care institution.\textsuperscript{44, 45}
  - One study estimates that in 2005 there were 94,360 MRSA infection cases in the US with 18,650 cases associated with death. For the same year, approximately 16,000 people in the US died from AIDS, according to CDC figures.\textsuperscript{46}

- Resistance to antimicrobial agents reduces resistance to therapies, which leads to increased susceptibility to infectious diseases.\textsuperscript{47} Extensively drug-resistant tuberculosis (XDR-TB) is now a cause of great concern, as well as drug resistant diarrhoeal diseases, malaria, meningitis, respiratory tract infections, and HIV.\textsuperscript{48}
- In the US, the infectious disease hospitalization rate in older adults increased 13\% between 1990-1992 and 2000-2002. Over half of these hospitalizations were due to lower respiratory tract infections.\textsuperscript{49}

\textbf{Climate Change Effects on Health}

It has been predicted that climate change will start affecting weather patterns and environmental conditions, thus supporting new disease vectors and environmental stresses on health.\textsuperscript{50}

- Canada may experience extreme weather patterns and warmer climates, which could lead to an increase in illnesses such as asthma, allergies, and respiratory and cardiovascular stresses.\textsuperscript{51}
- West Nile Virus cases have been increasing in Canada since 1999.\textsuperscript{52} Canada had 2,215 confirmed cases of West Nile in 2007 compared to 151 in 2006.\textsuperscript{53} More recently, however, the infection rate has plummeted; there were only 36 cases in 2008,\textsuperscript{54} and 13 in 2009.\textsuperscript{55}
• Skin cancer has now become the most common form of malignancy amongst fair-skinned people.\textsuperscript{57}

• Climate change in Canada may contribute to an increase in vectors that carry dengue and dengue haemorrhagic fever, Lyme disease, encephalitis, and other tick-related diseases.\textsuperscript{58}

• The number of known endemic areas of Lyme disease in Canada is increasing because the range of the tick vector is expanding in the eastern and central provinces due to warmer temperatures. As of 2009, physicians will now have to report clinically confirmed and suspected cases of Lyme disease to the national surveillance authority.\textsuperscript{59}

• Climate change in Europe is predicted to support an increase in ticks and mosquitoes (which carry Lyme disease, malaria, arboviruses and dengue fever).\textsuperscript{60}

EMERGING RESPONSES
Prevention through Lifestyle Changes

• The Canadian Population Health Initiative (CPHI) is working to advance population health understanding, and focuses on knowledge generation and synthesis, policy synthesis and analysis, knowledge transfer and reporting and knowledge exchange.\textsuperscript{61}

• Research has suggested that a child’s health behaviours are profoundly influenced by those of their peers and family members.\textsuperscript{62,63} As a result, programs such as the US Department of Health and Human Service’s Ways to Enhance Children’s Activity & Nutrition (WE CAN) national program have been developed. The WE CAN program is designed for families and communities to help children maintain a healthy weight by giving parents tips on how to cook with their children, how to read nutrition labels, and how to choose healthy snacks.\textsuperscript{64}

• Research has shown that the physical environment (i.e., availability of green space, bike paths, access to fresh fruits and vegetable, etc.) is related to health.
  - An ICES study found that “activity-friendly” neighbourhoods in Toronto had the lowest rates of diabetes while neighbourhoods outside the downtown area had the higher rates of diabetes. “Activity-friendly” neighbourhoods were neighbourhoods that had more individuals who reported walking and bicycling and were less dependent on cars for travel. Further, neighbourhoods with poor access to healthy resources such as stores selling fresh fruits and vegetables had higher rates of diabetes.\textsuperscript{65}
  - A UK study found that populations exposed to the greenest environments were less likely to have higher rates of mortality and circulatory disease compared to populations not exposed to green environments. Additionally, even populations living in the lowest income level areas had better health outcomes if exposed to green spaces. It has been suggested that green space might affect health by inducing beneficial physical activity and by ameliorating the response to stress.\textsuperscript{66}

Obesity

• The Ontario Medical Association recommends that primary care providers screen for obesity during maintenance visits by measuring BMI and offering strategies to prevent the onset of overweight. Physicians should also suggest lifestyle changes including specific advice with regards to increasing physical activity.\textsuperscript{67}

• Ontario’s doctors are calling for calorie counts to be shown prominently on chain restaurant and school cafeteria menus and menu boards province-wide. Ontario’s doctors would like to see menu labelling enacted to help parents and children make informed choices about the foods they eat. A recent survey by the Ontario Medical Association shows that over 80% of Ontarians support such an initiative.\textsuperscript{68}

• Some of the Public Health Agency of Canada’s initiatives to reduce obesity include a revised Canadian Food Guide, $5 million in funding towards ParticipACTION (a program to encourage active lifestyles), a
$33 billion infrastructure plan to provide reliable funding to provinces in order to support transportation projects such as bike paths, and WinterActive and SummerActive programs.\textsuperscript{59}

- In 2010, the Assembly of First Nations announced their IndigenACTION initiative, which was founded to ensure Indigenous peoples in Canada have an opportunity to grow themselves and their communities through community fitness, wellness, sports and recreation. IndigenACTION will focus on relationships that support young Indigenous athletes and improve fitness and wellbeing in Indigenous communities. One of the main goals of the initiative is to improve health and combat obesity.\textsuperscript{70}

- In order to change children’s eating habits for the better, the European Commission (EC) has launched a new Healthy Eating Campaign for European school children. Three roadshows will tour seven European countries, each visiting two schools a day, reaching a total of 18,000 children in 180 schools. Using the slogan “Eat it, Drink it, Move it,” the roadshows give children a chance to take part in educational activities and games. The EC also launched an interactive website, competitions and other events.\textsuperscript{71}

- The US healthcare reform law established a Prevention and Public Health Fund. Funding was set at $500 million for 2010, and is scheduled to increase year-over-year until it reaches $2 billion in 2015, and thereafter. The fund will go to programs for prevention, wellness, and public health activities including prevention research and health screenings, and immunization programs.\textsuperscript{72}

- Progress has been made in some US states with respect to obesity-related legislation. Currently, 11 states have passed “Complete the Streets” legislation that mandates states to consider pedestrians and bicyclists when building, rebuilding, or renovating streets and surrounding areas. As well, 30 states have imposed “Snack Taxes” on soda and snacks.\textsuperscript{73}

- In the US, the CDC recently unveiled LEANWorks!, a website designed to help businesses address obesity. The website is a synthesis of science and practice-based evidence to guide employers in planning, building, promoting, and assessing a worksite obesity prevention and control program.\textsuperscript{74}

- Planet Health is a Massachusetts-based interdisciplinary program that focuses on nutrition and physical activity. It is designed for teachers to implement in schools and offers innovative approaches to health education. It is in its second edition, and has been in use by many teachers as a school-intervention program.\textsuperscript{75}

- A study in Israel divided a group of 60 obese children into one of two interventions: 30 one-hour educational sessions about obesity management were provided to either the child or the parents. Seven years later, twice as many children whose parents received the intervention were no longer obese than children who had received the intervention themselves.\textsuperscript{76}

**Smoking**

- Smoking bans have been implemented in several jurisdictions to protect non-smokers from exposure to secondhand smoke and provide a supportive environment for people who want to quit.\textsuperscript{77}
  - A recent systematic review of 50 studies found that legislative bans reduced exposure to secondhand smoke.\textsuperscript{78}
  - A 2009 study of a public smoking ban instituted in Saskatoon found that the incidence rate of acute myocardial infarction in the year after the smoking-ban legislation was 13% lower than in the year prior to the legislation, and that the relative reduction in smoking prevalence was 24.5% over the same period.\textsuperscript{79}

- The internet is increasingly being used as a tool to deliver smoking cessation programs.\textsuperscript{80} Features of online smoking cessation programs include: interactive quit planning tools, community chat groups, and online counselling.\textsuperscript{81}
  - US web-assisted tobacco interventions such as QuitPlan.com and QuitNet.com have been
associated with increased abstinence rates among users. A recent systematic review found that internet-based interventions can assist smoking cessation, especially if the information is appropriately tailored to the users and there are frequent automated contacts with the users. More evidence is required, however about the long-term benefits of such interventions.

- A 2009 study in Canada found that individuals who received an intensive smoking-cessation intervention (which included one hour of bed-side counseling, take-home material, and counseling calls for two months after discharge) were twice as likely as those who receive minimal intervention to report being abstinent after 3-, 6-, and 12-months.

- In the UK, a trial of a school-based anti-smoking intervention, which trained student leaders to become peer supporters who informally encouraged fellow students to not smoke, found that students were 22% percent less likely to be smokers during the first 2 years of the intervention.

### Alcohol

- Action on the negative health effects of alcohol is beginning to take place. The European Union has developed a strategy including establishing an Alcohol and Health Forum to support member states in reducing alcohol related harm. To date, 108 commitments for concrete action have been made by the members of the forum to address the negative health effects of alcohol.

- A recent review of alcohol policies found that making alcohol more expensive and less available and banning alcohol advertising are highly cost-effective strategies to reduce harm. Enforced legislative measures to reduce drink-driving and individually directed interventions to already at-risk drinkers are also effective, though school-based education does not reduce alcohol-related harm.

### Infectious Diseases

- In response to the severe acute respiratory syndrome (SARS) epidemic of 2003, the Ontario Ministry of Health and Long-Term Care (MOHLTC) released the Ontario Health Plan for an Influenza Epidemic (OHPIP). The OHPIP was created for situations like H1N1, so even before the WHO declared a global pandemic, the plan was being implemented in Ontario.

- According to Ontario’s Chief Medical Officer of Health, a comparison of several different jurisdictions (other provinces and countries) on key indicators of H1N1’s impact reveals that Ontario compares satisfactorily or very favourably to most of them.

- Despite having a significantly smaller proportion of vaccinations among individuals 12 years or older than all of Canada (the 2009/10 estimate for Ontario was 32.2%, the estimate for all 10 provinces was 41.3%), an analysis of the cost-effectiveness of the mass H1N1 immunization program in Ontario found that the program was effective in preventing influenza cases and health care resource use and was also highly cost-effective despite the substantial program cost.

- The Association of Medical Microbiology and Infectious Disease Canada (AMMI) supports research and education in infectious diseases and medical microbiology. They currently have a program in place to address the issue of hospital-acquired infections, and are working to develop an antimicrobial stewardship curriculum for Medical Microbiology and Infectious Disease training programs, to provide new specialists with the skills to help other doctors use antibiotics appropriately.

- The use of the Internet as a surveillance tool may be one way for researchers and the government to identify disease outbreaks early and raise public awareness of emerging disease trends.

- Researchers in the US were able to reliably predict influenza-like illness (ILI) using search queries submitted
to Google. The model was able to accurately estimate the number of ILI-related physician visits in each region of the US, and because search queries can be processed quickly, the resulting ILI estimates were consistently one to two weeks ahead of the ILI surveillance reports generated by the Centers for Disease Control. The authors note that the model was not designed to be a replacement for laboratory-based surveillance and that it is vulnerable to false alerts due to sudden increases in ILI-related queries (e.g., a drug recall of a popular flu remedy), but suggest that early detection of ILI percentages may enable public health officials to mount a more effective early response in the event of a ILI pandemic.94

- **Google Flu Trends** provides near real-time estimates of flu activity based on aggregated search queries, and reports the general activity level as minimal, low, moderate, high, or intense.95 The system supplies estimates for a number of countries and regions around the world, but is better suited to track disease activity in developed countries, because to be most effective, it requires large populations of Web search users.96 Estimates can be viewed on the Google Flu Trends website—where they are presented as a map colour-coded by activity level—or downloaded for analysis.97

- An analysis of the 2008 *listeriosis* outbreak in Canada that resulted from contaminated deli meat found that individuals were searching the Internet on the topic of *listeriosis* before the outbreak was announced by the federal government on August 20, 2008. A search-term surveillance of the Internet using the word “*listeriosis*” showed a spike in Internet queries beginning in mid to late July, nearly a month before the declaration of the public outbreak.98

- The Ontario Ministry of Health and Long-Term Care publicly reports *C. difficile*-associated disease (CDAD) rates of all hospitals on the ministry webpage.99 According to ministry data, CDAD rates have been showing a small decline since reporting began. As well, media coverage has been less negative since CDAD public reporting has begun.100

- At the University of Miami hospital, a hand hygiene compliance pilot was implemented to reduce the percentage of bacteria-related infections that patients and physicians contract from not washing their hands with bacteria-killing soap. The pilot involves using small sensors in the medical center’s soap dispensers that identify staff ID badges as well as monitor when and where physicians and other staff members wash their hands.101

### Climate Change Effects on Health

- “Human Health in a Changing Climate: A Canadian Assessment of Vulnerabilities and Adaptive Capacity” is an investigation of the scope and magnitude of current and anticipated health impacts of climate change in Canada and Canada’s adaptive ability.102

- A 2005 Health Canada *Health Policy Research Bulletin* highlighted the impact of climate change on human health and how Canadians can prepare and adapt.103
  - Efforts to protect Canadians from the impacts of climate change will likely entail revising, reorienting or strengthening public health policies and practices currently aimed at protecting, Canadians from air pollution (e.g., smog alerts), poor water quality (e.g., boil water advisories), vector-borne and zoonotic diseases (e.g., monitoring and surveillance), extreme weather events (e.g., emergency health services) and heat waves (e.g., “cooling off” locations).104
  - Northern communities are making great efforts to adapt to climate changes, for example by introducing community freezer programs to ensure food safety, and changing
hunting routes to protect against injury.\textsuperscript{105}

- An updated “Health Effects of Climate Change in the UK – 2008 Report” discusses methods for assessing health implications of climate change, and potential measures aimed at mitigating effects. It also presents predictions of future health effects from climate change.\textsuperscript{106}

- A 2008 WHO report “Protecting Health in Europe from Climate Change” outlines how the European Union can take a proactive approach in confronting climate change by developing and implementing action plans and polices to protect the population from extreme weather events.\textsuperscript{107}

  - For example, the report discusses important elements of health-service preparedness for heat-waves that should be considered. This includes considering or providing: external shading of buildings, energy-efficient cooling facilities, sufficient drinking-water and appropriately adapted menus, energy-efficient buildings, appropriate staff scheduling and working arrangements, special care for patients and residents (identification of individuals at risk, adjustment of drugs and treatment), organization of home care (support and contact), and staff training in identifying heat-related health problems and appropriate treatment and cooling techniques.

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informal school


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INTRODUCTION
The Public Health Agency of Canada has identified 12 key determinants of health (represented in Box 1). Defined as differences in health status among population groups, health disparities are often a result of inequalities in the distribution of the underlying determinants of health across populations. It has been suggested that it is not the absolute level of income of a society that determines health, but rather how evenly that income is distributed that affects mortality and health in an industrialized society.

Box 1: Public Health Agency of Canada: Key Determinants of Health
1) Income and Social Status
2) Social Support Networks
3) Education and Literacy
4) Employment/Working Conditions
5) Social Environments
6) Physical Environments
7) Personal Health Practices and Coping Skills
8) Healthy Child Development
9) Biology and Genetic Endowment
10) Health Services
11) Gender
12) Culture

SUMMARY OF KEY FINDINGS
Growing Challenges:
- The ‘healthy immigrant effect’ is a pattern in health outcomes experienced by immigrants to Canada. Immigrants tend to experience an initial level of superior health that eventually worsens and converges towards health outcomes of those born in Canada. The decline in health may be linked to persistent barriers in access to health services, environmental factors, and/or the adoption of health behaviours of Canadian-born residents.

- Health disparities for women have been identified in various areas of clinical practice including intensive care use.

- Findings from the recent POWER study and a Wellesley Institute report show wide health disparities between low and high income Ontarians.

- Rural and remote regions of Canada have trouble accessing health services due to physician shortages and long travel times to hospitals. This is a major problem especially with maternal and child health.

- Aboriginal peoples are among the poorest of all Canadians, and are more likely than any other segment of the population to live in environments that have a negative impact on their health and well-being.

Emerging Responses:
- Health Equity Impact Assessment tools have begun to surface around the globe to help better identify the potential impacts a policy, program or project may have on the health of marginalized or disadvantaged populations.

- Health in All Policies (HiAP) is a developing concept that can be thought of as a mechanism for achieving positive outcomes in health and wellbeing in all sectors using a Social Determinants of Health Equity lens.

- Other sectors in Canada are beginning to recognize the importance of health disparities and specifically the social determinants of health. The Conference Board of Canada released a report on why the socio-economic determinants of health are important for businesses and employers to address.
The Sioux Lookout Meno Ya Win Health Centre (SLMHC) is a unique obstetrics program that has a model of care that incorporates Aboriginal values and promotes delivering maternal care close to home. The program has also started using telehealth to aid with the delivery of newborns.

GROWING CHALLENGES

Health Disparities for Immigrants

- The ‘healthy immigrant effect’ is a pattern in health outcomes experienced by immigrants to Canada and other countries – they tend to experience a level of good health that is higher than Canadian-born individuals. For instance, a recent report found that the Canadian-born population was significantly more likely than immigrants to report some risk factors that relate to health, including smoking, heavy drinking, and obesity. However, this relatively higher health level tends to be followed by a worsening of health and convergence towards Canadian-born levels.

- Lifestyle choices may moderate health effects among immigrants. In some immigrant groups, men's alcohol consumption and smoking levels increase with years in Canada – which can lead to various chronic diseases. In women, lower rates of vigorous physical activity and consumption of fruits and vegetables may explain health outcome decreases. In light of these findings, maintenance of ethnic or home-country attitudes and beliefs may be beneficial.

- Recent research indicates that not all immigrant groups in Canada experience the same loss of the ‘healthy immigrant effect.’ One study found that white male immigrants had a BMI similar to that of Canadian-born individuals, while non-white immigrants (both males and females) had lower BMIs. Another recent study found that, controlling for several relevant factors (e.g., age, income), risk for diabetes was higher among immigrants from South Asia, Latin America, the Caribbean, and sub-Saharan Africa than among immigrants from western Europe and North America.

- Recent qualitative studies of diverse groups of immigrants living in Mississauga and the neighbourhood of St. James Town in Toronto have revealed that immigrants face geographic, socio-cultural, and economic barriers when attempting to access health care services in their community. Although recent immigrants tend to be highly educated with better overall health than those native born, they have been shown to access health care services less often, including preventative care such as cervical and breast cancer screening.

- Although a recent study of influenza vaccination uptake in Toronto school children found that vaccination was more likely in foreign-born children than Canadian-born children, and a population based cohort study of two-year-olds in Ontario found new immigrant mothers are accessing immunization for their children at least as effectively as non-immigrant mothers, other American and Canadian studies have found overall immunization coverage lower for immigrants.

- In the US, a 2006 ethnographic study of the social context of migrant health revealed that structural racism and anti-immigration practices determined the poor health of migrants.

- Despite the observed decrease in overall cancer death rates in the US, immigrant minorities continue to experience disproportionately higher cancer incidence and mortality for many cancers, with late stage diagnosis being partially responsible for higher mortality rates.

- Recent US reports on disparities include The National Healthcare Disparities Report (NHDR) and The National Healthcare Quality Report released by the Agency for Healthcare Research and Quality (AHRQ). These reports suggest access to health care is a major barrier to successful health outcomes in the US especially for minorities. Overall, disparities in quality and access for minority groups and poor populations have not been reduced since the first NHDR was released in 2003 and in some cases have increased for some minority groups (e.g.
Findings from the 2009 NHDR show that disparities in care for cancer, heart failure, and pneumonia exist across populations, and that although quality of hospital care for heart failure and pneumonia has improved overall, care for white individuals continues to improve at a higher rate than for minority populations.26

Health Disparities for Women

Important gender disparities have been identified in various areas of clinical practice:

- A large retrospective cohort study reported that women aged 50 or older in Canadian Critical Care Research Network hospitals and intensive care units (ICUs) were less likely than their male counterparts to be admitted to the ICU or to receive life-saving interventions and more likely to die when admitted because of critical illness.27

- Although women are more likely to have higher utilization rates than men for general practitioners, specialists, and hospitals, research in Canada, the US, and Scotland show that higher utilization does not necessarily translate into greater access to health care services for women.28

- A recent Ontario women’s health study found women were more likely to report having arthritis, depression, and multiple chronic conditions than men. One in three women reported having two or more chronic conditions (vs. only one in four men) and the burden of chronic illness and disability was found to be the highest among low-income and Aboriginal women. Older women were the most likely to report that their activities were limited due to pain or discomfort, with 35% of low-income women aged 65 and older reporting activity limitations. Reported incidence rates of gonorrhea infection among women aged 15–19 were more than twice as high as rates reported for adolescent men.29

Health Disparities Due to Geography

- A big challenge faced by rural and remote residents in Canada is the problem of access to timely and continuous primary health care and linkages to specialist care. Physician and nurse shortages in rural regions mean that many residents must travel (considerable distance in some cases) to urban centres for care.30

- Patients sometimes have to make trade-offs between receiving care and paying high costs associated with traveling and safety aspects of reaching urban areas (e.g. hazardous driving conditions due to seasonal weather).31, 32 Communities that lack specialists often rely on their primary care practitioners and other health care providers to perform a wider variety of tasks.33

- Rural citizens in farming communities face distinctive environmentally hazardous factors that urban centres do not. For example, intensive livestock operations can pose a threat to a region’s water supply and air and soil quality (e.g., the Walkerton water crisis).34

- In British Columbia, standardized rates of avoidable, non-avoidable, and total hospitalizations are consistently higher in rural areas compared to urban areas.35

- Access to gynaecological, obstetrical, and maternity services has steadily decreased outside of urban centres, and these services are often not readily available to women in rural and remote regions.36,37 However, travel for labour and delivery is associated with higher delivery complications and rates of prematurity, as well as increased financial, emotional and psychological stress. Many women choose to deliver in their home community despite limited obstetric services.38

Health Disparities Due to Income

- Health disparities associated with socio-economic status (SES) have been well documented in Canada, the US, and the United Kingdom for decades (e.g., UK Marmot Review).39 40 A gradient exists between health and income – health status increases with every step up the income and social hierarchy.41

- Those with higher SES in Canada tend to utilize preventative measures (e.g. PAP tests and mammograms), whereas lower SES
individuals are less likely to do so. People with lower SES use more primary care and hospital services than the general population. Higher SES groups also tend to use more specialist medical services.42

- In 2007–2008, rates of hospitalized heart attack events were 66% higher among people living in the least affluent neighbourhoods compared to people in the most affluent neighbourhoods; rates of hospitalized stroke were 54% higher.43
- The Project for an Ontario Women’s Health Evidence-Based Report (POWER) released their third chapter in June 2009 which focused on the burden of illness experienced by Ontarians and how it differs by sex, socioeconomic status, ethnicity, and geography of residence. The report found that Ontarians of lower socioeconomic position experienced much higher levels of chronic disease and disability than those who were more advantaged. They also were more likely to die prematurely.44
- A recent ICES study found that despite Ontario having a wait times strategy for specific health care services such as MRI scans, individuals living in the wealthiest neighbourhood quintile were 38% more likely to receive MRI scans than individuals in the poorest neighbourhood quintile. Thus it appears that individuals residing in the wealthiest neighbourhoods have benefited most in terms of access from Ontario’s investments in MRI scanning.45
- According to a recent Wellesley Institute report, the poorest 20% of Canadians when compared to the richest 20% of Canadians have more than double the rate of diabetes and heart disease, a 60% greater rate of two or more chronic health conditions, more than three times the rate of bronchitis, and nearly double the rate of arthritis or rheumatism.46
- According to a recent AHRQ-funded study, both housing instability and food insecurity were independently associated with children’s poor access to health care in the US.47

Health Disparities in Aboriginal People
- Aboriginal peoples are among the poorest of all Canadians, and are more likely than any other segment of the population to live in environments that have a negative impact on their health and well-being.48 For example, 17% Aboriginal Peoples live in crowded conditions versus 7% of the general population49. As well, 33% of Aboriginal households are food insecure compared to nine percent of non-Aboriginal households.50
- Aboriginal people’s marginalization is furthered evidenced with a shorter life span and higher infant mortality rate than non-Aboriginal people. In 2001, Aboriginal women’s life expectancy was 77 years and Aboriginal men was 71 years. In comparison non-Aboriginal women’s life expectancy was 82 years and non-Aboriginal men was 77 years.51 The infant mortality rate for Aboriginal peoples is estimated at seven deaths per 1000 live births while for non-Aboriginals it is five deaths per 1000 live births.52
- Disproportionate rates of multiple conditions including heart disease, diabetes, tuberculosis, hypertension, and HIV/AIDS also affect Aboriginal peoples.53 According to the POWER study, Aboriginal adults (48% of women and 41% of men) reported having two or more chronic conditions.54
- Mental health and addictions issues also are disproportionately high among Aboriginals compared to non-Aboriginals. The suicide rate for Aboriginal peoples is twice that of the non-Aboriginal population.55
- Improving access to health care for Aboriginal people in Ontario is hampered by the lack of an information system that documents fundamental facts about Aboriginal peoples’ health status and service utilization in a manner that gives Aboriginal people collective entitlements to the information that is gathered.56
- It is suggested that the only way to reduce Aboriginal peoples’ health disparities is to address the legacy of colonialism.57 “Any approach which fails to consider Aboriginal people as active in response to their colonial situation, rather than simply as passive
victims, will fail to comprehend not only the past changes in health status and health care, but more importantly the future direction that will be taken in these areas.”

EMERGING RESPONSES

Attempts to Monitor and Address Equity

- A Health Equity Impact Assessment (HEIA) is a way to help better identify the potential impacts a policy, program, or project may have on the health of marginalized or disadvantaged populations. The assessor can then make adjustments to the initiative to mitigate negative impacts as well as maximize positive impacts on the health of vulnerable and disadvantaged groups. HEIA tools have been implemented in Australia, New Zealand, and the UK, and the Ontario Ministry of Health and Long-Term Care is in the process of developing a HEIA tool.

- The Equity Unit of the Ontario Ministry of Health and Long-Term Care has developed a HEIA tool for Ontario which can be applied at the ministry, Local Health Integration Network (LHIN), or health-service provider level. The tool was developed based on a breadth of evidence including an inter-jurisdictional review, consultation and piloting within the ministry and LHINS. Internal implementation of the HEIA was initiated and it still underway. Following HEIA pilots in three LHINS, the ministry continues to work in partnership with LHINS to steward HEIA integration at the regional level.

- Other sectors in Canada are beginning to recognize the importance of health disparities and specifically the social determinants of health. The Conference Board of Canada released a report that makes a business case for why businesses and employers should take action on the socio-economic determinants of health (e.g., employment and working conditions, education and literacy, food security). The report offers examples of successful initiatives already taken by Canadian and international firms and provides practical guidance and principles of success to businesses that may take action.

- Health in All Policies (HiAP) is a developing concept that can be thought of as a mechanism for achieving positive outcomes in health and wellbeing in all sectors that uses a Social Determinants of Health Equity lens. Currently, the European Observatory has published a report discussing HiAP and has developed a Medium-term Strategic Plan (2008-2013) to address the underlying social and economic determinants of health. Sweden and Australia have both used HiAP in developing strategic health plans.

- In February 2010, the Marmot Review Team published Fair Society, Healthy Lives. This was the culmination of a year long independent review into health inequalities in England. The review proposes evidence-based strategies for reducing health inequalities in England from 2010 onwards. The major task of this Review was to assemble the evidence and advise on the development of a health inequalities strategy in England.

- In response to a 2009 report which made recommendations for improving health equity, St. Michael's Hospital, in Toronto has undertaken several new equity-focused programs and service or organizational changes. New initiatives include: 1) The Sick Kids Translation Project, an initiative to translate generic patient education documents into nine languages that could be used by all 18 Toronto Central LHIN hospitals, and 2) The Compassionate Care Committee, a cross-hospital initiative that brings together staff from various areas (e.g., clinical, finance, and inner city health staff), to discuss how best to provide necessary care to people without Ontario Health Insurance Plan (OHIP) cards while maintaining fiscal responsibility. The US CLEAN Look checklist (Culture, Literacy, Education, Assessment, and Networking), identifies cues and strategies to achieve relevant community outreach. The use of a checklist may help clinicians, educators, and researchers create a sustainable model of community outreach guided by a paradigm that incorporates a...
multilevel approach to address outcomes for disenfranchised populations.

- To better understand the context of mental health inequities, the US National Institute of Mental Health (NIMH) has recently founded the Office for Research on Disparities and Global Mental Health (ORDGMH), which coordinates the NIHM’s efforts to reduce mental health disparities both within and outside of the United States. The ORGDMH recently convened a summit of leaders from academic and research centers, community organizations, and government agencies with wide array of expertise (e.g., genetics, service delivery); summit members made recommendations for research priorities, and suggestions about rethinking traditional study designs and measures.

### Addressing Immigrant, Income, and Geographical Health Disparities

- In the Calgary Health Region, The Refugee Health and Wellbeing project was initiated in 2007 to provide support and assistance to refugees. The program liaises and facilitates connections between refugee clients/patients, families, communities and Calgary Health Region staff and community organizations that provide services to the refugee population in Calgary.

- In 2005, the Robert Wood Johnson Foundation created a national program to help communities across the United States set and achieve goals to improve quality of care for patients and their families—particularly patients from specific racial and ethnic backgrounds, who often receive lower-quality care. Among its other goals, Finding Answers is charged with providing grants to fund evaluation of health care interventions that hold promise for reducing racial and ethnic disparities and improving care for minority patients with one or more of the following conditions: cardiovascular disease, depression, and diabetes. The evidence base of this program can assist in shaping policies that facilitate the reduction of disparities by noting what does and does not work how to work with and modify the current health care infrastructure to implement effective interventions, and institutional challenges to enacting such changes. In its third round of funding in 2009, the program awarded more than $1.5 million to seven research centres.

- In England, Sure Start Local Programmes (SSLPs) are area-based interventions to improve services for young children and their families in deprived communities, promote health and development, and reduce inequalities. SSLPs have been found to be beneficial for young children and their families on various outcome measures. In SSLP areas, children show better social development, with more positive social behaviour and greater independence, and parents show less risk of negative parenting and provide a better home-learning environment.

- In 2000, the Center for Immigrant Health, New York University School of Medicine, launched the Cancer Awareness Network for Immigrant Minority Populations (CANIMP) a network comprising community and faith-based organizations, local and national government health institutions, clinical services providers, researchers, and immigrant service and advocacy organizations. CANIMP was able to develop successful outreach, education, screening, survivorship training, and research programs to decrease cancer disparities.

- A network of 12 pilot hospitals from the European Union member states implemented and evaluated the effectiveness of three health care models for migrants and minorities. The models are:
  - The improvement of interpreting in-clinical communication.
  - The creation and distribution of migrant-friendly information and training in mother and child care.
  - Staff training in cultural competence.

### Addressing Health Disparities for Women

- In 2010, the UN launched the Global Strategy for Women’s and Children’s Health to improve the health of women and children around the world by improving access to essential health services and proven, life-
saving interventions, such as access to vaccines, family planning, and treatment for HIV and AIDS.81

- In Toronto, the Women’s Health in Women’s Hands community health centre is devoted to providing primary health care to black women and women of colour from the Caribbean, African, Latin American, and South Asian communities. The health centre is committed to working from an inclusive environment to address barriers that prevent this population from being healthy.82

- Due to various barriers, many women in Northwestern Ontario have never had a mammography or are not screened regularly. To address these barriers, the local public health units have developed a mobile breast screening van that travels through the region to provide breast screening (mammography).83

- African American women are disproportionately affected by the HIV/AIDS epidemic in the United States.84 To address this disparity, in 2009 the CDC sponsored a mass media campaign, Nine and a Half Minutes (the amount of time someone in the US is infected with HIV), to educate women and men about HIV prevention.85

- A breast health outreach program utilizing the application of the CLEAN approach was able to reach more than 80 Haitian women with mammograms and clinical breast examinations and 4,500 Haitian people with breast cancer education messages.86

Addressing Aboriginal Health Disparities

- It its budget for 2010, the Canadian government announced that it was investing in critical First Nations health infrastructure, as well as renewing funding for several Aboriginal health programs. Infrastructure investments included $9.4 million for expanding the Fort Hope Nursing Station in Northern Ontario, $15 million for the construction of the Fort Chipewyan Health Centre in Albert and $695,000 for the construction of an on-reservation nursing home in Manitoba. The budget also renews $285 million of funding over two years in several key areas including the Aboriginal Diabetes Initiative; the Aboriginal Youth Suicide Prevention Strategy; maternal and child health; and the Aboriginal Health Transition Fund.87

- The Eskasoni Primary Care Project is a tripartite (Federal government – First Nations and Inuit Health Branch, the Nova Scotia government & the Eskasoni First Nations) approach to delivering health care to the Eskasoni First Nations. A steering committee was established to deliver better primary care, remove overlaps and address deficiencies in services. Some of the key successes from this project include: an 850% increase in referrals from local doctors to nutritionists for diabetic management; a 40% decline of outpatient/emergency department visits at the regional hospital by Eskasoni residents; and a savings of approximately $200,000 in the medical transportation budget. Notably, 89% of patients believed the quality of services to have improved.88

- The Sioux Lookout Meno Ya Win Health Centre (SLMHC) is a unique obstetrics program that has been in operation for 25 years and services 28 remote, fly-in Aboriginal communities and the town of Sioux Lookout, Ontario serving a total population of 25,000. The SLMHC has developed a model of care that incorporates Aboriginal values and promotes an environment of culturally sensitive care. The obstetrics program has caesarean delivery, ultrasonography and version capabilities, delivered by rural physicians with appropriate additional training. The program has also started to use telehealth technologies to decrease travel from communities for a broad scope of consultations, including mid-trimester assessments. Last year during a blizzard, two babies were born in remote communities, assisted by the on-call physician in Sioux Lookout via live video conferencing.89

- The Aboriginal Nurses Association of Canada, the Canadian Association of Schools of Nursing, and the Canadian Nurses Association have jointly developed a
framework to create cultural competencies and promote cultural safety in First Nations, Inuit and Métis nursing education. In Australia, $20.8 million over five years has been given to an initiative to improve the Capacity of Workers in Indigenous Communities. The initiative trains Aboriginal and Torres Strait Islander Health Workers, counsellors and other clinic staff in Indigenous-specific health services to identify and address mental illness and associated substance use issues in Indigenous communities, to recognize the early signs of mental illness, and to make referrals for treatment where appropriate.

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INTRODUCTION
Consumerism in health care is the process of enabling and engaging consumers more directly in the selection and purchase decisions regarding health care services. While increased consumer choice allows individuals to make better-informed choices about when, where, and from whom to seek health care, consumerism in health care may lead to inequity, needless consumption of resources, and compromised quality of care. As well, perhaps the most serious consequence of implementing consumer choice in a publicly funded health care system is that it could lead to a change in motivation among health care professionals (i.e., health care professionals will be more motivated to satisfy the consumer’s requirements at the lowest possible cost to the provider, rather than be motivated to improve the overall welfare of the consumer).

SUMMARY OF KEY FINDINGS
Growing Challenges:
- Direct-to-consumer advertising (DTCA) is used by pharmaceutical companies to stimulate demand and increase sales for high revenue products.
- The popular media continues to play a crucial role in communicating information about health treatments. There are concerns though about the quality, clinical relevance, and accuracy of health care issues that are reported in the media.
- Rates of alternative and complementary medicine (CAM) usage have increased slightly in both Canada and the US despite the media not reporting on the overall trend toward evidence-based CAM.

Emerging Responses:
- A recent, Canadian DTCA court challenge was dismissed due to lack of evidence and failure to prove how current DTCA laws contravene the Canadian Charter of Rights and Freedoms.
- Media Doctor websites continue to be set up around the world, most recently in Hong Kong, to provide objective analyses of health news reported in the media.
- The Complementary and Alternative Medicine in Undergraduate Medical Education project aims to help medical school instructors impart to students the knowledge, skills, and attitudes to discuss complementary medicine with patients in an informed and non-judgmental manner.

GROWING CHALLENGES
Direct-to-Consumer Advertising
There may be a misalignment between the interests of the pharmaceutical industry and those of public health.
- The growth of DTCA has been attributed to structural changes in the health care market, especially the health maintenance organizations, which usually prefer cheaper generic drugs to more expensive name-brand ones. This change limited pharmaceutical companies’ ability to influence physicians through direct-to-physician marketing tools, and prompted a shift to DTCA.
- Direct-to-consumer advertising (DCTA) of full product ads has been permitted on television since 1997 in the United States. Prior to 1997, this type of advertising was allowed only in print. The only other country to permit this type of DTCA is New Zealand.
- In Canada two types of DTCA are permitted.
  - In 1996, a Health Canada advertising policy statement redefined the boundary between ‘information dissemination’ and ‘advertising,’ allowing for help-seeking ads.
In 2000, Health Canada published an administrative policy paper that allowed branded ‘reminder advertisements’ targeting the general public.\(^8\) In the European Union and Australia reminder advertisements are permitted (no drug names are mentioned but patients are advised to “see your doctor”).\(^9\)

- Europe spent more than US $85 million on unbranded DTCA in 2004, with spending expected to reach US $348 million by 2008.\(^10\)
- Australia’s free trade agreement with the US allows unbranded advertising in Australian media to be linked to branded information on websites.\(^11\)

- The Canadian pharmaceutical industry spent over CAD $90 million on branded advertising from 1995 to 2006. Despite this rise in spending in Canada, the volume of advertising is less in comparison with the US. US advertisers spent CAD $36.2 billion from 1995 to 2006.\(^12\)

- The most heavily advertised product in Canada during 2006 was Celebrex (a drug for arthritis) even though in 2005, Health Canada warned physicians not to prescribe this drug to patients with heart disease and recommended restricting prescriptions to the lowest possible doses and for the shortest period of time.\(^13\)

- In 2006, US spending on DTCA reached almost $5 billion. However, expenditures have lagged for the past two years in part as a result of the economic downturn.\(^14\) The reduction in spending to $4.4 billion in 2008 was the first reduction in DTCA spending since the late 1990s.\(^15\)
  - A limited number of drugs accounted for a large proportion of this spending; the top 25 DTCA brands accounted for 62% of total DTCA spending in 2008;\(^16\) these products tend to treat only a few disease types (e.g., depression, insomnia, erectile dysfunction).\(^17\)

- According to a report by the American Medical Association, DTCA resulted in a positive return on investment for more than 90% of brand-name drugs, 70% of which had returns in excess of 1.5 times the investment and 35% of which had a return of more than 2.5 times the amount invested.\(^18\)

- On November 22, 2007, viewers of a nationally televised football game witnessed the launch of the first DTCA campaign for percutaneous transluminal coronary angioplasty (PTCA) with a drug-eluting coronary stent. This marked a transformation in DTCA, which has for the past decade focused on brand-name pharmaceuticals.\(^19\)

- The results of a longitudinal study on DTCA indicate that DTCA has the potential to modify drug use. However, the results are mixed as to the long term effectiveness of DTCA. One drug in the study received an initial (short lived) rise in prescription rates, but DTCA had no impact on the other two other drugs examined in the study.\(^20\)

- There are arguments both for and against DTCA:
  - Proponents argue that it increases appropriate consultation for undiagnosed or untreated health conditions. A 2002 Ipsos Reid survey found that 68% of Canadians support direct-to-consumer prescription drug information\(^21\)
  - Opponents claim that DTCA can cause damage by instigating rapid, widespread use of new drugs before harmful effects are fully known,\(^22\) confuse and mislead consumers, and interfere with the physician-patient relationship.\(^23\) It may also contribute to higher costs through promoting new expensive drugs that may not have treatment advantages.\(^24\)

- Commercialization of genetic technologies is also expanding the horizons for the marketing and sales of genetic tests direct-to-consumers (DTCs). One study found that genetic tests advertised DTC over the internet with low clinical utility are provided with minimal professional oversight and counselling services. This may lead consumers to overestimate or underestimate their risks of developing health conditions with complex etiologies.\(^25\)
Media and Dissemination of Health Information

- News media coverage of health issues has increased dramatically in recent years:
  - A report by the Kaiser Family Foundation and the Pew Research Center’s Project or Excellence in Journalism (PEJ) found that between January to June 2009, health news represented 4.9% of all news coverage. This is a 36% increase over 2007, and also higher than the first half of 2008, when it was 3.6%.26
  - In the United States, the New York Times increased its media articles content by 425% between 1969 and 1988. The appetite for health news and health-related television has also increased in Australia.27
- The internet and social media networks like Twitter are changing the way individuals receive health information.
  - According to a Statistics Canada survey, 21.7 million Canadians aged 16 and older (80%), went online for personal reasons during the 12 months prior to the survey. Of those individuals, 70% used the Internet to search for medical or health-related information, up from 59% in 2007.28
  - A hospital web manager suggests that hospitals use social media sites to blog about experiences, upload videos of surgeries and “tweet” updates from operating rooms.29
  - As of October 2010, 871 US hospitals were listed in the Hospital Social Network list, maintained by a director of web strategy at the University of Maryland Medical System. Combined, these hospitals have 2,259 social networking sites, including 421 YouTube channels, 679 Facebook pages, 648 Twitter accounts, and 94 blogs.30
  - It is also suggested that Twitter may be a useful tool in disseminating information quickly in emergency situations (e.g., infectious outbreaks).31
- The MOH LTC’s Mumps Campaign used various social networking sites such as blogs, Wikipedia and forums to relay general health messaging and used Facebook and YouTube to generate public engagement in the mumps vaccination campaign.32
- Evidence shows that there is a link between health news reports and health behaviour:
  - According to the Medical Journal of Australia, news of singer Kylie Minogue’s breast cancer generated a sustained 101% increase in never-screened women booking mammograms.33
  - A study on the relationship between newspaper coverage of tobacco issues and smoking attitudes and behaviours (8390 newspaper articles, 98,747 youth in the US), suggests that the greater volume of news coverage is related to greater perceived smoking harm, lower perceived peer smoking prevalence, and lower likelihood of having smoked in the past 30 days.34
- Concerns exist about the reporting of health care issues, including sensationalism, inaccuracy or failure to consider quality of evidence, clinical relevance, and lack of consideration of adverse effects or cost:
  - According to an Australian study that analyzed the accuracy of 1200 medical stories from different types of media outlets, the overall quality of medial reporting in the general media remains poor, however; modest improvements in some areas of reporting have been made.35
  - A study of press releases from 20 American academic medical centres found that many press releases overstated the importance of study findings (especially preliminary research or inherently limited human studies) while underemphasizing cautions that limited the findings’ clinical relevance. Few releases provided access to the full scientific report and only four percent noted conflicts of interest.36
There has been a large increase in the number of clinical trials for herbal remedies over the last 20 years. However, there has not been a concomitant increase in the number of media articles reporting on clinical trials for herbal remedies. Overall, it seems that the media is not reporting on the trend toward evidence-based herbal medicine.

Complementary and Alternative Medicine (CAM)
- In 2007, 38% of American adults and 12% of children used CAM. For the same year, Americans who used CAM spent $33.9 billion out-of-pocket. In comparison, the 2003 Canadian Community Health Survey found that 20% of Canadians ages 12 or older reported using some form of alternative or complementary health care.
- The majority of CAM users also continue to use conventional medicine, which creates potential safety risks due to interaction effects. For example, in 2002 only one-third of US adults using natural herbs or supplements told their physician about this use.
- According to the 2010 Deloitte Global Survey of Health Care Consumers, Canadian consumers are the highest users of alternative health services (e.g., acupuncture, naturopathy) with 25% of those surveyed having treated a health problem with an alternative or natural therapy; 15% preferred doctors with an orientation toward holistic or alternative medicine compared to those with an orientation toward traditional medicine.
- While a review on the strength of evidence for and against CAM suggests a positive effect of one quarter of the CAM therapies studied, the authors note that further research is required due to the numerous CAMs (56.6%) classified as having insufficient evidence.
- In a meta-analysis that examined the analgesic effect of acupuncture and placebo acupuncture, it was unclear whether acupuncture reduces pain independent of the psychological impact of the treatment ritual.
- In a comparison of CAM clinical trials in the media with pharmaceutical trials, it was found that newspaper coverage of herbal remedy trials were more negative than for pharmaceutical clinical trials.

EMERGING RESPONSES

Direct-to-Consumer Advertising
- Regulatory disputes continue worldwide with ongoing debate about the introduction of DTCA in the European Union and Canada. At the same time, the US Senate has recently considered legislation prohibiting such advertising during the first two years after the release of a new drug.
- The American Medical Association (AMA) has called for better government oversight of DTCA to protect patients from misleading information. The AMA discussed the need for FDA regulation over DTCA and shared guidelines for DTCA that address advertising content, disclosures, and target audiences, and stated the need for collaboration with US Congress to achieve this goal.
- In 2010, the US Federal Food and Drug Administration proposed to amend its regulations concerning DTCAs of prescription drugs. Specifically, the proposed rule would implement a new requirement that the major statement in DTCAs relating to the side effects and contraindications of an advertised prescription drug be presented in “a clear, conspicuous, and neutral manner.”
- CanWest Mediaworks Inc. was granted an indefinite adjournment in a landmark Canadian Charter of Rights and Freedoms challenge case about direct-to-consumer prescription drug advertising that was held in June 2009. CanWest argued that the section of the Food and Drug Act that prohibits advertising to the public a drug as a treatment or cure for certain diseases or disorders contravenes “freedom of thought, belief, opinion and expression including freedom of the press and other media of communication.” However, the Attorney General of Canada argued that the ban on
prescription drug advertising is justified by section one of the Charter which guarantees rights and freedoms “subject only to such reasonable limits prescribed by law as can be demonstrably justified in a free and democratic society.”

Media and Dissemination of Health Information

- Until recently, researchers, medical journals and other independent groups have done little to assist journalists with interpreting scientific developments for the public. This situation is starting to change with the creation of science media centres.
  - The Media Doctor website was launched in Australia in 2004 with the aim of providing objective analyses of the strengths and weaknesses of the health stories appearing in the Australian mainstream media. Similar sites have also been launched in Canada, the US, and most recently in Hong Kong.
  - Media Doctor Canada (www.mediadoctor.ca) evaluates news articles using a standard criteria based on ten dimensions such as quality of evidence and the quantification of benefits of treatment. Each article is evaluated by two reviewers and is given a satisfactory or not satisfactory rating. The website had 59,000 unique hits between May 2005 and November 2006, and in the future it intends to send scores back to editors and journalists whose stories are assessed, and broaden and refine the scoring instruments.
  - The UK’s NHS Choices is a comprehensive information service that draws together the knowledge and expertise of the NHS Evidence: Health Information Resources, the Information Centre for Health and Social Care, the Care Quality Commission, and many other organizations. NHS Choices provides a single ‘front door’ for the public to all NHS online services and information through the country’s biggest health website.

Complementary and Alternative Medicine (CAM)

Jurisdictions are responding to the consumer demand for CAM in different ways: The Complementary and Alternative Medicine in Undergraduate Medical Education project or CAM in UME Project is a Canadian medical education initiative established in 2003 by a team of conventional and CAM educators. Based at the University of Calgary, the overarching objective of the project is to help medical school instructors impart to students the knowledge, skills, and attitudes to discuss

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INTRODUCTION
Health care systems may need to deal with aging buildings by renewing the infrastructure in order to meet infection control standards as well as the demands and needs of a changing population. As of 2006, Ontario’s hospital buildings were, on average, more than 40 years old and may require significant investment to modernize and upgrade the facilities and expand capacity.1 Ontario announced in 2005 that it would invest $5 billion over a five year period to complete more than 100 hospital facility upgrade projects by 2010.2 The plan was completed in 2008/09.3

SUMMARY OF KEY FINDINGS
Growing Challenges:
- Ensuring that the most appropriate health care facility design is used in new investments.
- Renewal/upgrading of older existing facilities.

Emerging Responses:
- Single-patient rooms may be safer and more efficient than multi-patient rooms, primarily due to decreases in hospital-acquired infection.
- Some small hospitals with a patient-centered design have resulted in improved patient satisfaction, increased profitability, and increase patient volumes.
- Green facility design and environmentally sustainable practices (e.g., using green cleaning products, making use of natural light, renewable energy sources) are emerging trends within health care facility design and construction.

GROWING CHALLENGES
Health Care Facility Design
- Given the age of most hospital buildings in Ontario, a major design challenge is to ensure that new buildings stay as relevant for as long as possible, given an average use of 40+ years.4
- Over the first 30 years of a facility’s life, the construction costs of a hospital will represent 2-3% of the overall cost of the services it will deliver. Design costs represent between 0.3-0.5% of the whole life costs of a hospital, yet through the design process the largest impact can be made on 85% of the medical service delivery cost.5
- Facility design can play a role in shaping and supporting human lives, particularly for vulnerable patients with mental illness and/or dementia. These types of patients have special needs for a safe and secure physical environment. Planning a safe and supportive environment requires consideration of several architectural factors.6

Human Factors and Ergonomics
- There is a growing interest in developing a culture of safety within long-term care (LTC) homes. However, it has been suggested in a US conducted study that LTC homes in the US face numerous systemic barriers that prevent real advancements in safety and quality. These barriers include management organization, workforce shortages, high rates of staff turnover, and difficulties with moving away from a punitive system of incident reporting.7
The Human Factors and Ergonomics Society noted that American nursing homes have been a particularly hazardous environment for health care workers.\(^8\)

Sleep deprivation is known to affect immune function, and loss of sleep in the critical care setting has been associated with a decrease in subjective quality of life measures.\(^9\) A recent study demonstrated that common hospital noises at typical decibel levels evoke repeated noise-related sleep arousals even in healthy young adults. The authors of the study also note that while national surveys identify hospital noise as an urgent quality of care concern, no benchmark for excellence has yet been established for sleep protection from disruption by noise for the inpatient population.\(^10\)

**EMERGING RESPONSES**

**Single-Patient Rooms and Patient Safety**

- A recent commentary published in the *Journal of the American Medical Association* argued that single-patient rooms are safer and more efficient than multi-bed rooms.\(^11\) The authors cite the following evidence:
  - A review of 16 studies concludes that single patient rooms reduce nosocomial infection rates and reductions in airborne-related and contact-related hospital-acquired infections.\(^12, 13\)
  - Some evidence suggests that single rooms are more efficient than multi-bed rooms. One estimate suggests that 85 single-bed rooms offer the same capacity as 100 beds in multi-patient rooms.\(^14\)
- A study of adult patients admitted to a Canadian teaching hospital between 2001 and 2005 found that the number of roommate exposures per day was significantly associated with the chance of developing a hospital-acquired infection. Each roommate to whom a patient was exposed was associated with an 11% increase in the risk of *Clostridium difficile* (C. difficile) infection, a 10% increase in the risk of methicillin-resistant *Staphylococcus aureus* (MRSA), and an 11% increase in the risk of vancomycin-resistant *Enterococcus* (VRE).\(^15\)
- Current evidence on the design of Intensive Care Units (ICUs) also seems to favour the use of single patient rooms combined with strict infection control procedures and individual sinks in easily accessible locations to minimise nosocomial infections in patients and staff, but the benefits of single rooms for other outcomes (e.g. environmental factors such as noise and light) remains uncertain.\(^16\)
- The Ward of the 21st Century (W21C), a new research facility in Alberta, Canada, has been created to study hospital design, including single-patient rooms.\(^17\) The focal point of the initiative is Unit 36, a state-of-the-art medical teaching unit opened in May 2004, which serves as a beta test-site for prototypical hospital design, approaches to the delivery of care, and innovative medical technologies.\(^18\)
- In 2006, the American Institute of Architects called for single rooms in all new hospital construction.\(^19\)
- According to Jane Bolin, an associate professor of health policy and management at Texas A&M Health Science Center School of Rural Public Health in College Station, single-patient rooms may be safer because infectious diseases like Severe Acute Respiratory Syndrome (SARS) may not have been transmitted between patients in the same room.\(^20\)
- However, some experts and nursing unions are concerned about the impact that a greater move to all single rooms may have on hospital patients. Possible disadvantages include: reduced social interaction, less surveillance by staff, increased failure to rescue and increased rates of slips, trips, and falls.\(^21\)

**Facility Infrastructure**

- Evidence-based design is a current trend in facility infrastructure where relevant and proven design innovations that optimize patient safety, quality, and satisfaction as well as workforce safety, satisfaction, productivity, and energy efficiency are taken into consideration when a health care facility
Kaiser Permanente—a large healthcare provider in the US—operates a facility that serves as a rehearsal ground to perfect proposed facility designs before they are rolled out to Kaiser's hundreds of hospitals and clinics. Simulations involving doctors, nurses, architects, and actors recruited to serve as patients have enabled Kaiser to slash expenses in a variety of areas, including patient record keeping and facility construction, while maintaining levels of doctor, nurse, and patient satisfaction. The centre also creates mockups for home-based care that include patient monitoring devices and other new technologies.

A review by Lega and DePietro (2005) identified an international trend for large, multi-specialty hospitals to adopt a common design scheme of an integrated and care-focused organization. This design is characterized by four traits:

- Clinical integration: designing facilities with similar units grouped together with multi-disciplinary care teams delivering care.
- Resource integration: newly built hospitals designed to maximize resource pooling (i.e., sharing of beds operating rooms, equipment, staff, etc by all specialties), flexibility, and modularity of spaces.
- Focus on the patient (e.g., patient groupings in wards not based on specialities, but on similar prevalent care needs).
- Engagement of clinicians (e.g., multi-skilled and cross-training).

The authors also found that “newly built hospitals are designed to maximize resource pooling and patient grouping, flexibility and modularity of spaces.” In contrast, older hospitals require restructuring because of space constraints and buildings being built around fixed and focused spaces.

In smaller hospitals like the Griffin Hospital (Derby, Connecticut), experimentation with new, non-traditional designs aims to improve patient satisfaction, increase profitability, and increase patient volumes (inpatient and outpatient).

- The Griffin Hospital began by reconstructing its birthing centre using a customer oriented approach, ultimately extending this redevelopment to the rest of the organization.
- The Griffin Hospital reports that the additional costs are very small, given that 60 to 70% of budgets are salaries and medical supplies.
- Cost savings on staff turnover and better control of salaries more than make-up for the extra costs.

In Kitchener, Ontario St. Mary’s General Hospital needed to significantly redevelop its facility to enable it to keep pace with its transforming role in the community. For example, the original surgical suite and day surgery were located four floors apart. The redevelopment solution was to group all surgical procedures on level two of the hospital addition. Improvements such as this, along with easier access to clinical areas and light filled interiors have meant dramatically improved patient and staff experience.

Green Facility Design

- LEED is a green building rating system that provides a suite of standards for environmentally sustainable construction. Below are some examples of how adhering to LEED standards and implementing environmentally conscientious practices can reduce expenditures and improve staff and patient outcomes.
  - The Richard J. Lacks Cancer Centre in Grand Rapids, Michigan, a certified LEED Silver building, saved $1.2 million on an original $40 million construction budget by using LEED building standards.
  - The Dell Children’s Medical Center in Austin, Texas was the first hospital to be LEED platinum certified. Inside the facility, sunlight reaches 80% of the available space, motion and natural light sensors shut off unneeded lights, and the efficiency measures save...
enough power to fuel about 1,800 homes. The CEO of the facility expected that the additional construction costs associated with building a green hospital would be recovered within 5.9 years, thanks to reduced energy utilization.

- Boulder Community Foothills Hospital in Boulder, Colorado achieved a 30.6% reduction in energy use, 53% reduction in potable water use and 64% waste diversion. Boulder Community also implemented an environmentally preferable purchasing practices program to identify safe and environmentally smart products. Collaborating with manufacturers, the hospital modified their processes to eliminate bulky packaging. Switching to hard reusable containers saved an estimated $100,000 in yearly expenses.

- By pursuing LEED for several of its buildings, New York-Presbyterian Hospital reduced its energy use by 11%, saving the hospital upwards of $1.77 million annually.

- The Providence Newberg Medical Centre in Oregon is a gold LEED certified building. The $70.6 million building uses only green electricity from a combination of wind, geothermal and hydroelectric power. The building circulates fresh outdoor air into the building and uses natural light and smart lighting sensors.

- Going green can mean more than being energy efficient. Oregon Health and Science University Hospital opened a health convenience store for staff and visitors which sells organic and locally grown food, products free from hormones, high fructose corn syrup, trans-fats and artificial colourings and dyes. Dominican Hospital in Santa Cruz, California buys locally from producers and has an on-site garden that provides produce and flowers for the facility.

- A cost benefit analysis of green buildings in the state of California determined that a minimal upfront investment of approximately two percent of construction costs typically yields life-cycle saving of over ten times the initial investment.

- In a sustainable hospital report sponsored by McGill University, it was determined that most of the green buildings studied for the report had a cost premium of below eight percent and many were two percent or less, with some indicating no cost premium.

- Green hospitals can improve patient health and outcomes. By allowing more natural light, installing environmentally friendly wall and floor coverings and using green cleaning products, hospitals often see the following benefits: fewer medical errors, decreased pain medications for some patients, shorter patient stays, increased staff retention, lower rates of asthma, and improved patient outcomes.

### Human Factors & Ergonomics

- According to one review, well designed and sustainable health care facilities may improve the health and well-being of health care workers and result in improved staff recruitment, retention and performance. Well-designed facilities are located near to where staff live, provide sufficient daylight and ventilation, and minimize walking distances.

- The first large-scale ergonomics intervention study involving nursing homes resulted in a 37% overall decrease in work-related musculoskeletal injuries among workers in 111 Ohio facilities. In work reported in the Proceedings of the Human Factors and Ergonomics Society 49th Annual Meeting, researchers noted that the decrease in back injury rates alone (44%) far exceeded the national rate reported by the US Bureau of Labor Statistics (17%).

- In this same study, nursing homes were given devices such as adjustable beds, patient lifts, and transfer devices. After the two year study period, researchers noted “significant evidence that ergonomic interventions in health care facilities led not only to reduced musculoskeletal injury rates but also to fewer lost work days and lower turnover.”
• Well designed buildings can have a profound effect on health care workers. At the Barbara Ann Karmanos Cancer Institute in Detroit, Michigan, the renovation of in-patient nursing units resulted in a reduction of the nurse attrition rate from 23% to 3.8%.

International Success Factors
• The project to build and develop the Infectious Diseases Institute at Makerere University, Kampala, Uganda is a collaborative initiative among Ugandan and US entities, including private sector organizations, universities, ministries, and individuals. Project success factors fall into three categories:
  o Planning at the design stage to address functional requirements.
  o Input and feedback from clinical and building professionals to ensure that the building was appropriate to local conditions.
  o Rigorous project management.
• In this project, processes were established to manage physical infrastructure development with stakeholders on different continents all contributing expertise to address functionality, quality control, fiscal accountability, and ultimate sustainability.
• Columbia Asia, a private American firm with hospitals across Asia has made a push into India, utilizing a model of building design that has few frills and is standardized and connected like spokes to a hub. The firm focuses on providing services to those earning between $10,000-20,000 a year within wealthy cities. The hospital does not have an expensive foyer or high tech imaging machines, but does boast integrated health information-technology (HIT) systems, including electronic health records.

Collaboration and Sharing of Expertise
• The third Annual Canadian Healthcare Infrastructure Summit was held in February 2010. The high-level “think tank” type event was designed to “bring together top decision-makers from all sectors of healthcare infrastructure development to share their experiences in a collegial and educational environment.” The summit is designed to allow participants to learn from leading practitioners and infrastructure experts about the latest strategies, techniques, best practices and case studies from other hospitals.
• At the 2009 conference, representatives from the Peterborough Regional Health Centre shared their insights about the process, design, and construction of their newly opened hospital. The entire construction process was monitored closely by all stakeholders to ensure it was completed on time and on budget, requiring an open process to engage the community. Some of the key engagement strategies were:
  o setting up a committee of neighbours living near the construction site
  o having senior administrators join community groups and city planning committees
  o soliciting community input about the design of the hospital
  o early tours of the site by staff and the community
  o using the local media to provide ongoing coverage of the construction.

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