



E-Health in Canada— the state of the nation

Nick Zamora BScPhm, MBA, CHE

Clinical Informatics Specialist - Courtyard Group Ltd

Agenda

1

Canada's unsustainable health care system: an e-Health response

2

Canada's performance in e-Health: an international comparison
Electronic Health Record, Access to Care, Chronic Disease Management

3

Concluding Thoughts
Role of IT in e-Health

Health care system constraints: how can e-Health address Canada's current issues?

Aging Population

- ↑ demand for healthcare services
- 21% of Canadians will be over 65 in 2026, vs. 12% now¹

Health Human Resource Shortage

- Significant portion HCPs near retirement
- Average age of HCPs ~ 41 years²

Rising Health Expenditures

- Costs ↑ faster than GDP growth
- Spending ↑ increased by 5% from 1996 to 2006 annually after inflation³
- Other government expenditures are being crowded out by health spending

Rising Consumer Demands

- Improved Provider Accountability
- Better Access to Care
- Enhanced Patient Safety
- Improved Quality of Care
- Improved Efficiencies

**Unsustainable
Health Care
System**

Top opinion leaders identify e-health strategies as an effective approach to address rising health care expenditures and quality of care

“How effective do you think each of these approaches would be to control rising costs and improve the quality of care?”
Percent saying “extremely/very effective”



Note: Based on a list of 19 options

The e-Health response: leveraging IT to respond to health care system issues

e-Health is not only a technical development but a way of re-thinking healthcare processes to better manage the challenges by using information and communication technologies

- **Optimize productivity**
- **Provide access to health information**
- **Improve health care quality**
- **Prevent medical errors**
- **Reduce health care costs**
- **Increase administrative efficiencies**
- **Decrease paperwork**
- **Reduce wait times**
- **Improve tracking of chronic disease**

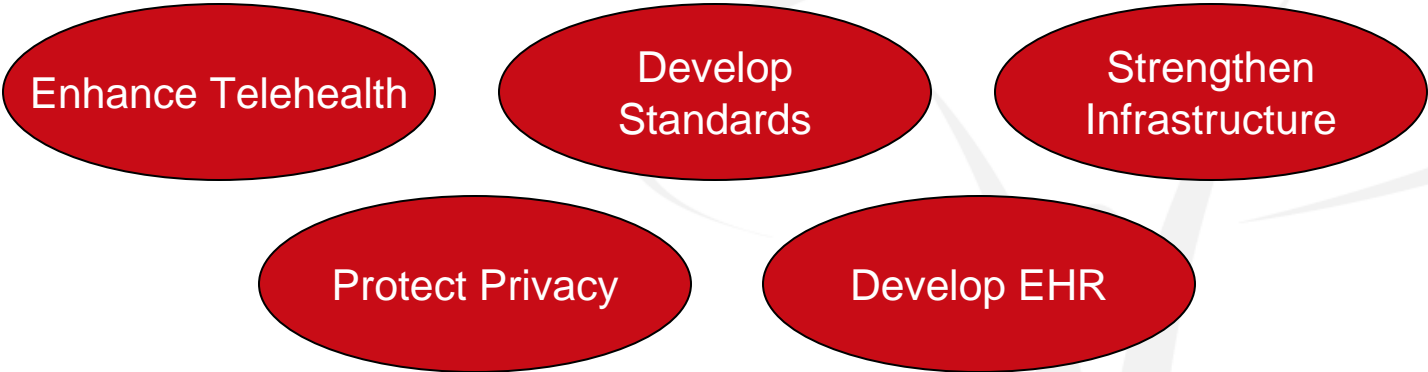
Canada's e-Health initiatives includes a broad spectrum of agencies: government, health boards, educational institutions, research, providers and citizens

**160 + initiatives
Over \$1.5 billion**



Slide from COACH "State of Nation"

Canada's industry leaders in e-Health development



Canadian Institute for Health Information
Institut canadien d'information sur la santé



Canada Health
Infoway

Inforoute
Santé
du Canada



Health Canada
Santé Canada

Funding support of \$1.1B CDN for EHR from the federal government invested through Canada Health Infoway



Canada Health Infoway
Inforoute Santé du Canada



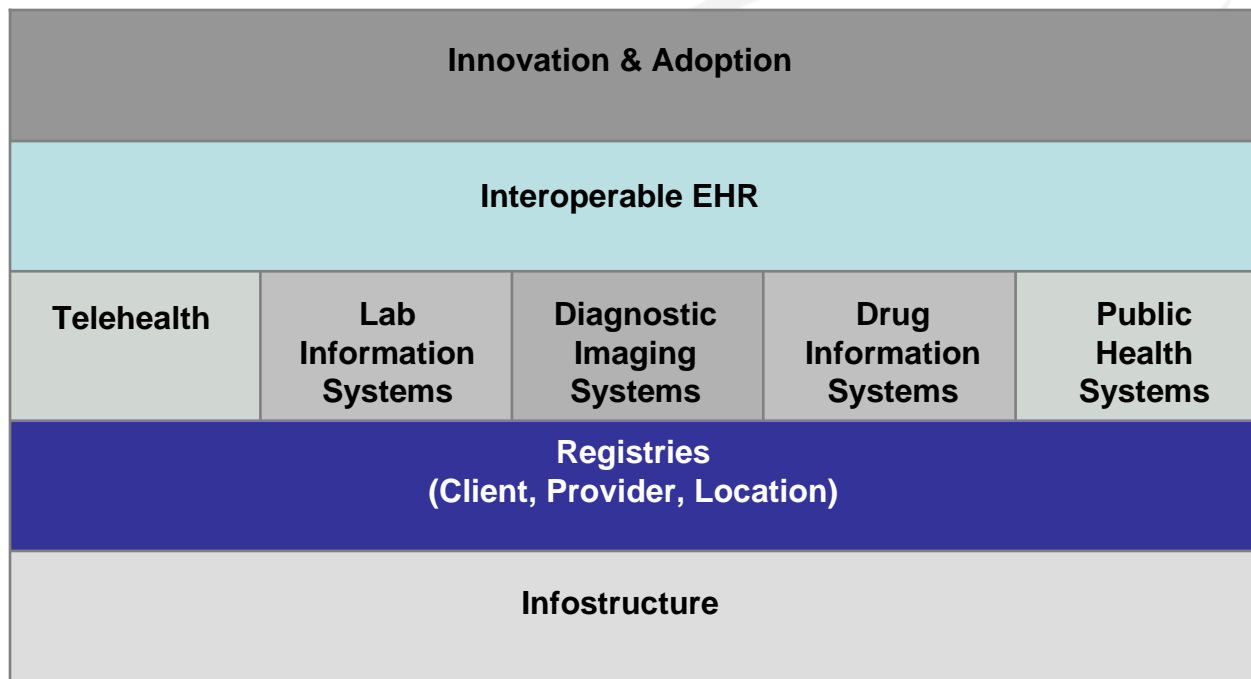
1.1 Billion

Supports:

- Knowledge Sharing
- Standards
- Strategy Development
- Partnerships
- Integration

"...accelerating the development of electronic health information systems for Canadians"

Canada Health Infoway's Investment Programs

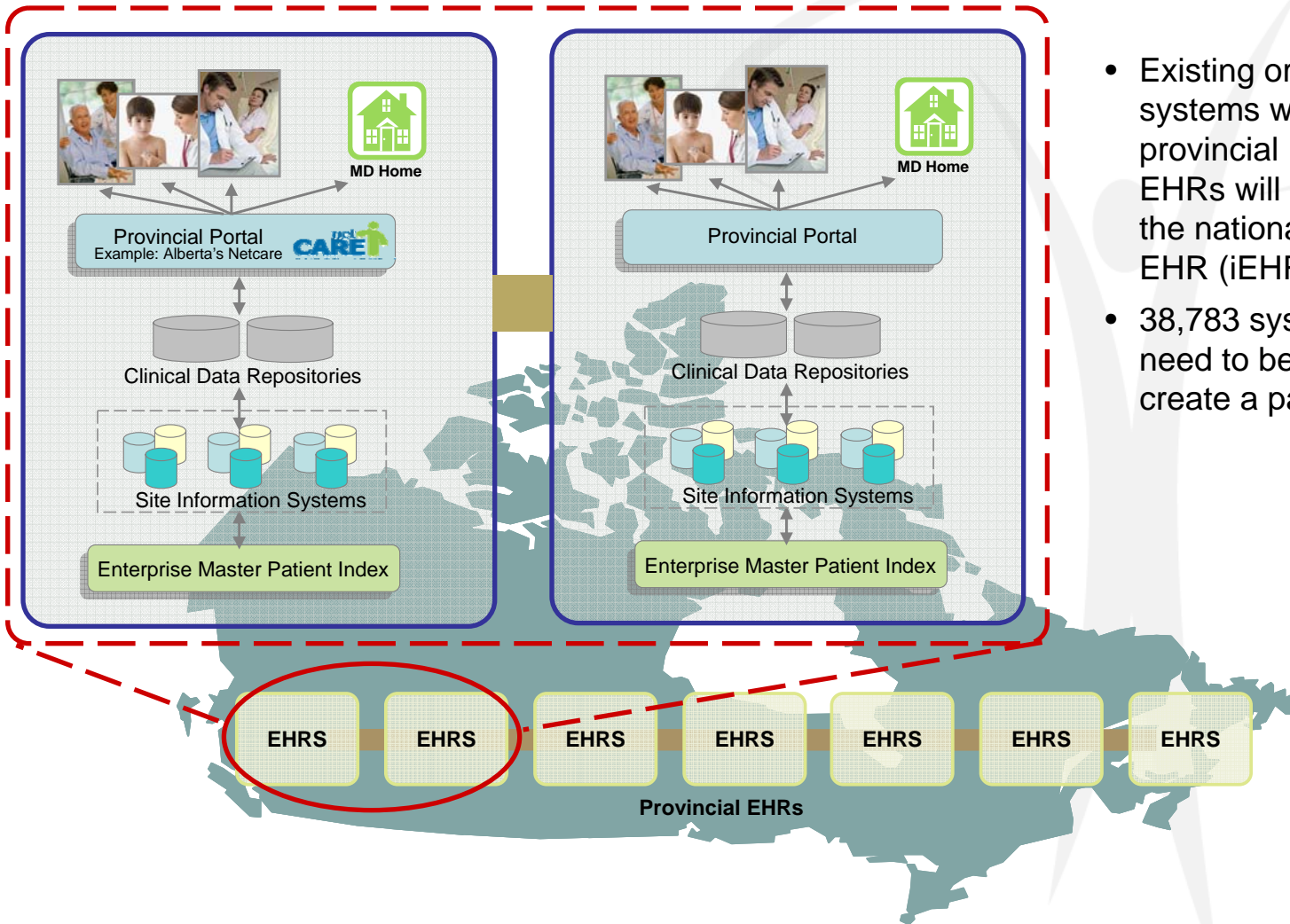


Implementing Canada's EHR:

- integrates local clinical systems with jurisdiction and regional registries and repositories
- Implements a common architecture across Canada through a series of linked jurisdiction networks
- architecture serves as a national reference model to ensure that jurisdiction solutions are interoperable

Canada's EHR is based on an incremental, best-of-breed, approach to interoperability

Canadian Interoperable EHR:



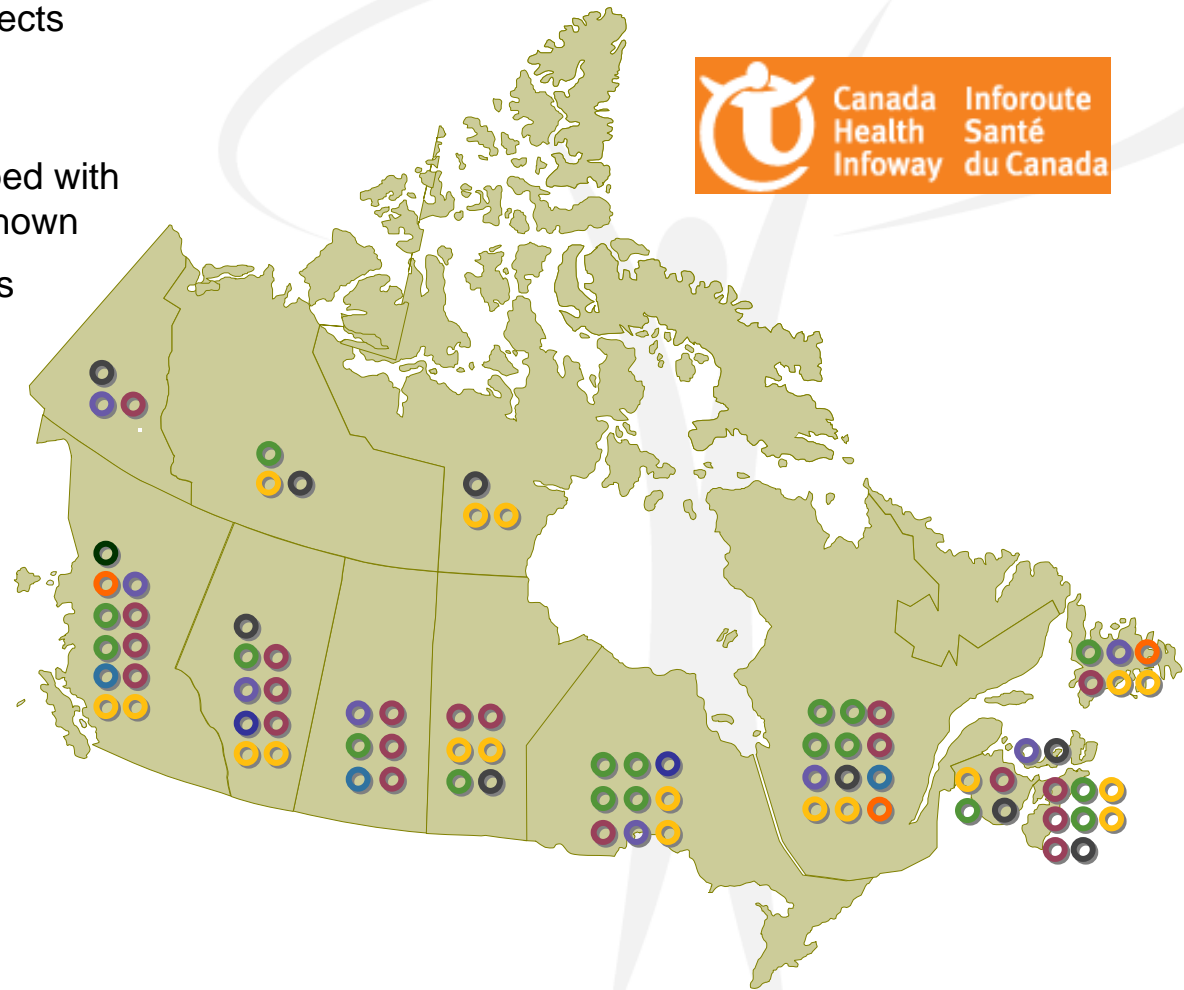
- Existing organisational systems will be linked to form provincial EHRs; provincial EHRs will be linked to form the national interoperable EHR (iEHR)
- 38,783 systems in Canada need to be integrated to create a pan-Canadian iEHR

Interoperable health systems will improve individual patient care and bring public health benefits

- **141** active and completed projects valued at **\$536** million in all 9 investment programmes
- The **82** projects jointly developed with provinces and territories are shown
- In addition, **59** national projects are also underway
- \$736M of \$1.1B CAD allocated to date

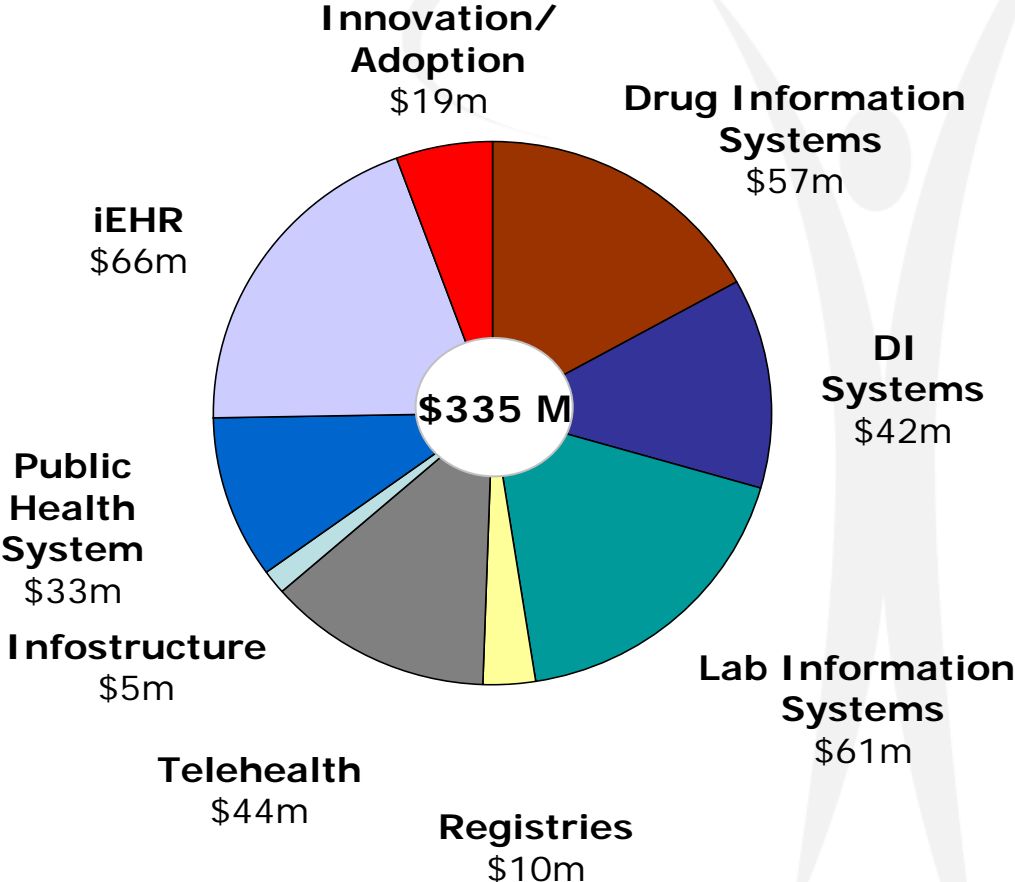
Legend

- Registries
- Diagnostic Imaging
- Drug Info Systems
- Lab Info Systems
- Telehealth
- Interoperable EHR
- Public Health Surv.

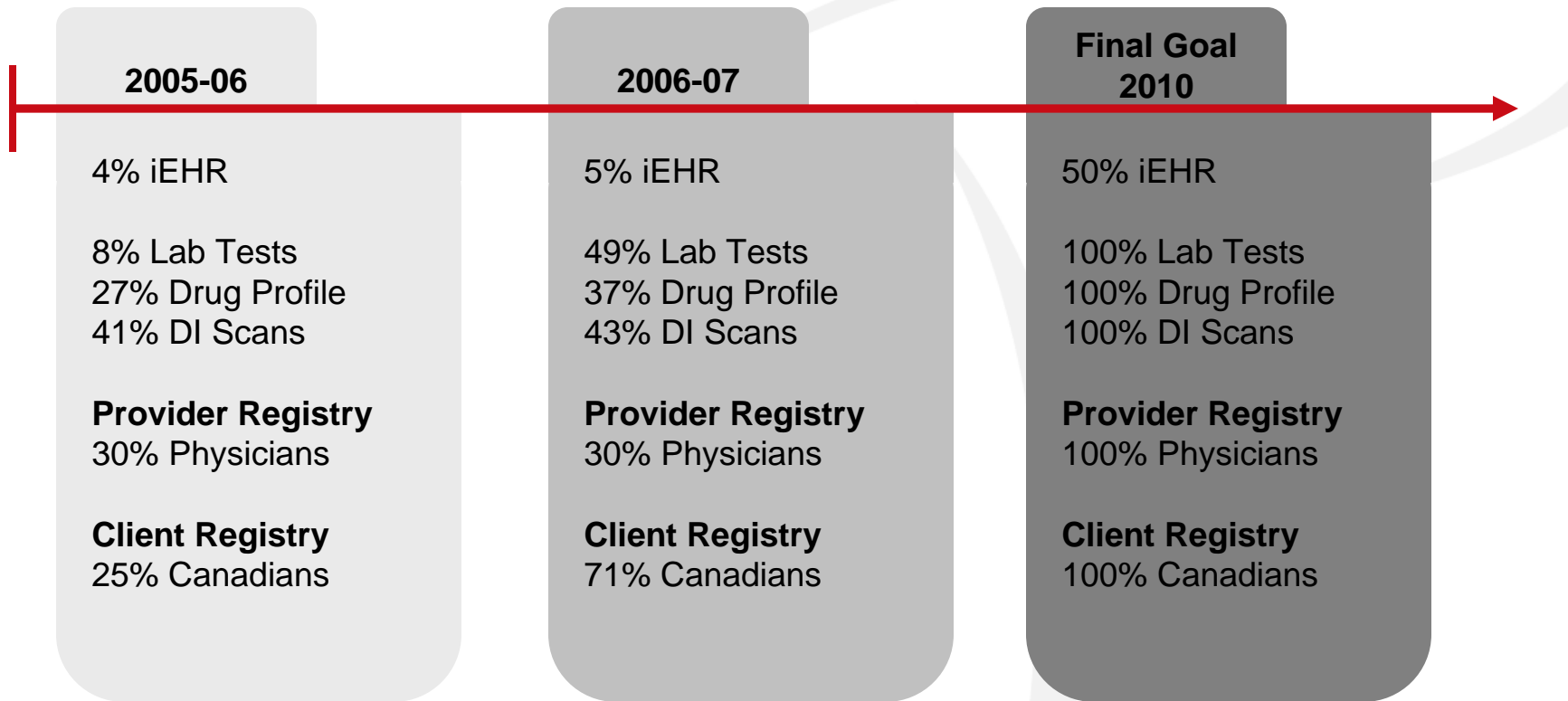


e-Health Spending: deployment of EHRs across Canada to transition from planning to implementation phase

06/07 Infoway Investments



Pan Canadian Interoperable EHR: Status Update



Infoway is progressing towards an iEHR for 50% of Canadians by 2010

Note: Primary care is not included in Infoway's mandate.

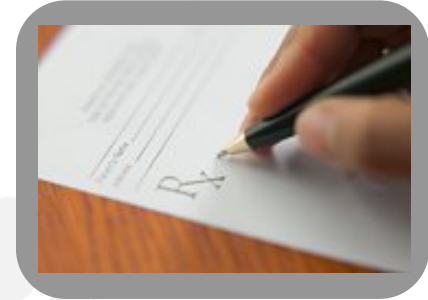
Physician use of IT in Canada

...only **34%** have digitized medical records in their offices (compared to **51%** in the US)

...only **10%** communicate with their patients via email (compared to **22%** in New Zealand)

...only **8%** use e-prescribing (compared to **87%** in the UK)

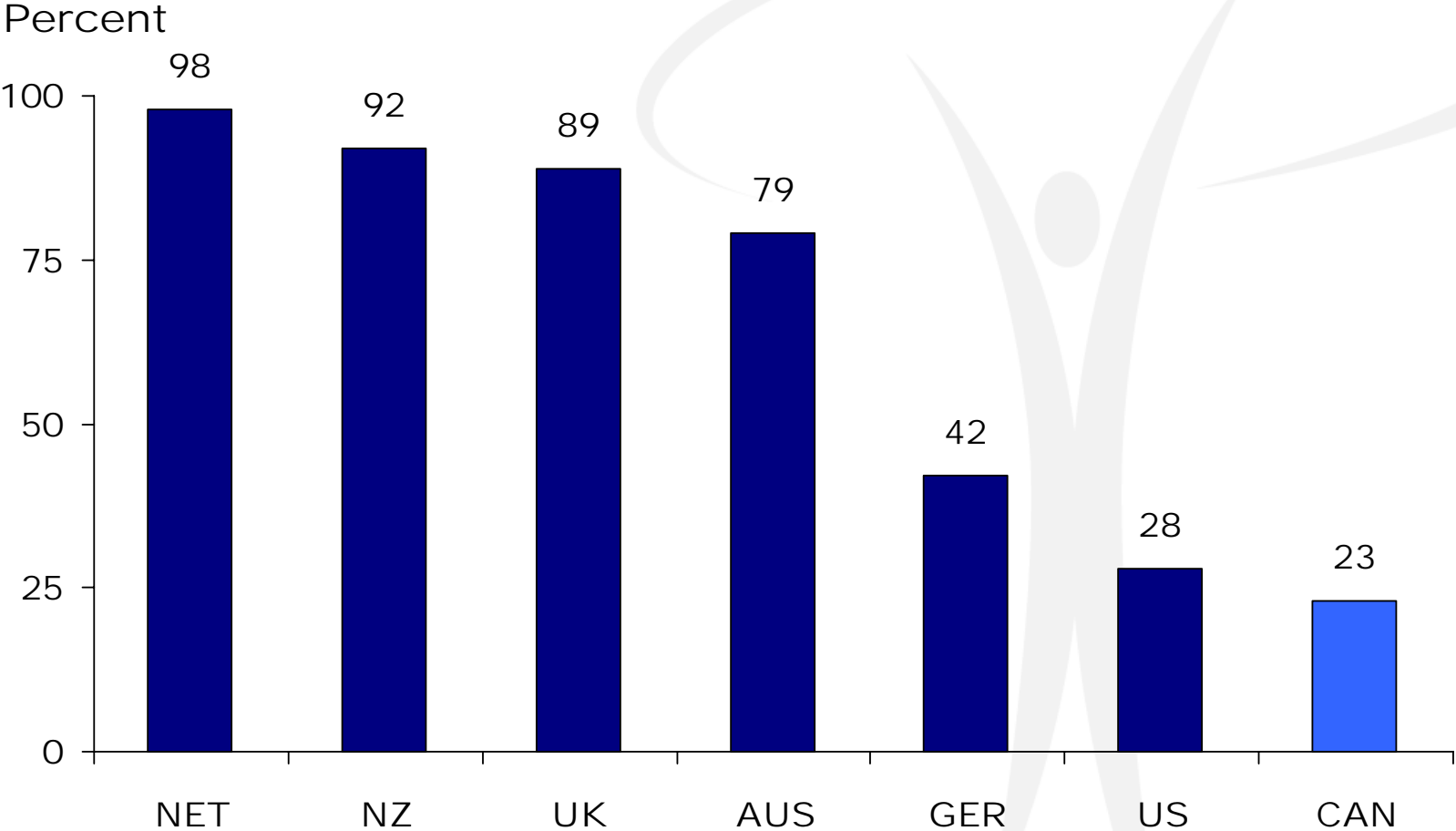
...only **21%** of Canadian physicians use electronic medical records (compared to **59%** in the UK)(2001)



We have a way to go!



Primary care doctors use of electronic patient medical records in 2006



Canada's doctors are lagging behind other countries when it comes to using information technology in patient care

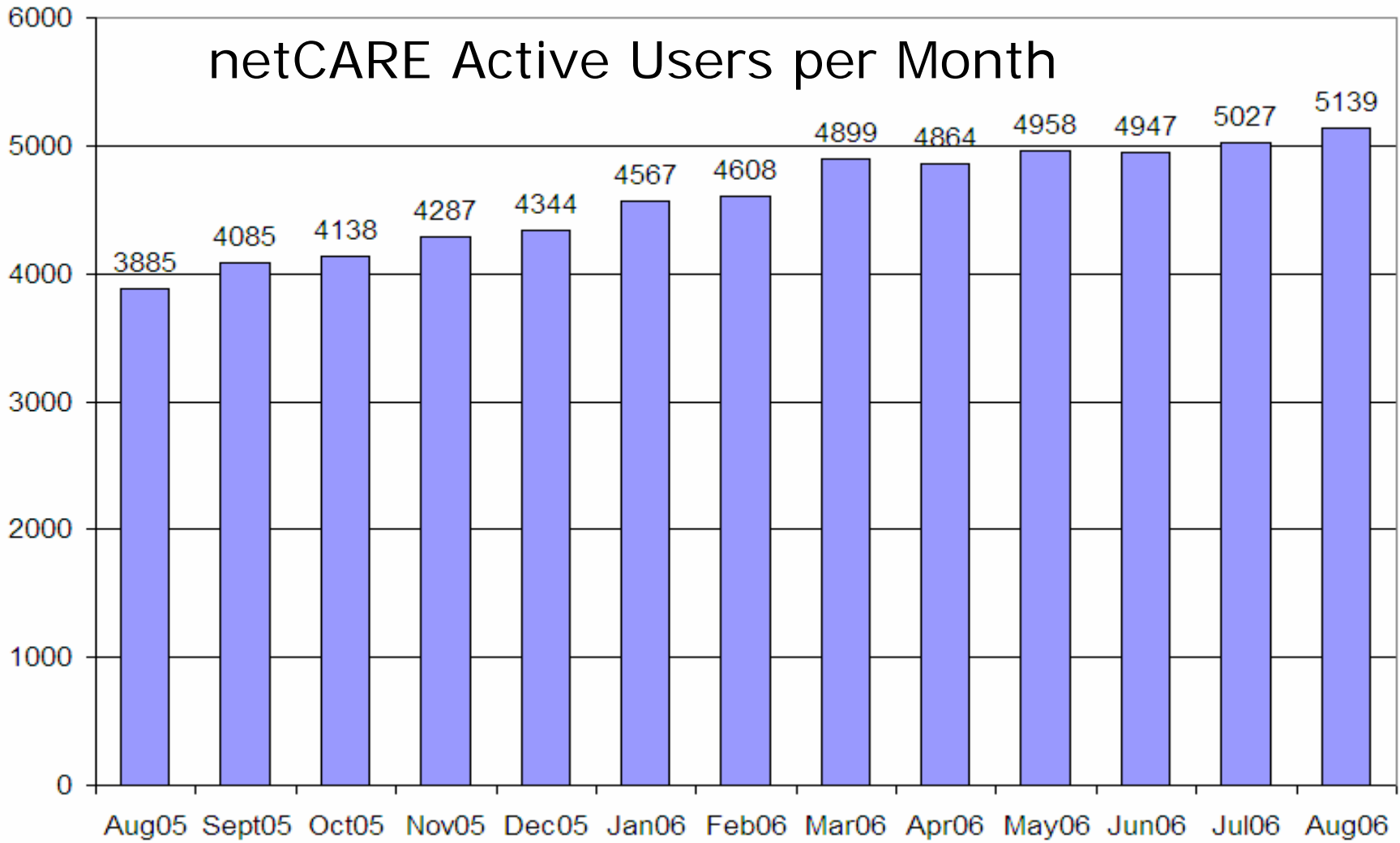
Country	% GPs managing automated medication prescriptions	% GPs recording progress notes	% GPs receiving lab results
Australia	98	64	Many
Austria	90	25	Many
Denmark	99	90	Most
England	95	90	Many
Germany	90	24	Few
Netherlands	90	94	Many
New Zealand	97	80	Most
Norway	100	95	Few
Scotland	95	65	Most
Sweden	99	15	Most

In Canada, approximately 20% of physicians are utilizing PCs for patient management

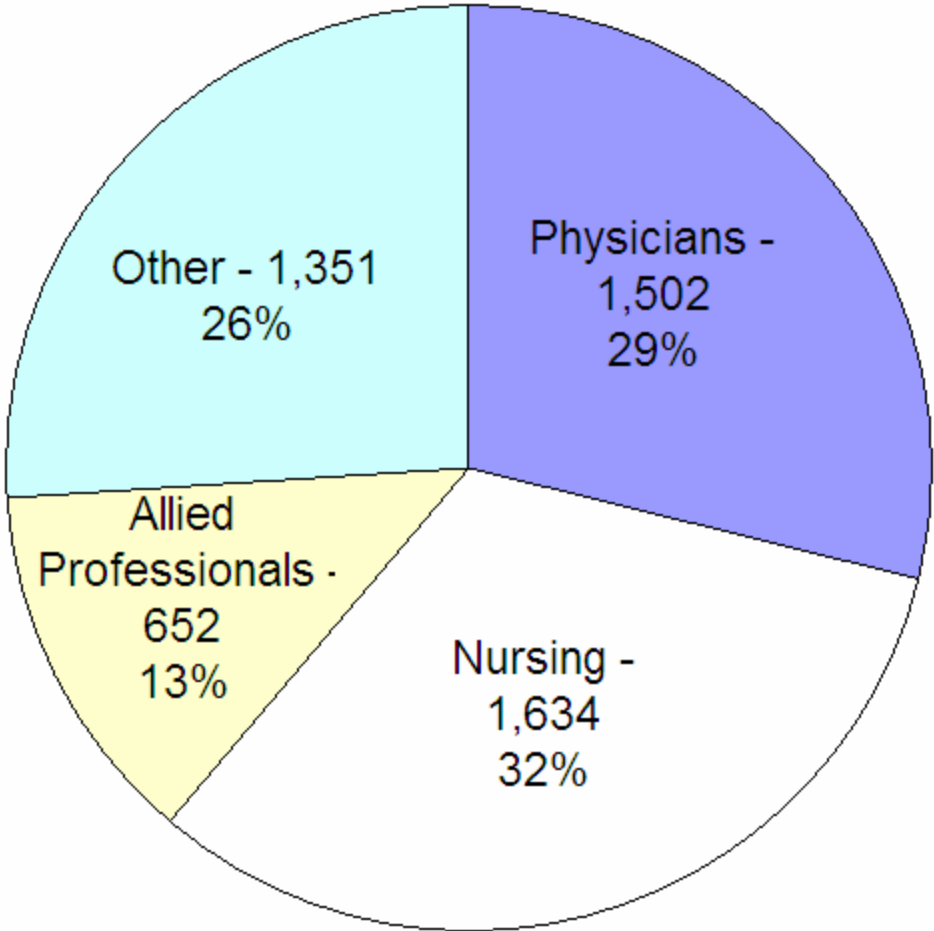
Capital Health Edmonton – netCARE A Notable Success

- Canada's first major regional electronic health record
- Edmonton and surrounding area
- Available 24 hours a day, seven days a week
- netCARE is accessed by physicians, nurses, allied professionals, unit clerks, and management
- Implementation started in April 2004
- System provides detailed month by month usage statistics

netCARE Utilization Continues to Increase

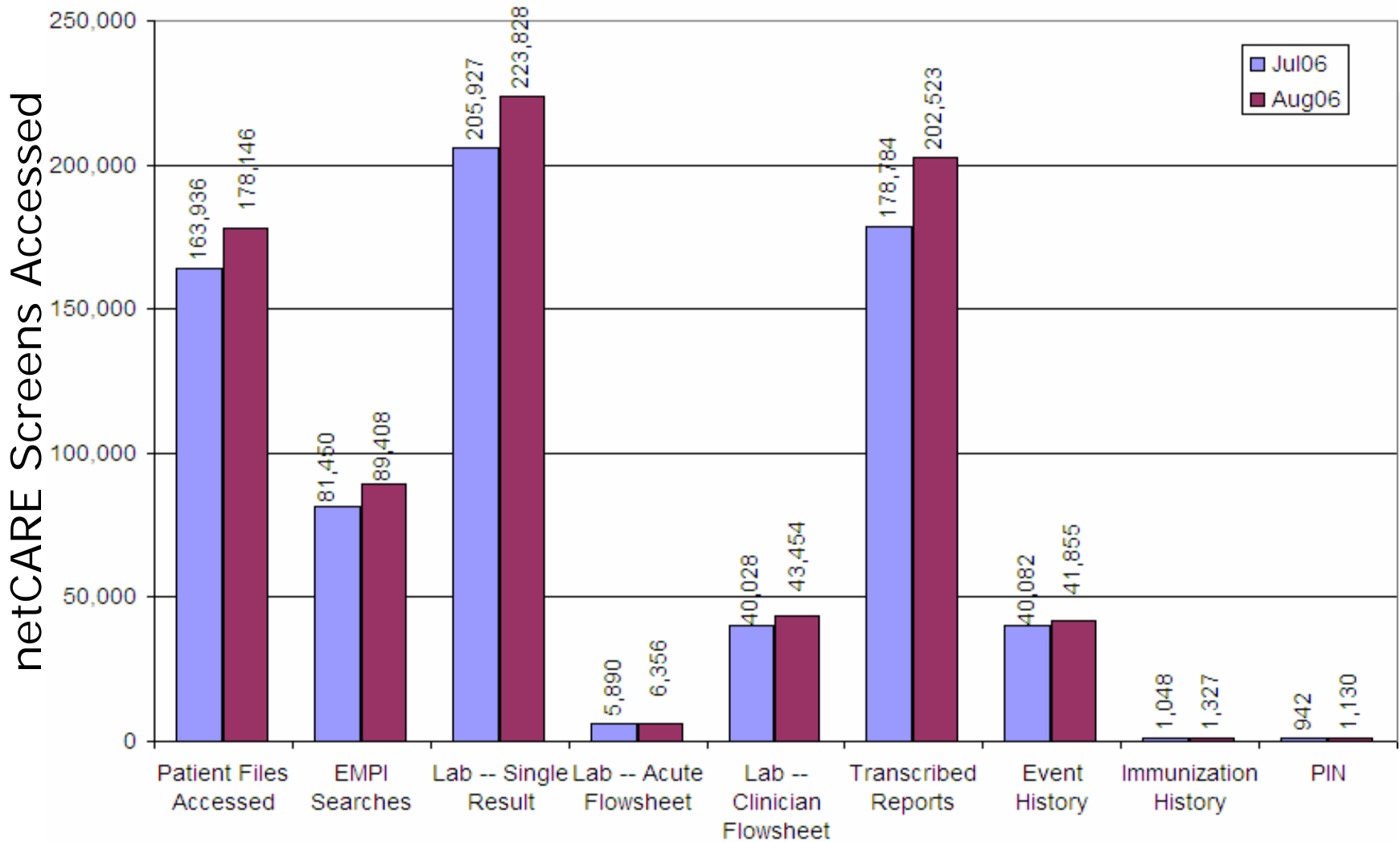


Active User Professions – August, 2006



Total = 5,139

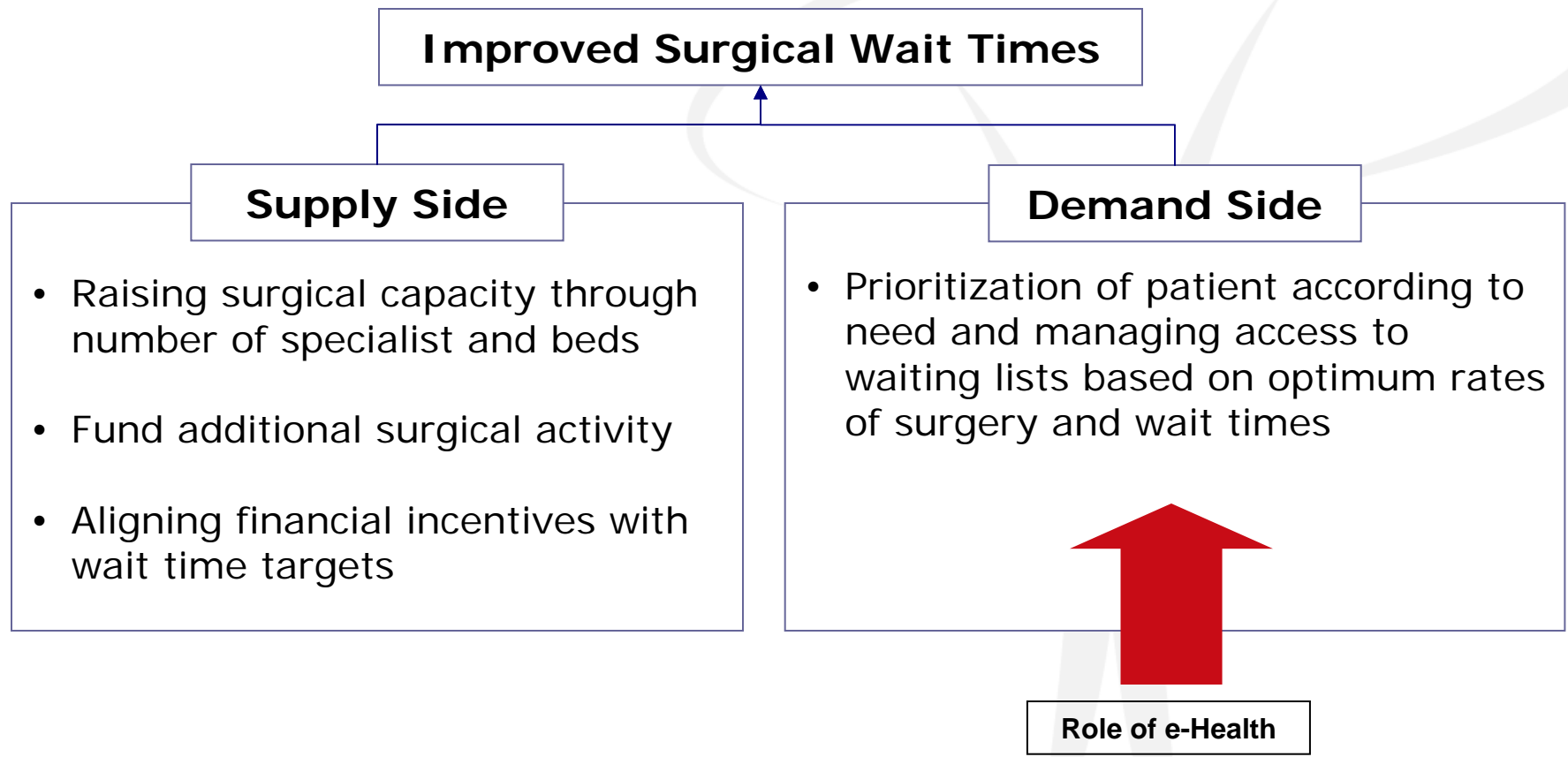
User activity is tracked to focus improvements on priority areas



netCare's Success

- Clear value proposition from first day (complete clinical content)
- Short development window before release to clinicians
- Successive waves of implementation after a short initial pilot
- Monitor utilization by name and profession - seek out the critics
- Rapid releases of new versions that added new clinical content (ECGs, PACs, reports, etc.)
- Careful tracking of user activity to focus improvement efforts
- Excellent, proven leadership

Access to Care: waiting times for elective surgery are a main health policy concern



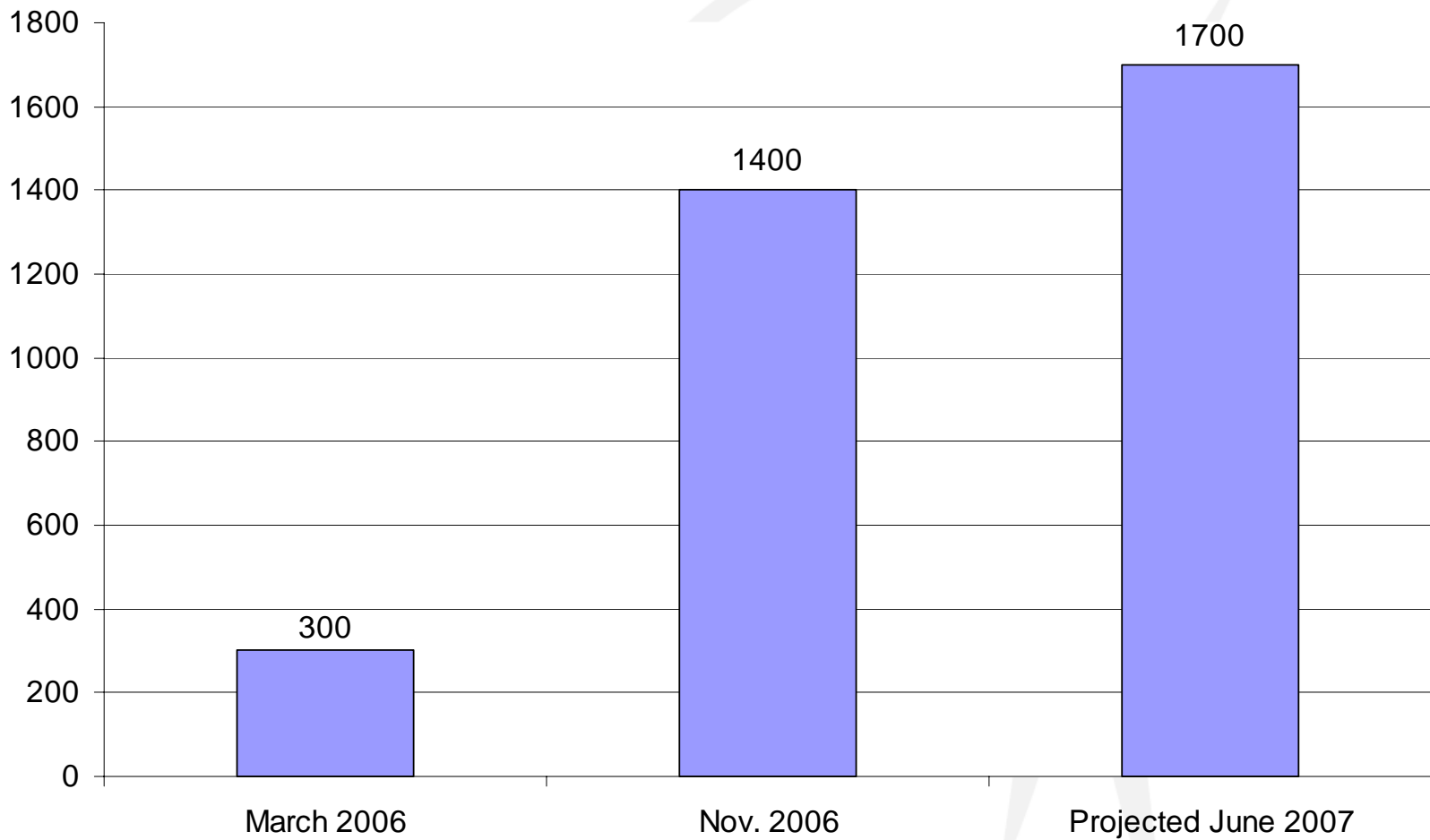
There has been investment in many countries in recent years to obtain data on waiting times to better manage demand

	Access to Service Strategy	Setting Targets	Wait Time System	Website Public Reporting
Canada	Yes	Assessment Tools Access Targets	Yes	Yes
Denmark	Yes	Access Targets	Yes	Yes
New Zealand	Yes	Assessment Tools	Yes	Yes
Sweden	Yes	Access Targets	Yes	Yes
United Kingdom	Yes	Access Targets	In progress	Yes

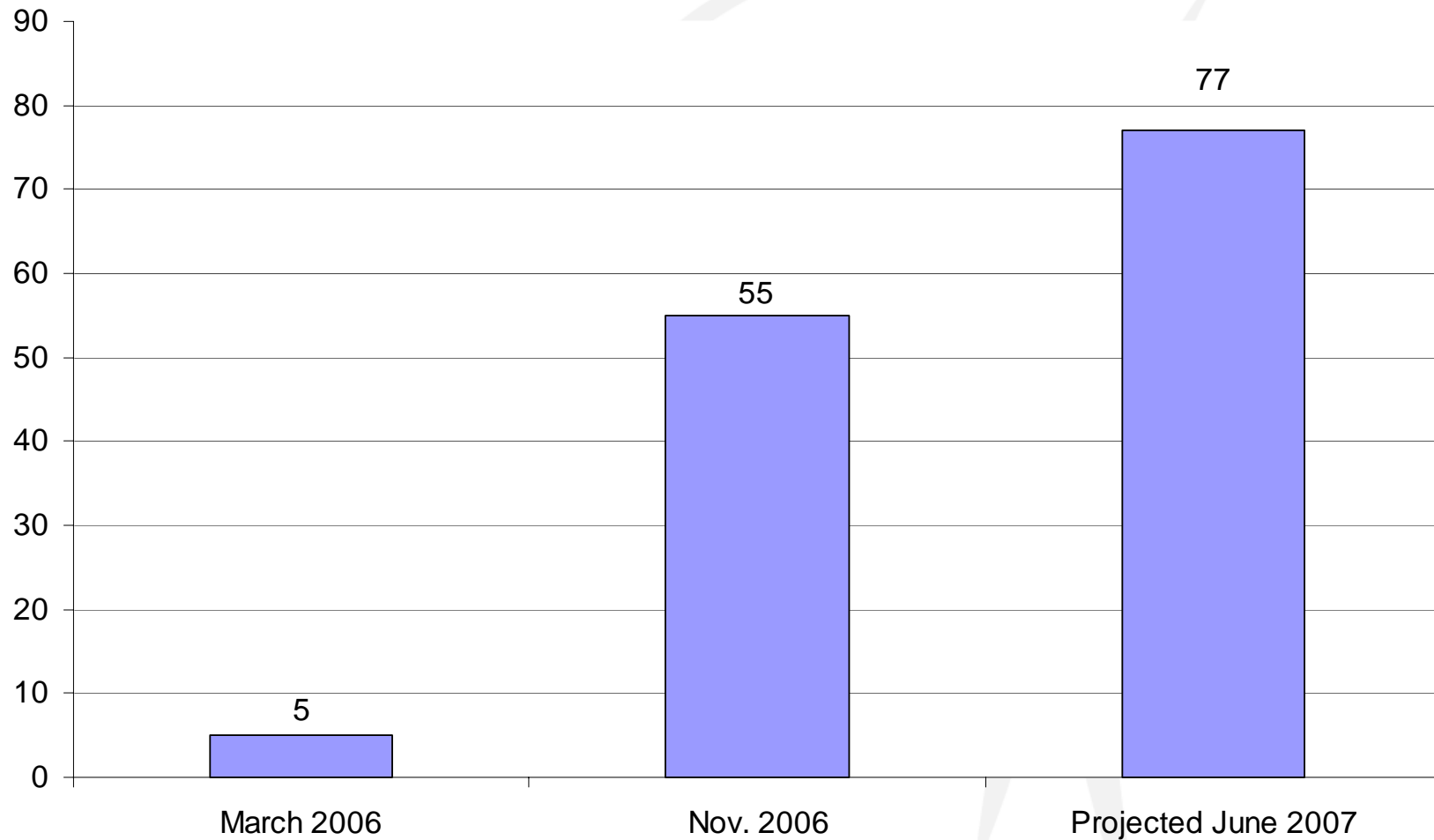
Wait Time Information can be utilized to:

- Increase Cost-Efficiencies
- Ensure Public Accountability
- Improve Quality of Care

WTIS-EMPI implementation status – adoption statistics, by surgeon offices



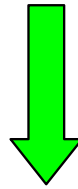
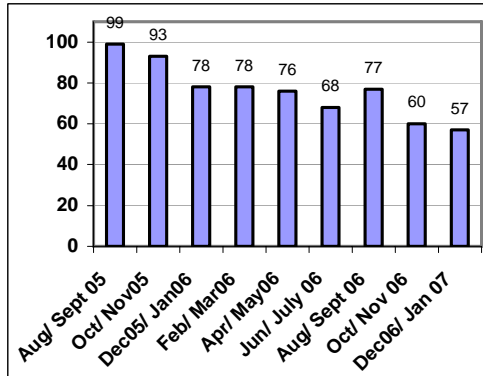
WTIS-EMPI implementation status – adoption statistics, by hospitals connected



Ontario Wait Time Information System A Notable Success

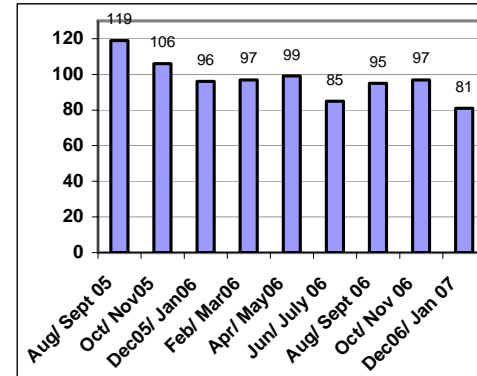
Ontario is the only province that is entirely electronic and direct from surgeons and hospitals

Cataract Surgery



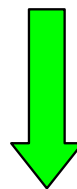
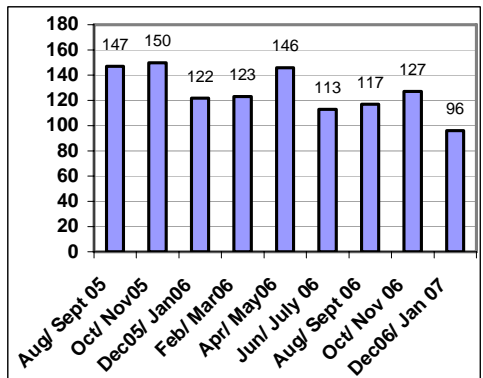
Current vs Baseline:
Net change: -42 days
Percentage change:
-42.4%

Hip Replacement Surgery



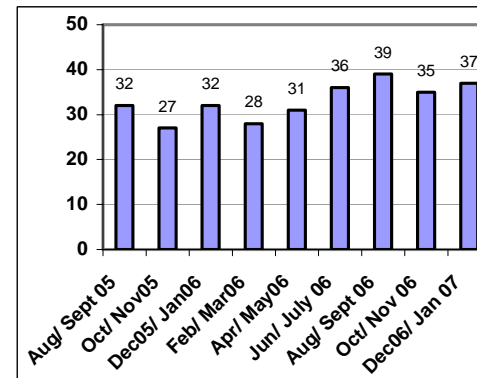
Current vs Baseline:
Net change: -38 days
Percentage change:
-31.9%

Knee Replacement Surgery



Current vs Baseline:
Net change: -51 days
Percentage change:
-34.7%

MRI



Current vs Baseline:
Net change: 5 days
Percentage change:
15.6%

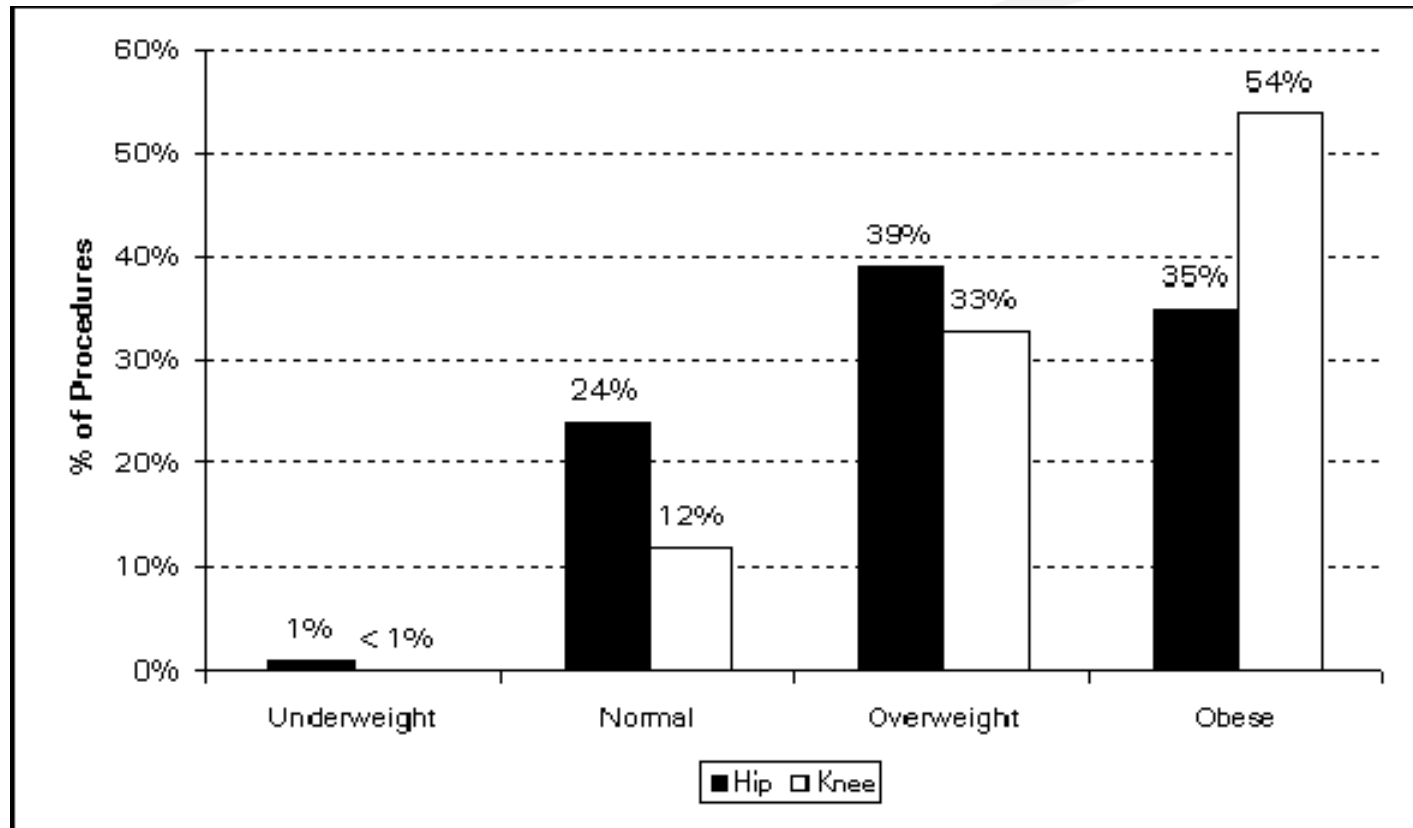
Ontario's Wait Time Information Strategy

- Motivated by a clear operational objective everyone can understand (reduce wait times)
- The system was a means to an end, not an end in itself
- Incentives for adoption understood by all (access to funds for expanded procedure volume)
- Implementation occurred in rapidly expanding waves (a few pilot sites, followed by successive waves of adoption)
- Data publicly available to all (close scrutiny on accuracy)
- Excellent, proven project leadership
- Focus on immediate operational needs that could be accomplished in <18 months

Growing Burden of Chronic Disease In Canada

- **16** million Canadians live with chronic illness
- **80%** of adults over age 65 have a chronic disease
- **60%** of hospitalizations are due to chronic disease
- **2/3** of medical admissions via emergency are due to exacerbation of a chronic disease
- **80%** of family doctor visits are chronic disease-related
- **60 to 80%** medical costs are related to chronic disease

Hip and Knee Replacements, Patients by Body Mass Index Category, 2004–2005



Note: BMI was available for 75% and 76% of hip and knee procedures.
Underweight = BMI <18.5; normal = BMI 18.5 to 24.9; overweight = BMI 25 to 29.9; obese = BMI of ³ 30.

Source: Canadian Joint Replacement Registry, CIHI, 2004–2005.

Chronic Disease Management: clinical standards and system infrastructure and development are required to support health care providers and patients manage chronic disease

Focus on episodic care

Fragmented Care

Lack of investment in interoperable clinical information systems

Poor physician adoption of clinical decision support tools

Lack of patient self-management

Reluctance to measure patient/ population performance

• A “quality chasm” in patient care exists as there is a significant gap between recommended care and received care

• Healthcare practitioners and patients fail to manage chronic disease due to a lack of national standards, integrated systems and clinical decision support tools

Result:

- Increase in burden of disease
- Economically unstable health care system

Diabetes care: Canada scored the lowest in terms of compliance with multiple indicators of diabetes care

Indicator	CAN* %	AUS %	NZ %	UK %	US %	GER %
A1C in last 6 mos.	90	86	79	85	90	91
Feet exam in last yr.	52	57	66	75	70	65
Eye exam in last yr.	73	73	66	83	69	85
Cholesterol checked in last year	91	93	87	92	92	95
All 4 services received in last yr.	38	41	40	58	56	55

Canada is ranked last in measuring and managing Chronic Disease Prevention and Management activities, and integrating multidisciplinary teams

CDM-related activities of Primary Care Physicians	CAN	UK	GER	NZ	NETH	AUS	US
Overall Ranking	7 th	1 st	2 nd	3 rd	4 th	5 th	6 th
Measurement Activities							
Participated in Collaborative QI Efforts	6 th	4 th	2 nd	1 st	3 rd	4 th	5 th
Conducted clinical audit of patient care	7 th	1 st	5 th	2 nd	6 th	3 rd	4 th
Sets formal targets for clinical performance	5 th	1 st	1 st	3 rd	4 th	6 th	2 nd
Reporting "well-prepared" re: patients with multiple chronic diseases	7 th	2 nd	1 st	6 th	3 rd	4 th	5 th
Reporting "well-prepared" re: patients with mental health problems	6 th	3 rd	1 st	5 th	2 nd	4 th	7 th
Management activities							
Least difficulty in generating list of patients by diagnosis	7 th	1 st	4 th	2 nd	3 rd	5 th	6 th
Gave patients with chronic diseases plan to manage care at home	7 th	5 th	1 st	6 th	4 th	3 rd	2 nd
Multidisciplinary team activities							
Practice routinely uses multidisciplinary teams	4 th	1 st	3 rd	5 th	2 nd	4 th	6 th
Routinely uses clinicians other than doctors to help manage patients with chronic diseases	7 th	1 st	2 nd	3 rd	4 th	5 th	6 th
Routinely uses clinicians other than doctors to provide primary care services	7 th	1 st	2 nd	3 rd	6 th	5 th	4 th

Potential Annual Benefits of Health Information Technology Enabled Diabetes Management Program in the LHIN

Benefit	RAND – Full Adoption in U.S.	Modest Adoption (40%) in Toronto Central LHIN
Use	(millions)	(thousands)
<i>Inpatient Stays</i>	-2	-4
<i>Inpatient Days</i>	-16	-27
<i>Hosp Outpatient and ED Visits</i>	-3	-5
<i>Physician Office Visits</i>	-30	-48
<i>Disease Management Visits¹</i>	46	75
Spending	(\$ billions USD)	(\$ millions USD)
<i>Hospital</i>	-18	-30
<i>Physician</i>	-5	-9
Totals	-24	-39
Mortality / Morbidity	(thousands)	(ones)
Deaths	-113	-185
Reduced Renal Failures	-29	-48

1 – includes planned interdisciplinary care management team encounters such as those delivered by physicians, nurses, community pharmacists and telehealth professionals

Source: Bigelow et al. RAND 2005

Potential ROI of a Regional Diabetes Management Program

Extrapolate RAND Study for a diabetes CDM program with a conservative adoption rate of 40% - **annual savings (after costs) of ~\$40M per year**

After the initial upfront costs every \$1 spent on the diabetes CDM program there is an approximate return of \$2 to \$6

Creation of an Infrastructure that can be leveraged to manage multiple chronic diseases

Chronic disease management in Edmonton

Edmonton's health census a bold example of modern care

Second Opinion

ANDRÉ PICARD

One of the most sophisticated and engaging examples of what our health system is capable of is the health census in Edmonton. It is a bold example of modern care.

It is a bold example of modern care.

Capital Health in Edmonton, the country's largest health region, announced recently that it plans to identify 100 per cent of people in its territory who suffer from diabetes. There it plans to ensure that every single one of them achieves his or her treatment goals. Deadline: 2009.

On the surface, this may seem like a pretty obvious thing to do. But diabetes and other chronic diseases are particularly insidious because diabetes is easy to prevent but, left on its own, can degenerate into a costly, debilitating condition.

Yet, in Canada, we don't even now have many people actually aware of diabetes. The best guess is around 100,000.

We do know, however, that diabetes is one of the leading causes of death and disability, and that it costs several billion a year to treat.

That we are doing so little to prevent this kind of suffering and disease speaks volumes about how our health system has gone astray in the setting of priorities.

Richard Lewanczuk, medical director of chronic disease management at Capital Health, says that systematic identification and treatment of diabetes should be a mission for Capital Health. In fact, the first jurisdiction in North America, perhaps the world, to try.

"We should be doing this kind of thing routinely," he says. "But the reason we don't do it is we have an illness care system, not a health care system."

In our illness care system, at least two in every three dollars are paid out with the treatment of chronic conditions — conditions that are largely preventable, including diabetes, heart disease, chronic obstructive pulmonary disease and most cancers.

Dr. Lewanczuk notes that our system do all kinds of things to keep their vehicles running smoothly such as changing the spark plugs and the oil. They don't wait until the engine seizes up and major repairs are required.

Yet, that is the way we treat our bodies. More so, that is how the health system is designed — we deal with a massive breakdown, such as a heart attack, stroke, kidney failure, blindness and circulation problems that require expenditures of funds. All of these are common symptoms of diabetes.

"You're not proposing here with the diabetes management model in preventive maintenance — keeping the engine running smoothly in the first place," Dr. Lewanczuk says.

The diabetes management model that has been adopted in Edmonton is doubly simple. It begins with using electronic databases to track every blood glucose test and flag abnormal results — an indication a person is diabetic or at risk of developing diabetes. These tests are done routinely, but it is only when there is a follow-up by the patient or his doctor.

The next step is getting people to get the education and treatment they need, from primary care practitioners such as family doctors, nurse practitioners, pharmacists and other specialists, such as dietitians, and keeping them out of emergency rooms.

If this model works — and there is no reason it should not — it could have dramatic results. Studies have shown that for every dollar invested in diabetes prevention, between \$5 and \$30 can be saved in treatment costs.

And if you can systematically track and treat people with diabetes, you can do so for people with high blood pressure, asthma, obesity and other chronic conditions.

The key to having the ability, the permission and the budget to do this is not Capital Health, as always. But the real story here is hidden in some surprising statistics from a recent study.

The health region can identify diabetes because it has sophisticated electronic records that include various laboratory test data to the result of lab tests. It is also the result of primary care health teams that can provide preventive care and education in a patient that is largely unrecognized by the traditional fee-for-service model. But now health through to specialized diabetes clinics.

These statistics flow directly from the fact that Alberta has chosen to replicate health services, breaking down the silos that are so commonplace in the health system.

In other words, Capital Health can do bold things because it has created an infrastructure that allows innovation and creates better patient care.

That's not making news such as a new cancer drug, the new polio vaccine and poliovaccines need to have local and state. The message: Regionalize, invest in electronic health records, and rebuild the primary care delivery model. If you should it can be done, take a trip to Edmonton and see for yourself.

There they have demonstrated that making preventive and management of chronic illness must be the priority.

The need is better care, not only for diabetes, but for all those who will face the challenge of living with a chronic condition.

We should all be so lucky.

apicard@capitalhealth.ca

“Capital Health in Edmonton ... announced recently that it plans to identify 100 per cent of people in its territory who suffer from diabetes. Then it plans to ensure that every single one of them achieves his or her treatment goals. Deadline: 2009.”

“That we are doing so little to prevent this kind of suffering and expense speaks volumes about how our health system has gone astray in the setting of priorities.”

“It begins with using electronic databases to check every blood glucose test and flag abnormal results -- an indication a person is diabetic or at risk of developing diabetes. These tests are done routinely, but far too often there is no follow-up by the patient or his doctor.”

Chronic disease management in Edmonton

Edmonton's health census a bold example of modern care

Second Opinion

ANDRÉ PICARD

One of the most sophisticated and engaging examples of our health system are the 11. There is not enough emphasis on prevention. There is a lack of investment.

It is worth noting that in highlighting a new initiative that is not only focused on health, but health.

Capital Health in Edmonton, the city's largest health region, announced recently that it plans to identify 10 per cent of people in its territory who suffer from diabetes. There is a plan to ensure that every individual of them achieves his or her treatment goals. Details:

On the surface, this may seem like a glaringly obvious thing to do. But diabetes and related conditions are particularly because diabetes is easy to prevent but, left un-

checked, can degenerate into a costly, debilitating condition.

Yet, in Canada, we don't even know how many people actually have diabetes. The best guess is around 100,000.

We do know, however, that diabetes is one of the leading causes of death and disability, and that it costs several billion a year to treat.

That we are doing so little to prevent this kind of a debilitating and often incapacitating disease shows how our health system has gone wrong in the way of prevention.

Richard Lewanczuk, medical director of chronic disease management at Capital Health, says that systematic identification and treatment of diabetes should be a mission that Capital Health is, in fact, the first jurisdiction in North America, perhaps the world, to try.

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"What we're proposing here with the diabetes management model is preventive maintenance — keeping the engine running smoothly in the first place," Dr. Lewanczuk says.

The diabetes management model that has been adopted is tailor-made to do this. It begins with using electronic databases to track every blood glucose test and log abnormal results — an indication a person is diabetic or at risk of developing diabetes. These tests are done routinely, but it is only when there is a follow-up by the patient or his doctor.

The next step is getting people into the system. It is not only for full-blown diabetes, the education and treatment they need, from primary care providers to family doctors, nurse practitioners, pharmacists and other specialists such as dietitians, and keeping them out of emergency rooms.

If this model works — and there is no reason it should not — it could have dramatic results. Studies have shown that for every dollar invested in diabetes prevention, between \$5 and \$20 can be saved in treatment costs.

And if you can systematically track and treat people with diabetes, you can do so for people with high blood pressure, asthma, obesity and other chronic conditions.

The key to having the ability, the permission and the budget to do so, such as Capital Health, is to do so.

But the real story here is hidden in some seemingly mundane bureaucratic details.

The health region can identify diabetics because it has superb electronic health records that include relevant information right down to the results of lab tests.

Studies have shown that for every dollar invested in diabetes prevention, between \$3 and \$20 can be saved in treatment costs.

The result is better care, not only for diabetics, but for all those who will face the challenge of living with a chronic condition.

"We should all be so lucky."

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“We should all be so lucky.”

Principles for eHealth investments

- Use experienced teams lead by leaders with a track record of success
- Build time should be short – get the application into a live clinical environment rapidly (<18 months)
- Implement using a short pilot phase followed rapidly by 2-3 waves of additional users
- Learn from the successes and failures of others
- Put users in the driver's seat (monitor utilization carefully)
- Make sure the users have a strong value proposition (incentives or benefits)
- Establish clear business or clinical objectives
- Build on legacy investments (don't ignore them!)

Concluding Thoughts

- The eHealth agenda is progressing more aggressively in non-primary care areas with some significant learnings
- Our most significant health system and clinical service challenge is the growing burden of chronic disease. Addressing this will:
 - Reduce the rate of escalating healthcare costs
 - Improve the productivity of providers
 - Motivate the adoption of electronic health records
 - Improve the quality of care
 - Improve our health
- Engagement of clinicians and users is critical to the success of eHealth
 - Upfront clinical and business objectives
 - Valid business case
 - Strong value proposition (clinical content, benefits and incentives)
- The IT system is the means to an end



COURTYARD GROUP

A proven track record of transforming healthcare

Canada ■ United States ■ United Kingdom