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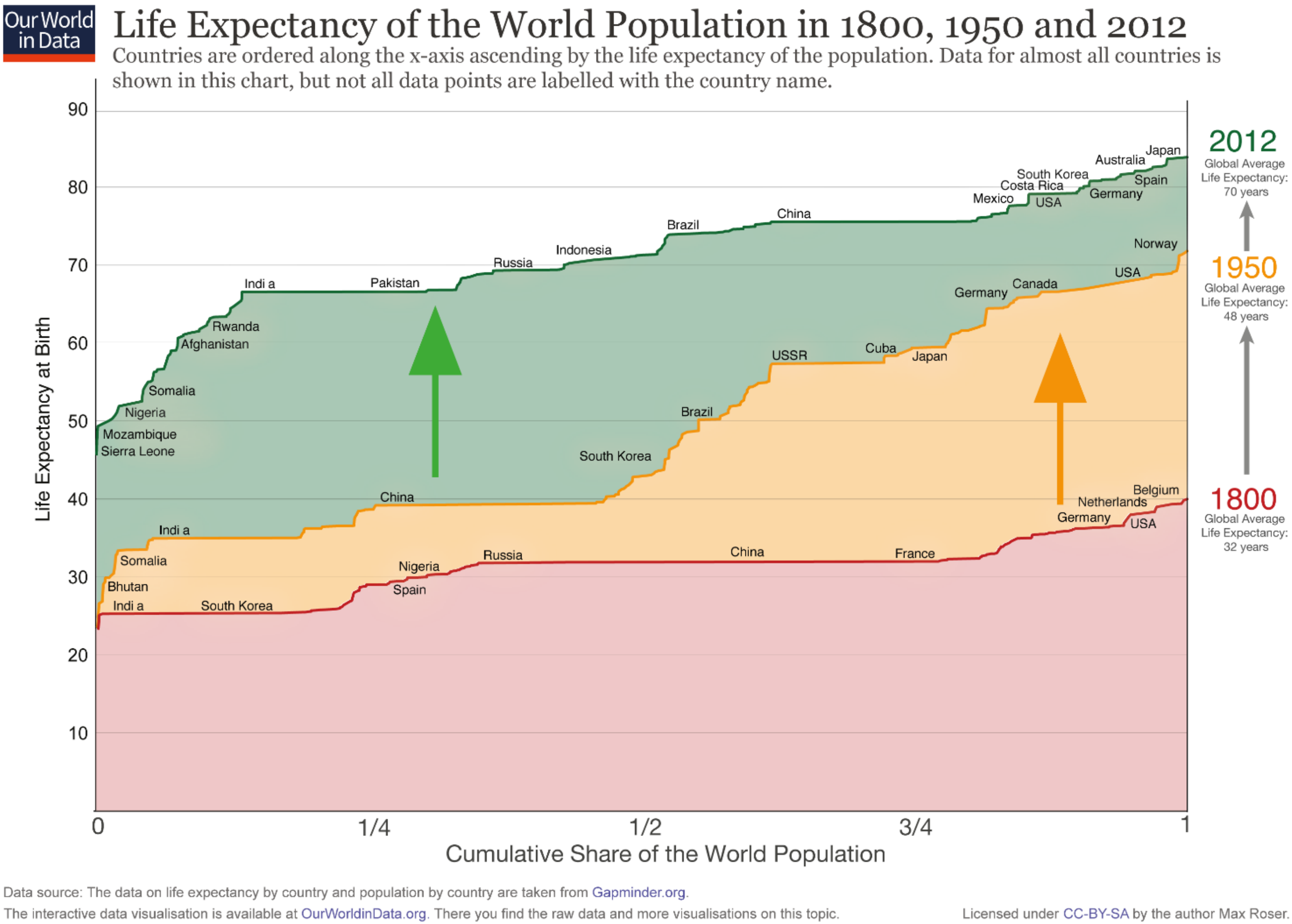
Better Outcomes 2017

The Smartphone (Doctor) at Ten

April 2017

My Happy and Uplifting Starter Slide…



Ten years of iphones


UP
5:14 PM
99
71
TODAY


AT&T 4G
2:28 PM
78%
AliveECG
00:15
bpm
63
25 mm/s
20 mm/mV

Fundamental trends are changing the global healthcare industry. Governments can do no more than channel these large forces…

Key global health industry trends …

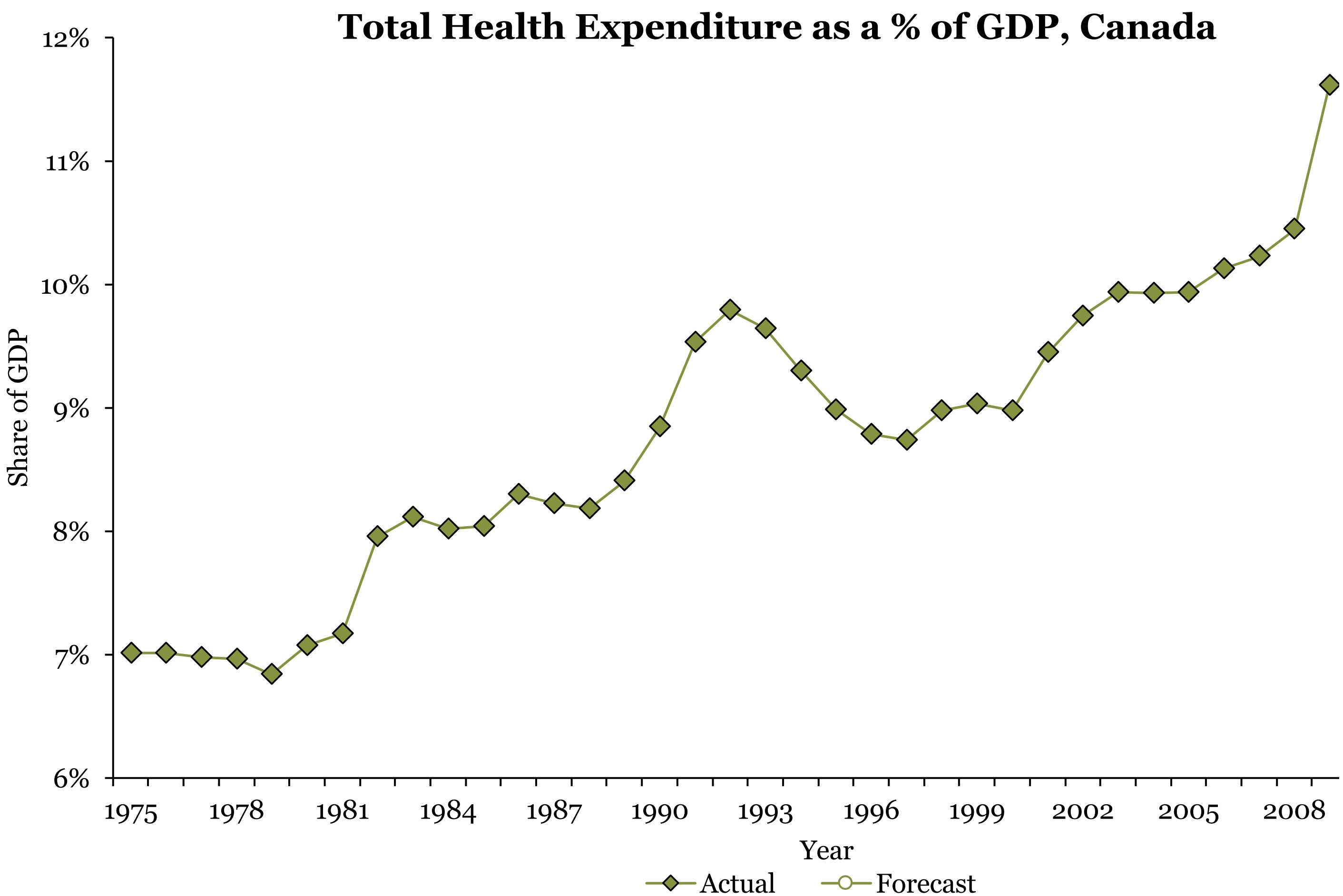
- Demographic shifts & social change
- Technological advances
- Empowered consumers
- Globalisation of care
- Rebalancing global economic power

…Resulting in:

- New business models
- Rise of New Entrants
- Outcomes over volume
- Private sectors and consumers financing delivery of care
- Distributed care

The Perception - ‘Out of Control’ Spending

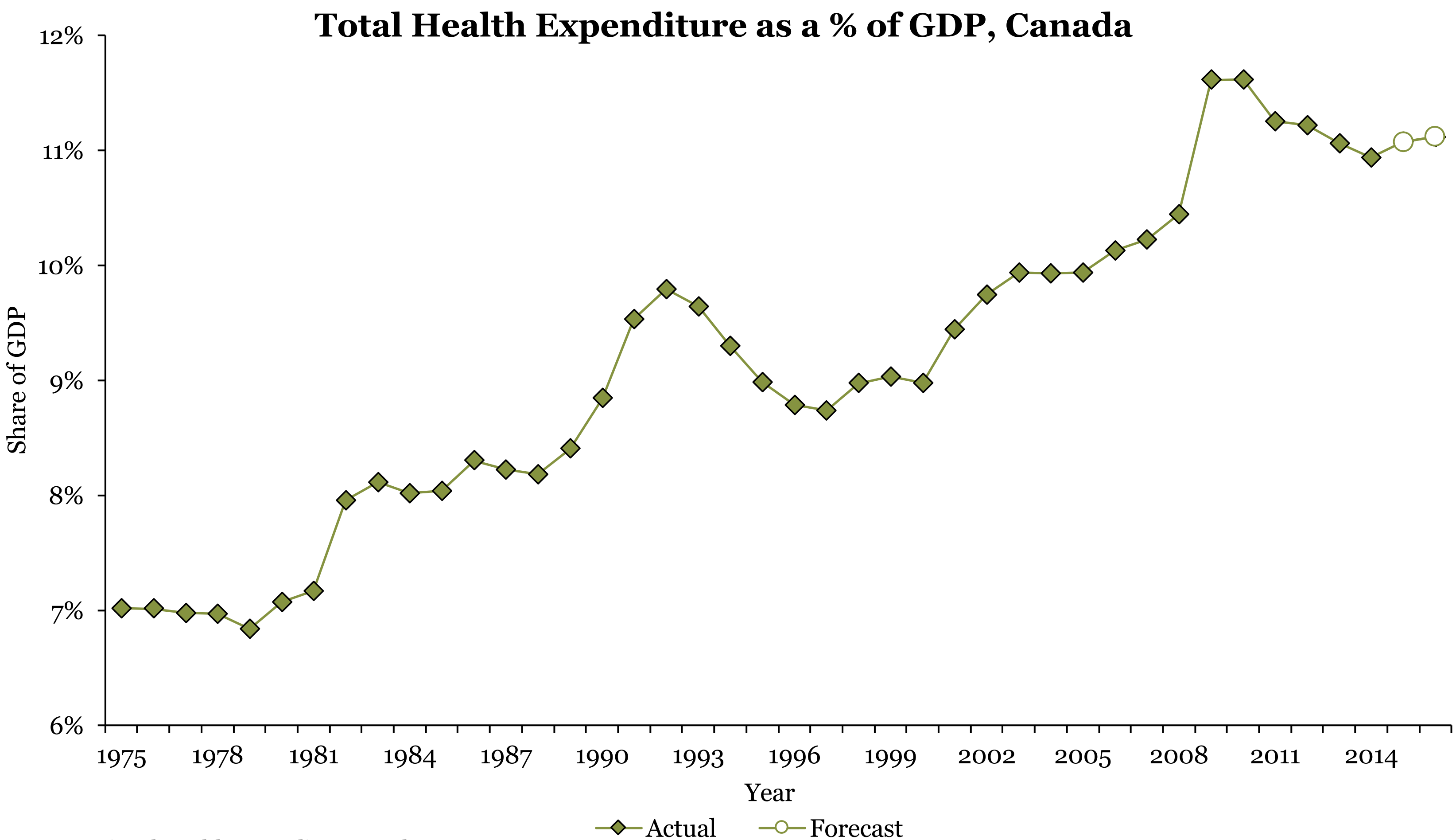
In the late 2000s, there was significant alarm about the rise in healthcare spending (in both absolute terms, and as a percentage of GDP)…



Source: National Health Expenditure Database, 1975-2016, CIHI

The Result – Reduction in Spending

…but government responded, slowing the rate of growth dramatically across all sectors of the healthcare system



Source: National Health Expenditure Database, 1975-2016, CIHI

Cross Country Check up: Government Policy (except Digital)

- “The Boys are Back in Town”: Federal government has stepped up with new funding for mental health, home care, Indigenous Health and Infoway.
- “Oil on Troubled Waters”: Ontario election budget and re-engaging with physicians are clear attempts to stabilize.
- “Change the Dial”: Youth Pharmacare and National Pharmacare
- “How Much Scale is Needed for Regionalization”: Continued argument about whether regional systems build scale or kill innovation. Alberta has not worked. But the Atlantic, Saskatchewan and BC stories are more positive.

… but don’t expect a change in fundamentals. Costs and prices need to go down and that means innovation in care models.

The Changing Nature of the Patient: Acute to Chronic: Older, Fatter, Sicker but Alive!

1

Better access to healthcare and medical innovations are contributing to an aging population…

1Bn
expected increase in the world's population by 2025

300M
of that increase is predicted to come from those aged 65 or more

2

Developing countries are experiencing a rising middle class, leading to lifestyle changes…

Nearly **65%** of the global population will be middle class by 2030

Chronic diseases
are expected to increase to 57% by 2020.
Emerging markets
And **60%** of this burden will occur in emerging markets

3

…further proliferating a sedentary lifestyle that's contributing to the rise in obesity and chronic disease

Source: strategy& analysis, UN Population Division, World Population Prospects (2012)

Obesity and mental health issues are highly prevalent in Canada and at the forefront of what needs to be addressed

Count Total
8,664,560

34% **Overweight**

Count Total
4,680,965

18.3% **Obese**

Count Total
467,969

23.1%

Overweight or obese; youth

In Canada

1 in 3
will be affected by mental illness

6.7%
Count Total
2,011,347
Diabetes

8.1%
Count Total
2,448,817
Asthma

17.5%
Count Total
5,113,813
High blood pressure

7.8%
Count Total
2,346,244
Mood disorder

14.7%
Count Total
4,316,271
Pain or discomfort that prevents activities

3.2 Million

The total number of 12-19 year olds in Canada at risk for developing depression is a staggering 3.2 million

Source: strategy& analysis, Canadian Census 2016, PwC HRI 2016

Different life-stages imply different needs for different customer segments. Market segmentation is critical to win in this market.

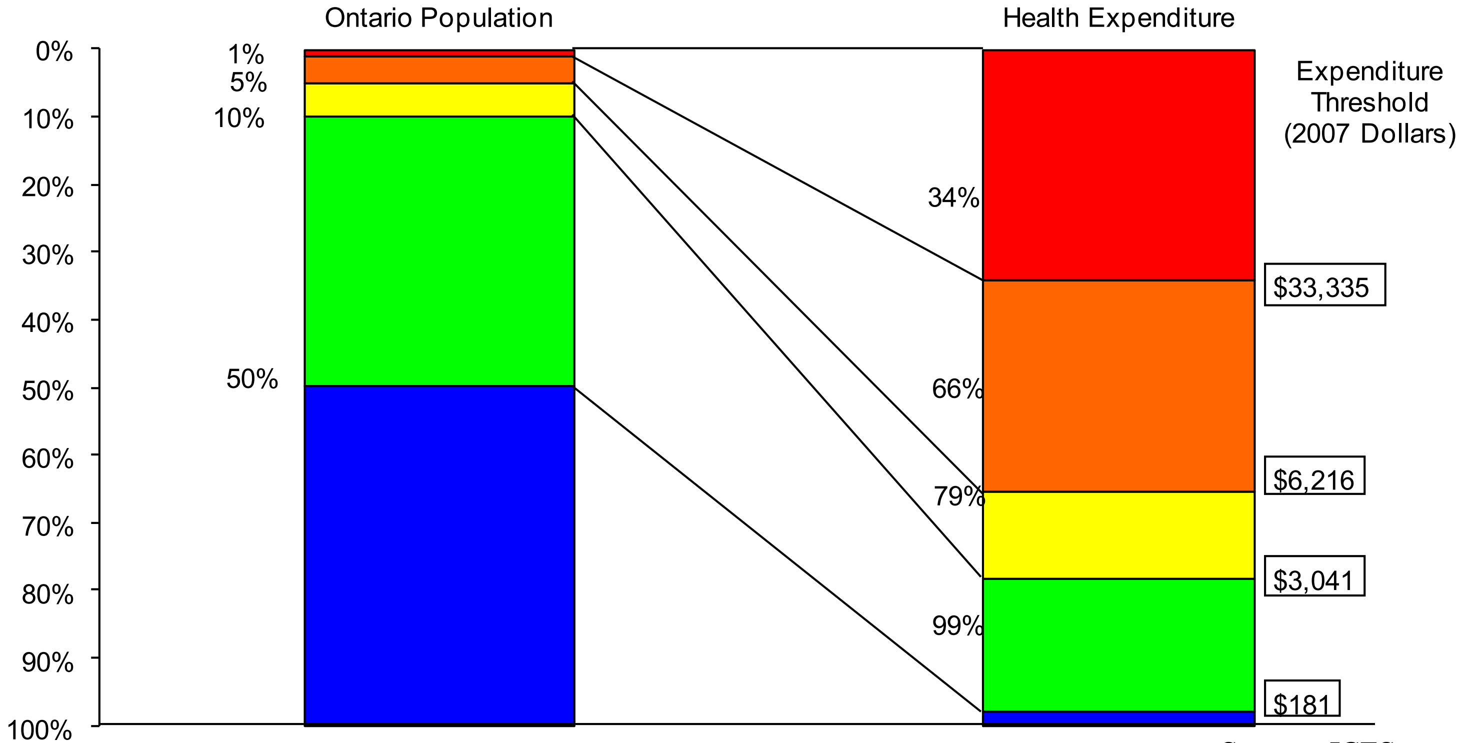
		Frail Elderly	Complex Chronic	Chronic Disease	Mental Health	Healthy Families	Healthy Adult Enthusiasts	Healthy Adult Skeptics
	Weighted number of people	0.9mn	24.8mn	175.1mn	9.4mn	65.4mn	22.6mn	12.5mn
	No. of visits per capita	15	13.3	7.7	5.6	1.7	1.6	1.1
	Spending per capita	$14,919	$12,308	$4,914	$3,012	$1,254	$1,245	$705
Medical	Have at least one condition highly impacted by diet	81-100%	41-60%	21-40%	< 20%	< 20%	< 20%	< 20%
	Report wanting help to manage their weight	21-40%	21-40%	21-40%	21-40%	21-40%	< 20%	21-40%
Social	Decided not to seek medical care due to cost at least once in the past year	41-60%	21-40%	21-40%	41-60%	41-60%	21-40%	41-60%
	Report wanting a care navigator	21-40%	< 20%	< 20%	< 20%	21-40%	< 20%	< 20%
Mental Health	Report wanting help with a mental health issue	21-40%	21-40%	< 20%	41-60%	< 20%	< 20%	< 20%
Preferences	Interested in DIY diagnostics, if it reduces cost of care	61-80%	61-80%	61-80%	41-60%	61-80%	41-60%	41-60%
	Interested in telemedicine, if it reduces cost of care	41-60%	41-60%	41-60%	41-60%	41-60%	21-40%	41-60%
	Interested in home health if it reduced insurance cost	41-60%	41-60%	41-60%	21-40%	41-60%	41-60%	21-40%
Medication	Report wanting help with understanding how to take their medications	21-40%	< 20%	< 20%	21-40%	21-40%	< 20%	< 20%
	Decided not to fill a prescription due to cost at least once in the past year	41-60%	21-40%	< 20%	21-40%	41-60%	< 20%	21-40%
	Number of prescriptions per person	36	32	12	6	1	1	1

< 20% 21-40% 41-60% 61-80% 81-100%

Sources:
HRI analysis of the 2013 Medical Expenditure Panel Survey; 2016 HRI Consumer Survey.
http://www.pwc.com/us/en/health-industries/health-research-institute/publications/primary-care-part-two.html

This different version of equity and fairness across a lifetime is very difficult for government.

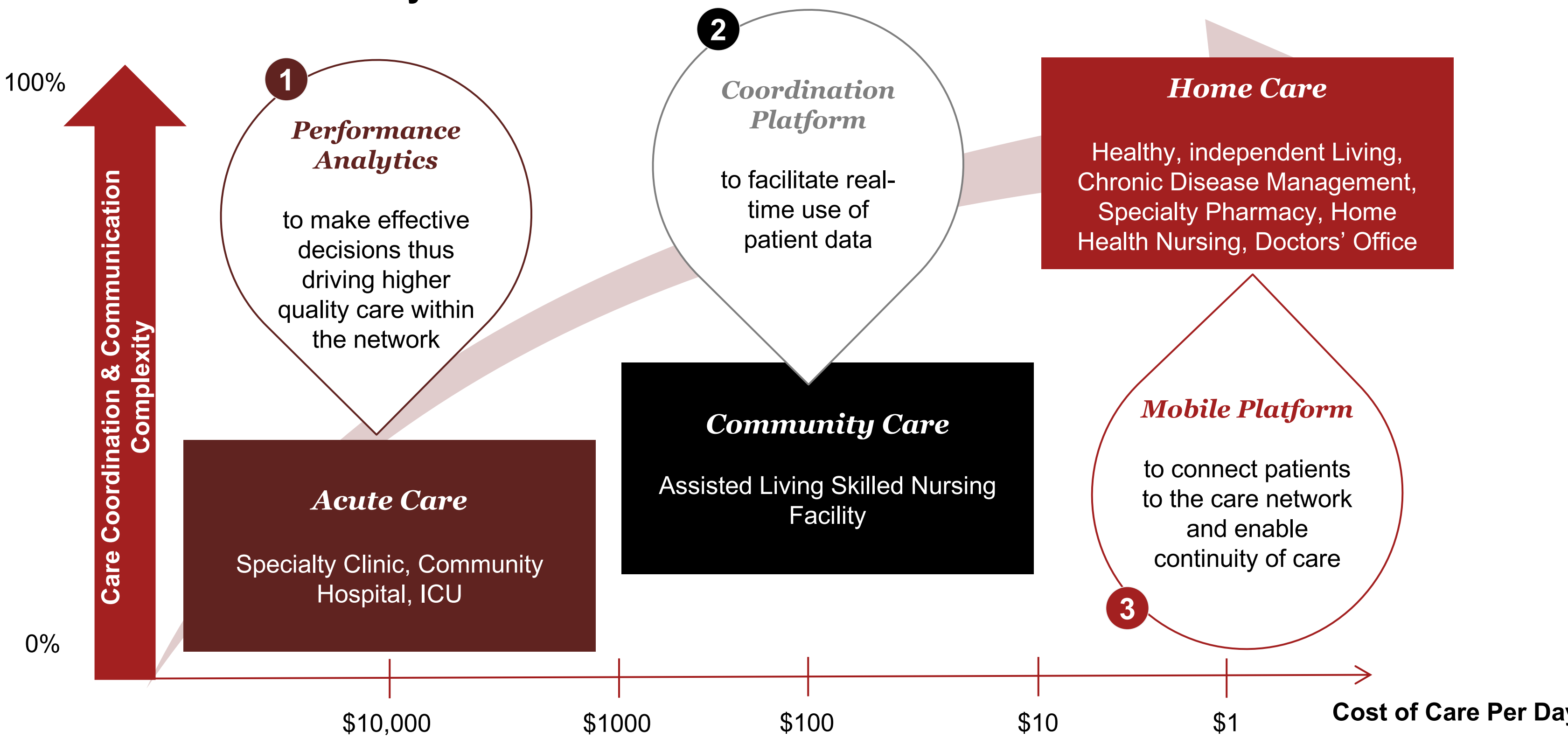
Figure 1. Health Care Cost Concentration:
Distribution of health expenditure for the Ontario population, by magnitude of expenditure, 2007



Source: ICES

New care delivery models: the move from hospital to home is driving new requirements

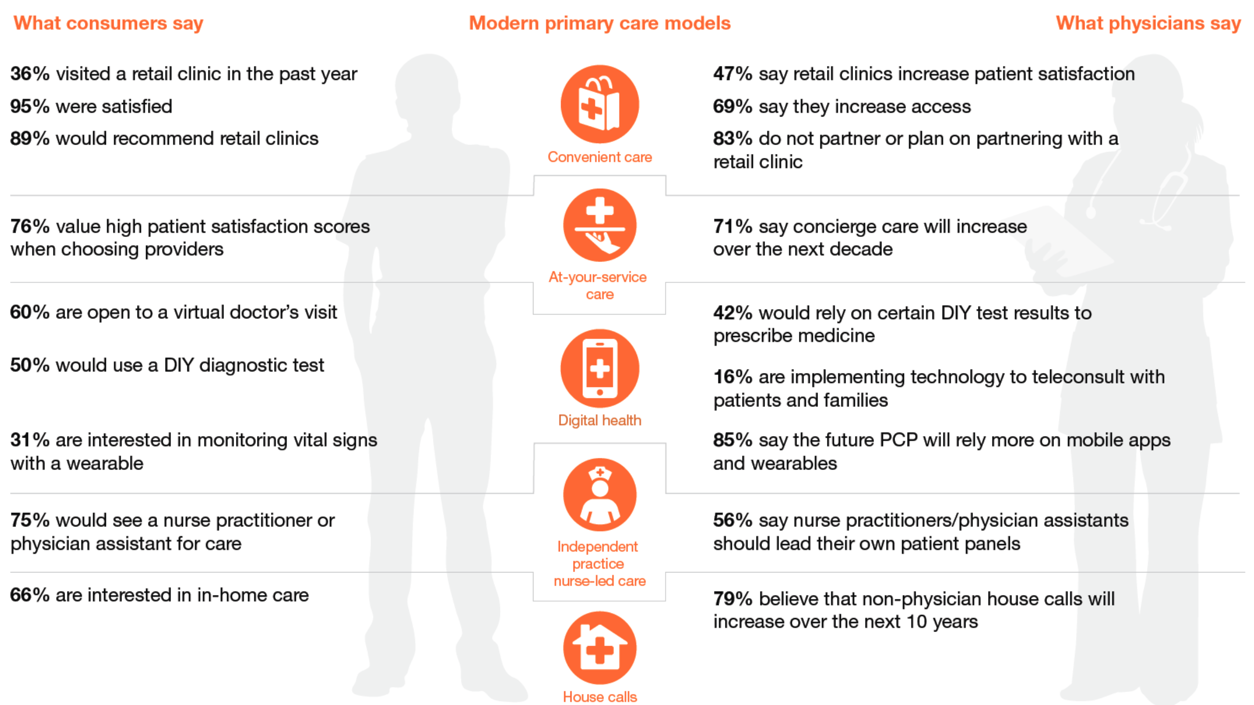
Governments are looking for low-cost, efficient solutions to reform healthcare and transition care into lower cost delivery models



Source: strategy& analysis

Globally, Primary care is a nexus of industry change, providing simplicity, value, and better health outcomes

Figure 3: Modern primary care models—what clinicians and consumer say



Clinicians and consumers are ready to embrace broader care teams

Healthcare organizations should build their primary care team based on consumers' medical, social, and behavioral needs & preferences

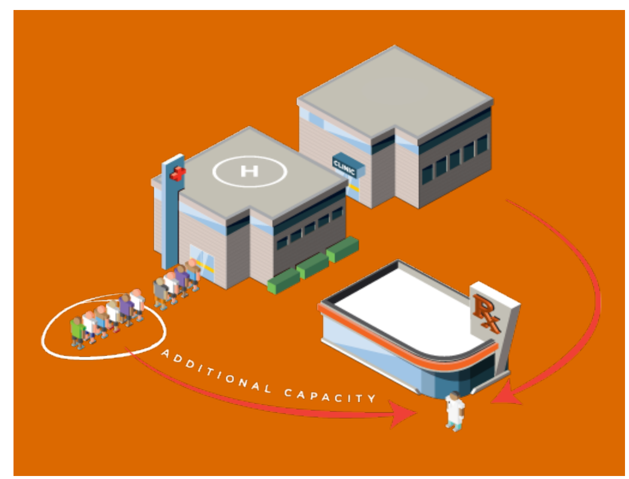
Most primary care teams are not designed to optimize care or meet consumer demands for convenience and value

Primary care in Canada is moving into new settings – such as retail pharmacies

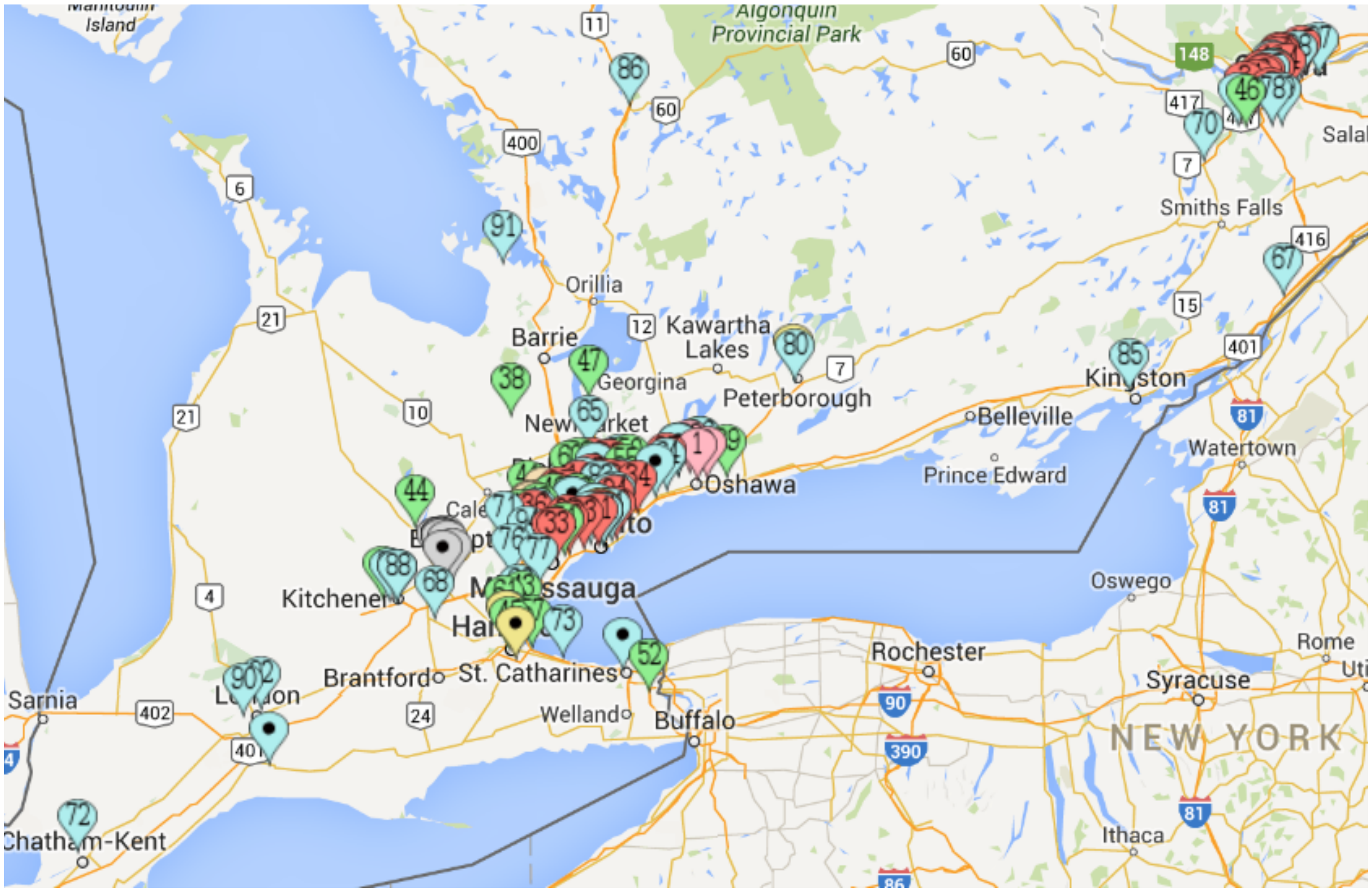
9,000 Points of Care: Improving Access to Affordable Healthcare

Broader Pharmacy's Plan for Improving Access to Affordable Healthcare:

- Developed by Canada's broader pharmacy community
- It aims to reduce care wait times by *shifting 17 million physician visits to pharmacists*
- The broader pharmacy community will be able to deliver a *wider array of primary and chronic care services*



Large organized primary groups are the new normal in many parts of Canada. Some organized by government/NFPs and some by private interests…



- Appletree Medical Group – 220 Primary Care Providers
- Oshawa Clinic – 127 Primary Care Providers
- Jack Nathan Health – 52 Canadian Clinics
- Primacy Clinic – 140 Canadian Clinics
- Guelph Family Health Team – 137 Primary Care Providers
- Wise Elephant Family Health Team – 25 Primary Care Providers
- McMaster Family Health Team– 31,000 patients
- The Peterborough Clinic – 127 Primary Care Providers
- Women's College Hospital Family Practice Health Centre – 50 Primary Care Providers

Within primary care, new entrants are developing innovative care delivery models

Customers will abandon companies that are unable to deliver care on their terms. Traditional companies need to create new options for access, information, and products and services as customers are not longer entirely dependent on family doctors or local hospitals.

Five emerging models in today's primary care market:

1

Convenient Care

Health systems are using retail clinics to triage patients with lower acuity health issues away from more expensive mothership locations.

2

House Calls

New companies are finding that there is value in repurposing old-fashioned care for the contemporary patient-consumer.

3

At-Your-Service Calls

Focuses on personalized boutique-like care without the exorbitant fees long associated with traditional medicine.

4

Digital Health

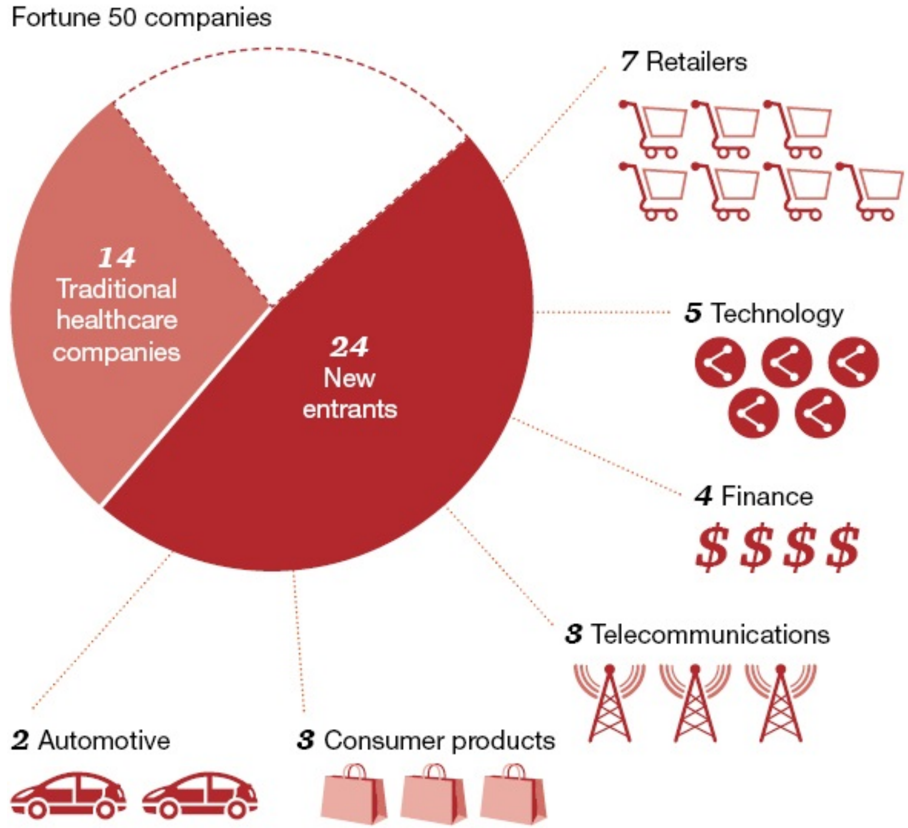
Seeding thriving businesses in virtual care, remote monitoring, and DIY home diagnostics.

5

Nurse-Led Care

Growing number of consumers (75%) say they would be comfortable seeing a nurse practitioner or physician's assistant.

New Healthcare Entrants are established in adjacent industries and reshaping the health system



Source: *Fortune 50*, 2013

Canada's 9000 points of care aim at reducing care wait times by shifting 17M physician visits to pharmacists

Large physician group practices are increasingly dominating the Ontario primary care market

Many retailers are looking closely at the Canadian healthcare system

100's of start-ups are entering the ecosystem

Vertically integrated healthcare in Canada – Some examples

Company	*Current Steps*
TELUS	TELUS HEALTH Telus has invested over $1B in health care IT: - EMRs with over 10,000 doctors participating - EHRs that securely share info between doctors & patients - Private electronic insurance claims network for drug, dental and extended health claims - Prescription file dispensing management for pharmacists
Loblaws	SHOPPERS DRUG MART · PRIMACY A CALIAN COMPANY In 2014, Loblaws acquired Shoppers Drug Mart for $12.4B. - Medisystems, a Shoppers company, uses pharmaceutical technology innovations such as eMARs, and a patient portal - Shoppers Drug Mart has an online prescription refill system - Primacy clinics are located within or next to Loblaws' stores
Walmart	The Clinic at Walmart · JACK NATHAN HEALTH In Canada, Walmart has partnered with Jack Nathan Health to provide walk-in clinic services in their supercentre stores. In the U.S., Walmart is upgrading these clinics to primary care providers. Most super centres also have pharmacies so prescriptions can also be fulfilled on location.

Vertically integrated healthcare in Canada – Some examples

Company	*Current Steps*	
McKESSON	McKesson has invested a significant amount in the purchase pharmacies and clinics - Owner and operator of 5 brand banners and almost 2000 pharmacies coast to coast - Operating 85 infusion clinics performing 90,000 infusions annually - 14 Distribution centres across the country - Providing technology to 1,250 hospitals and 7,100 pharmacies - Provided 140,000 calls through accredited teletriage between 2012 and 2013	
MEDAVIE INC.	Medavie operates in 2 industries and caters to the entire healthcare value chain: MEDAVIE BLUE CROSS - Offering health, life, travel and disability insurance to individuals and companies - Large volume claims and benefits management, drug Plan management and prescription drug monitoring, provider management and audit services for public organizations - ePay capabilities for providers	MEDAVIE EMS - Emergency Medical Services to individuals - EMS and Clinical Training to groups and companies - Community and mobile health solutions to public organizations - Public safety communications to healthcare professionals

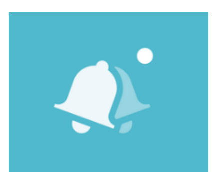
Retail Pharmacy is gaining traction in three core areas of patient engagement…

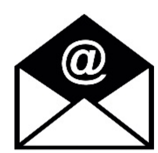
1 *Medication Adherence and Activity Monitoring*

Collect patient data through Bluetooth devices, NFC enabled devices, Body Patches, Patient reported data, Data from Health Kits connected to Mobile App

2 *Patient Education and Customized Coaching*

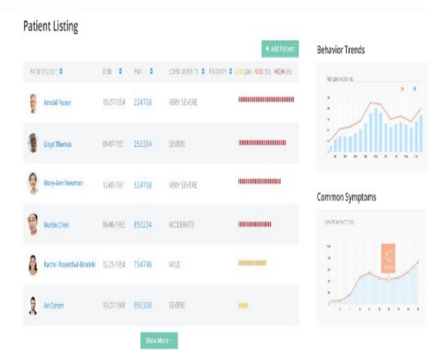
Educate patients through emailers, SMS notifications and in-App notifications to keep them on the medication and provide support should they have questions and overtime make it more personalized





3 *Insights Generation and Exacerbation Prediction*

Generate insights about patient behavior and reaction to the dosage. Overtime apply the insights to predict when the next dosage miss or exacerbation may occur and take proactive steps to address it



…and this is leading to new ways by which leading pharma organizations are engaging patients

Retailers are well positioned to capitalize on global shifts across sectors, grow its business, and win in the new health economy

As consumers play a more active role in their health and well-being, retailers are well positioned to meet growing needs…

Sample retail health opportunities, not exhaustive

…and can leverage core assets and unique strengths to drive growth via retail healthcare

- Direct ***B2C touch points***
- Deep ***understanding*** of the individual consumer
- Focus on ***convenience & frequency***
- Competitive ***pricing***
- Focus on ***value and customer experience***
- Knowledge of ***how to merchandise*** products and services

Globally, New Entrants are playing a crucial role in democratizing healthcare by offering different customer experiences to different patient segments

Traditional — Health Care Setting — *Virtual*

Traditional Providers

Physician Extender / Retail

*The delivery of **convenient, in-person care** in a traditional retail clinic setting*

Virtual Consultations

*The use of **videoconferencing and telepresence capabilities** to provide common consultations*

Do-it-yourself healthcare

*The use of **connected health devices** and **remote patient monitoring** devices to diagnose common conditions and monitor chronic diseases*

Enhance
Enhance existing retail clinic offerings and experience

Expand
Expand telehealth pilot capabilities

Innovate
Deliver customers innovative DIY health offerings

Canada's consumers are demanding modernization…

79%

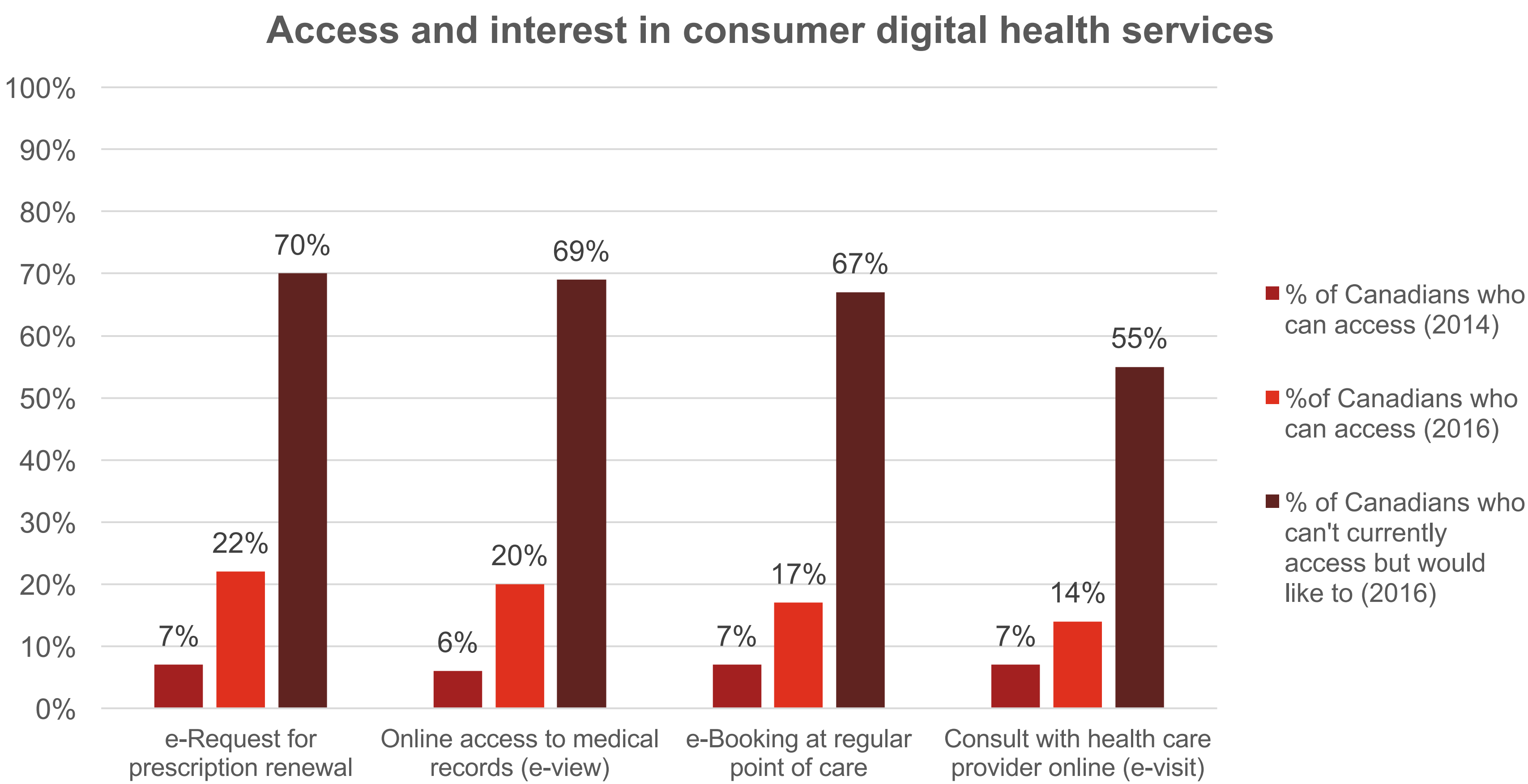
of patients report that they would definitely, or are likely to, use email services with their doctor

83%

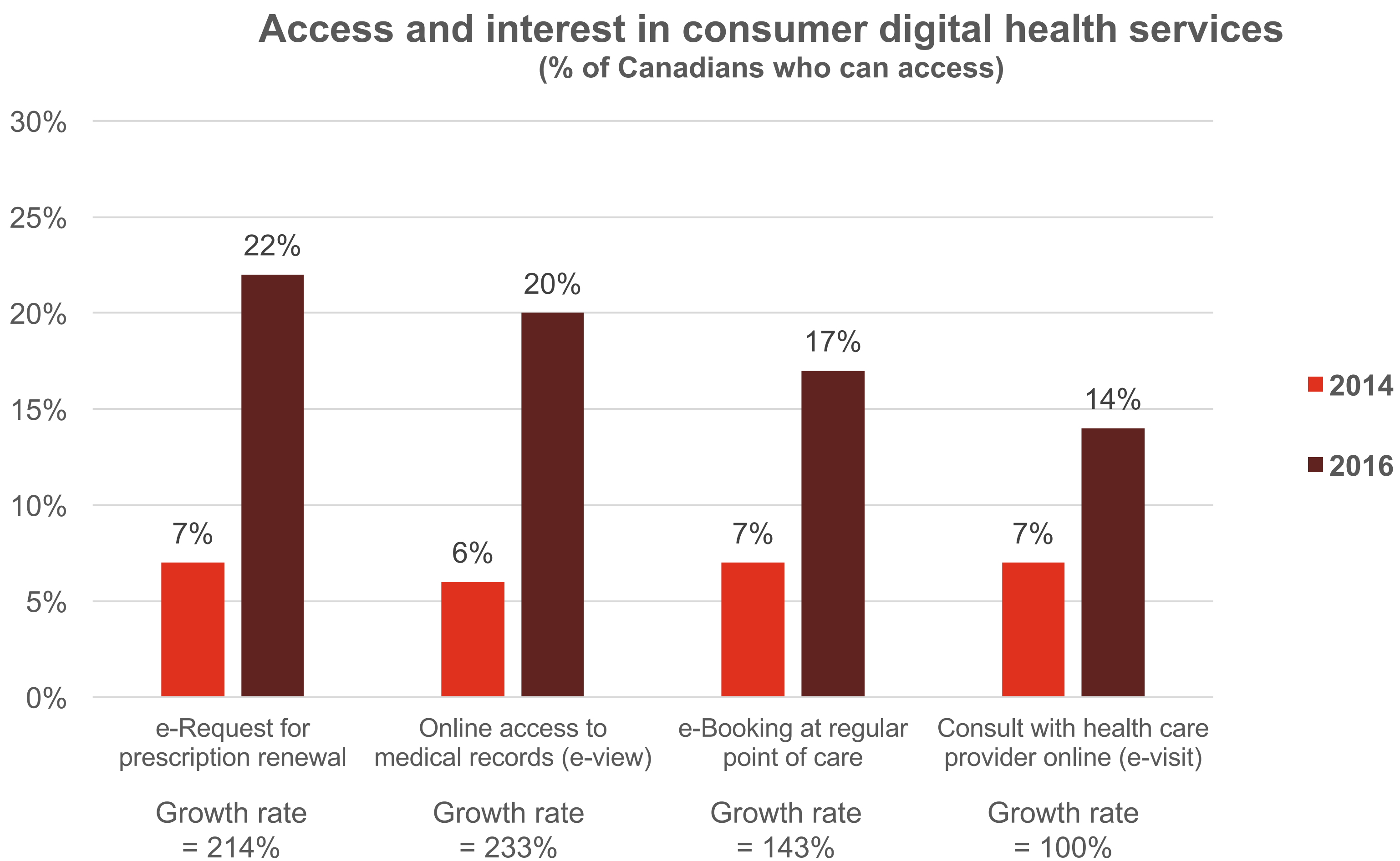
of patients report that they would definitely, or are likely to, use online prescription refill services

Source: PwC Canada - Making Care Mobile

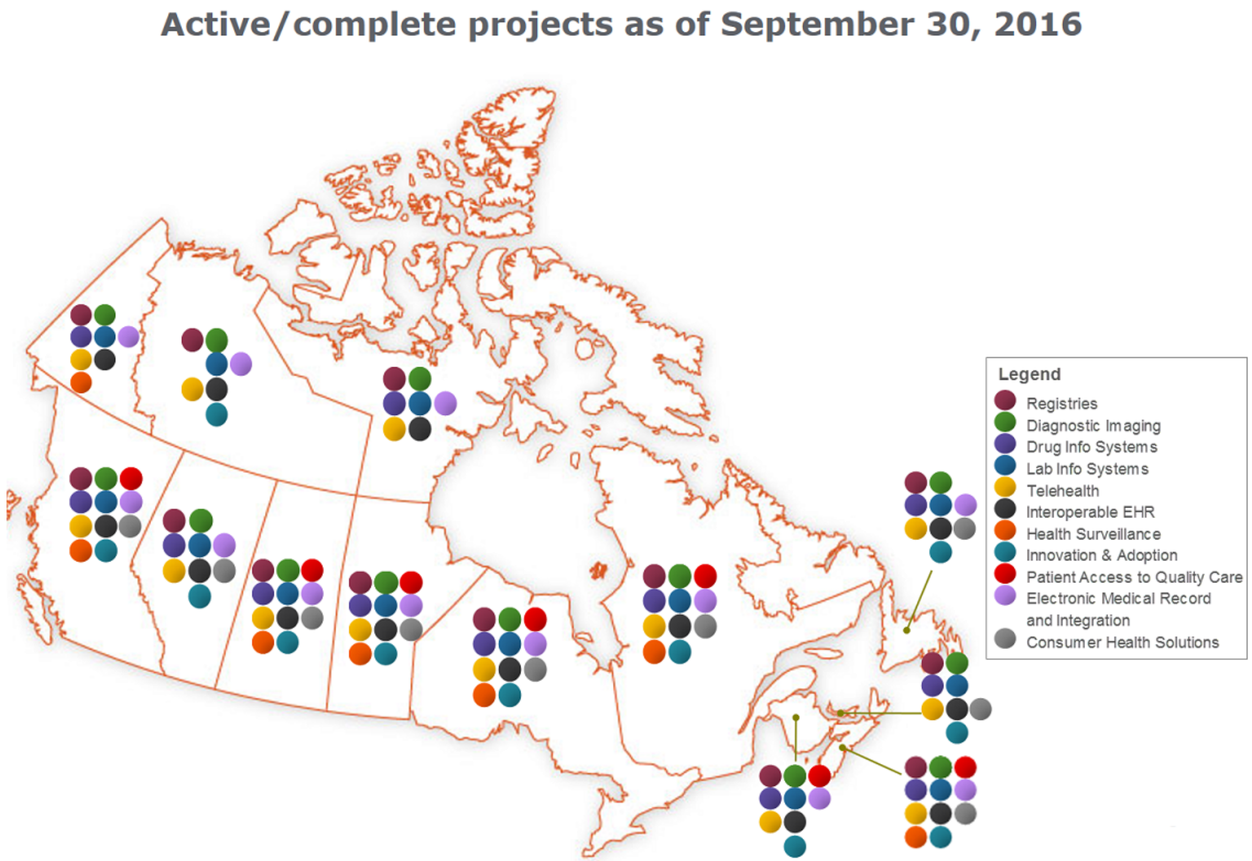
Canada's consumers are demanding modernization…



Canada's consumers are demanding modernization…



Deep Dive on Digital Health: Over the past decade government has been creating standalone assets. The next step is to figure out how to make the best use of them…



Source: CHI Website

Putting Patients First

"*Putting Patients First*" expresses one clear promise – "*put people and patients first by improving their health care experience and their health outcomes*."

Providers **will not achieve this promise without a major modernization effort.** Digital health solutions provide **the means to realize this transformation.**
This will require:

- Shifting the way we view individuals, **not as *passive users*, but as *active consumers***
- Meeting consumers' demand for **more choices, greater transparency, improved outcomes and a more satisfying experience** with healthcare services
- Giving consumers ***access to the same information*** available to healthcare providers
- Allowing consumers a ***greater role as co-authors*** of their healthcare decisions
- Becoming ***better, more efficient***, and ***embrace new technologies*** as elements of a continuous improvement culture

In this vision***, digital solutions will no longer be an adjunct therapy and simply become an integral part of the health service delivery***

Expected Benefits

What can digital health do for patients and families?

- *Better care at home and less travel*
- *Greater consumer involvement in their health*
- *Digitally connects patients and health team*
- *Quality advice and information on-line*
- *More equitable access for remote communities*
- *More data for health system analysis*
- *Increased convenience and options for patients*
- *Seamless integration of health settings*
- *Safer, more affordable healthcare services*

Government has an important (But Different!!) role to play

1 *Invest in Innovation*

- Foster development of innovative solutions and business models
- Shift investments from large complex projects to smaller projects and shorter cycles
- Focus on innovative care models, not the technology itself

2 *Accelerate Adoption*

- Update policies, standards and guidelines to address consumer needs
- Promote models that accelerate adoption of virtual care solutions
- Support solutions that benefit consumers sooner than later

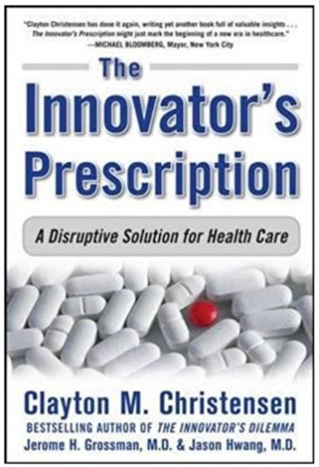
3 *Support Change*

- Promote "Digital Health by Design" culture and foster these capabilities across the health system
- Establish modernization goals in healthcare services agreements
- Support training initiatives and develop education programs

4 *Stay out of the way*

- Remove policy barriers to virtual care
- Promote competition in digital health
- Avoid technology lock-ins
- Give consumers greater choice and voice
- Don't try to shape technology market
- Be prepared for new health entrants

Clay Christensen introduces a helpful framework in chapter 11 of the Innovator's Prescription that we will use to examine what may be happening with EMRs, e-Rx, Portals/PHRs, and Virtual Care…



The intent of government intervention to influence and regulate industries in the public interest evolve through three stages:

1. Subsidizing
the foundation of the industry

To support early stage industry ***government makes investments*** *in the coalescing of an industry*

2. Stabilizing
and strengthening the companies involved

Once established, governments intervene in a market to stabilize it through ***regulation and policy*** *to ensure quality and performance.*

3. Encouraging Competition
to reduce prices

Once quality and stability are assured government policy and regulations ***shift to improve affordability and convenience****.*

Examples

- *E-Prescribing*
- *Aboriginal Health*

- *Personal Health Records*
- *Virtual Care*

- *Electronic Medical Records (Primary Care)*

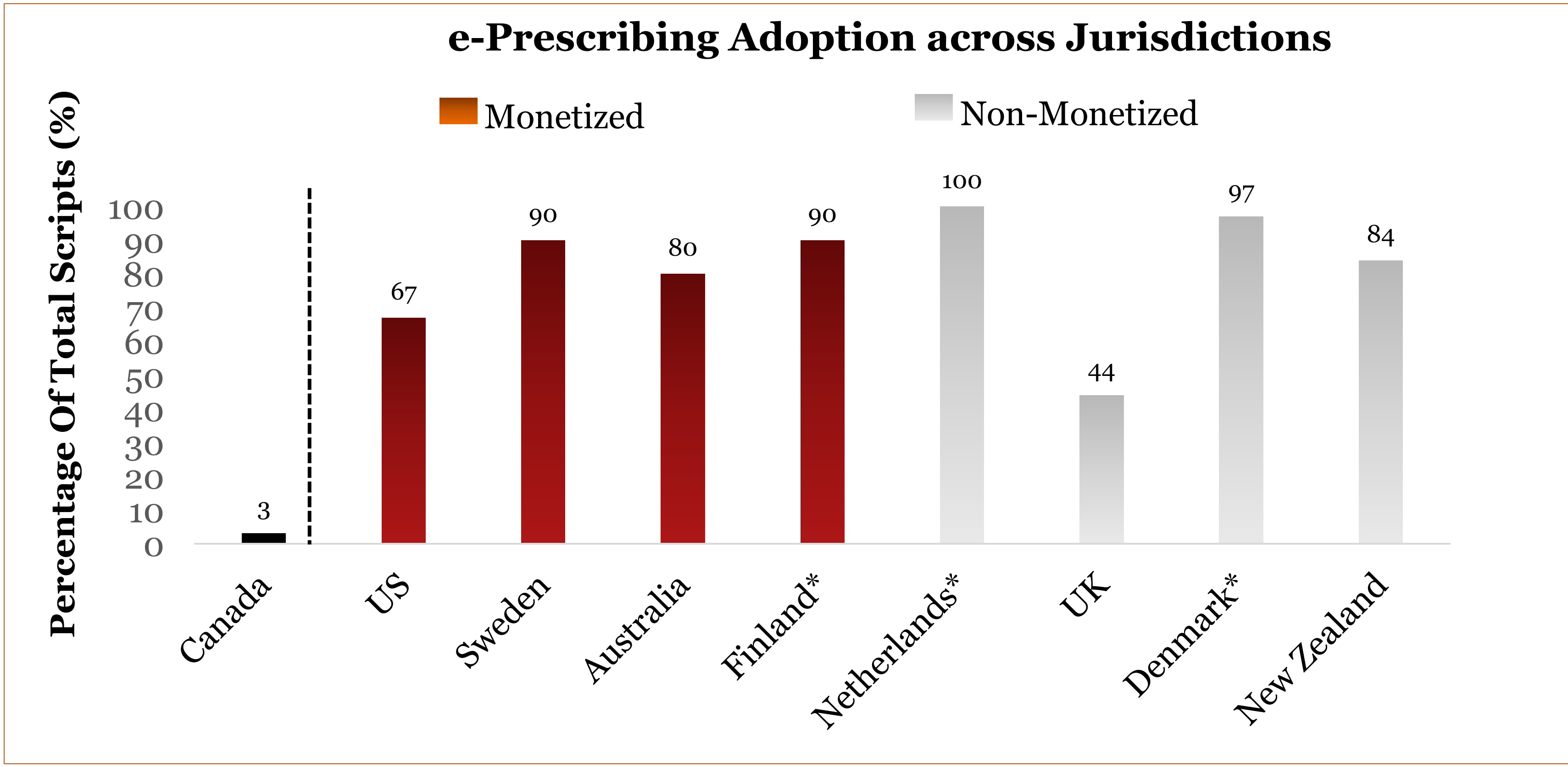
ePrescribing Around the World

ePrescribing has been successfully rolled out in several countries / jurisdictions around the world, creating insights into potential technical, business, and governance models

	USA (Surescripts)	Sweden	Australia	Finland	Netherlands	UK	Denmark	New Zealand
First Introduced	2001	1994	2009	2007	1998	2005	1994	2011
Public/ Private	Private	Public	Mixed	Public	Mixed	Public	Public	Public
Monetized	Yes	Yes	Yes	Yes	No	No	No	No
Mandated	No	No	No	Yes	Yes	No	Yes	No
Push/Pull	Push	Pull	Pull	Pull	Push	Mixed	Pull	Pull

ePrescribing is in the "Subsidization" Stage in Canada

ePrescribing has been introduced with notable success in a number of developed healthcare systems, through a mix of legislated and incentivized programs



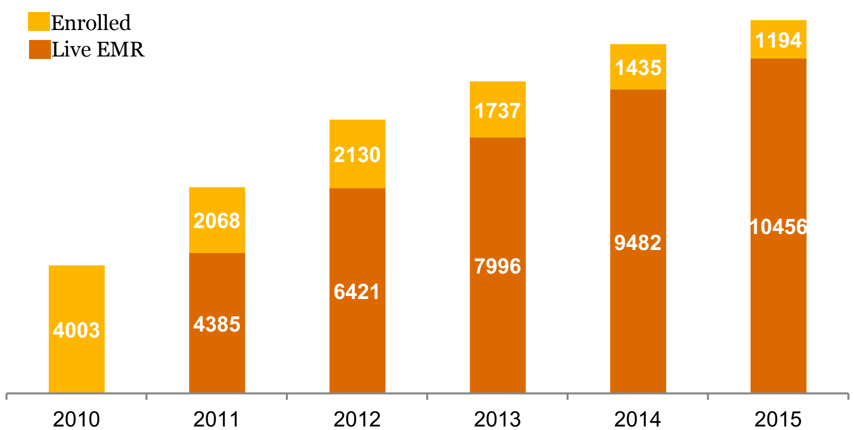
* Indicates ePrescribing is mandatory

Subsidizing | Stabilizing | Encouraging Competition

Since 2005, Ontario has subsidized EMR adoption as a foundational and critical step towards every Ontarian having a comprehensive EHR (as have other provinces)

Ontario's investments in EMRs created one of the single largest EMR implementation projects in Canada

EMR adoption by community-based physicians



Accelerated connectivity of EMRs with other provincial assets and reporting solutions is improving access to information for better care

Adoption of OLIS and hospital reports

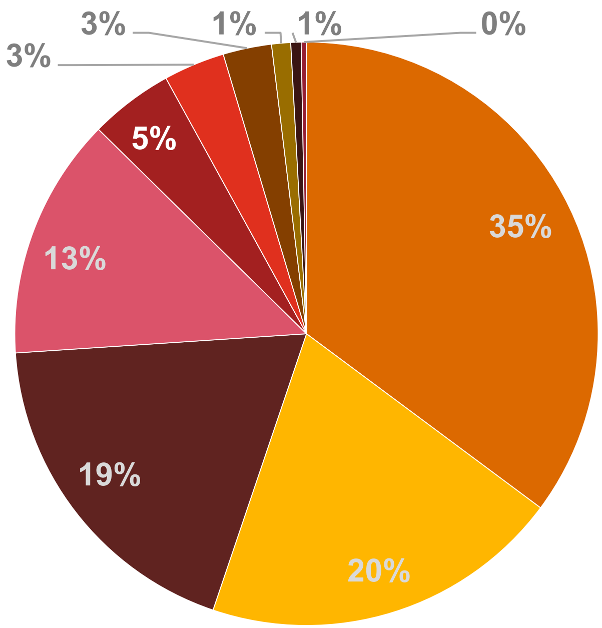
OLIS provides electronic lab results to over **8,100** EMR-enabled clinicians resulting in over **145,000** queries per month

80% of Ontario hospital corporations are delivering electronic patient hospital reports totalling **500,000** reports/ month to EMR-enabled clinicians

Patient access to EMRs was not an initial priority. Only recently has it started to gain momentum. We expect this to accelerate.

EMRs quickly moved through Stage 2 . Vendor consolidation has led to 4 EMR vendors holding 87% of Ontario market

OntarioMD Funded Physician Market % of EMR Offering as at January 31, 2016



EMR Vendor	# of Physicians	Market %	Consumer eHealth
TELUS Health Solutions	4,000	35%	Patient Portal
OSCAR EMR	2,276	20%	MyOscar
QHR Technologies Inc.	2,133	19%	Medeo
Nightingale Informatix Corp.	1,525	13%	myPatientAccess
P&P Data Systems Inc.	527	5%	
ABEL Soft Corporation	386	3%	
CanadaHealth Systems inc.	306	3%	
YMS Inc.	120	1%	
YES Medical System	65	1%	
	33	0%	

Source: https://www.ontariomd.ca/portal/server.pt/community/certified_emrs/745/vendor_market_share/24184

Patient Portal Solutions are Stabilizing – HIS and EMR portals (not exhaustive)

Solution Provider	Product	Type
Meditech	Patient and Consumer Portal	Tethered HIS
Epic	myChart	Tethered HIS
Cerner	Patient Portal	Tethered HIS
Sunnybrook	myChart	Standalone HIS
Appletree Medical	Patient Portal	Tethered EMR
Oscar	myChart	Tethered EMR
Telus Health	Wolf Patient Portal	Tethered EMR
Telus Health	Nightingale myPatientAccess	Tethered EMR

Patient Portal Solutions are Stabilizing– PHR and HSP portals (not exhaustive)

Solution Provider		Product	Type
	Telus Health	instant PHR	PHR
	McKesson	RelayHealth	PHR
	Influence Health	Enterprise Patient Portal	PHR
	Orion Health	Patient Portal	PHR
	Rexall	myRexall	Tethered HSP
	Shoppers	Healthwatch	Tethered HSP
	LifeLabs	myResult	Tethered HSP
	Dynacare	Dynacare Plus	Tethered HSP

Virtual Care Services in Canada and other jurisdictions are stabilizing
(not exhaustive)

Examples of Virtual Care Services in Ontario include:

AKIRA

SeamlessMD

MEDEO™ Virtual Care

otn.telehomecare®

neutun

Wellx

American Well®

dialogue

maple

Virtual Care Services: Remote Patient Monitoring

In Canada

- Across Canada, there is evidence that RPM is growing.
- Enrollment in telehomecare programs is a challenge as it is currently not integrated into care pathways.
- While there are promising implementations of remote monitoring and coaching, there is a high degree of complexity in determining and applying the best solutions for different conditions/diseases and acuity levels.

Globally

- It is projected that the US telemedicine market will cross $13 billion by 2021.

- Programs such as the Whole System Demonstrator (UK) & National Program for Telemedicine & Home Monitoring (Denmark) have shown reductions in hospitalizations and ED visits through the redesign of models of care & the integration into care pathways.
- A growing number of programs are focusing on lower acuity patients. This is coupled with a shift towards less complex technology, enabling patients to self-manage their condition through the use of readily available tools.
- In the longer term, wearables are expected to become a key component of remote patient monitoring.

Sources: http://www.pharmaion.com/news/328-us-telemedicine-market-to-cross-13-billion-by-2021.html
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/215264/dh_131689.pdf

Virtual Care Services: Remote Patient Monitoring

Barriers and Constraints

- Enrollment in telehomecare programs is a challenge as it is currently not integrated into care pathways for diagnosed patients.
- Current telehealth solutions are focused on a narrow set of diseases (primarily COPD, CHF and cardiac care) and acuity levels. There are conflicting studies and evidence around the cost effectiveness for other conditions and acuity levels.

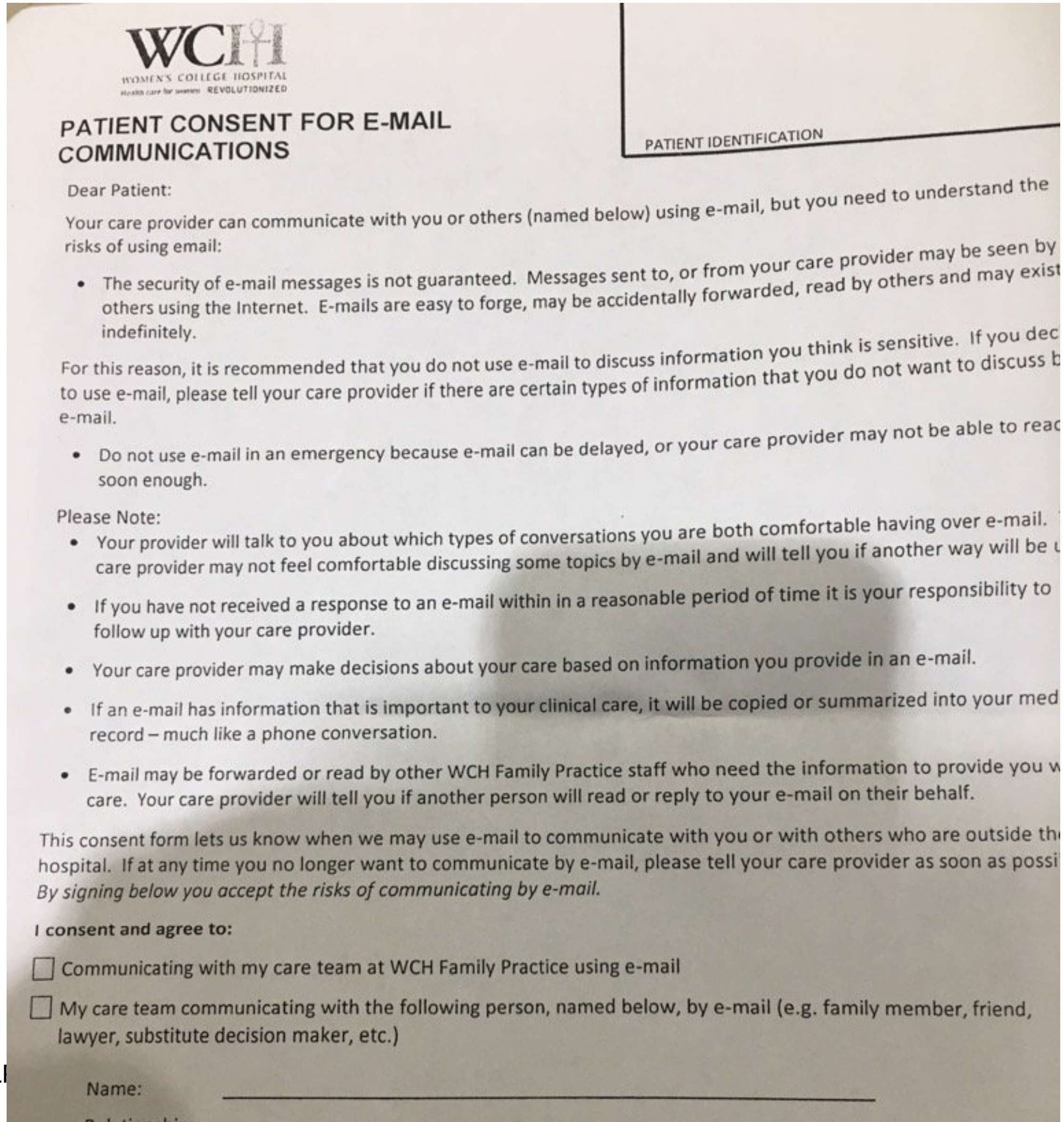
Opportunities

- As a world leader in telehealth, Canada is well positioned to build on its experience in this area.
- There are opportunities to scale existing solutions to integrate with care pathways on national levels.
- Current telehealth solutions are focused on a narrow set of diseases (primarily COPD, CHF and cardiac care) and acuity levels. There are opportunities to expand remote patient monitoring solutions across both dimensions.

RPM Program Examples (note: not exhaustive)

1. ON: OTN Telehomecare (CHF and COPD)
2. ON: Community Paramedicine RPM Project
3. ON: University Heart Institute Telehomecare
4. ON: LHSC– Mental Health Engagement Network
5. ON: Neutun
6. ON: Women's College & Northumberland Hospitals Wound Care
7. BC: BC BreatheWELL
8. QC: Jardins Roussillon (JRHC) Telehomecare Program
9. BC: mDAWN
10. BC: Wel-Tel
11. BC: Virtual Cardiac Rehabilitation Program
12. AB: MyHome Health Program

Virtual Care Services in Canada: Keep it simple and keep it real



WCH
WOMEN'S COLLEGE HOSPITAL
Health care for women REVOLUTIONIZED

PATIENT IDENTIFICATION

PATIENT CONSENT FOR E-MAIL COMMUNICATIONS

Dear Patient:

Your care provider can communicate with you or others (named below) using e-mail, but you need to understand the risks of using email:

- The security of e-mail messages is not guaranteed. Messages sent to, or from your care provider may be seen by others using the Internet. E-mails are easy to forge, may be accidentally forwarded, read by others and may exist indefinitely.

For this reason, it is recommended that you do not use e-mail to discuss information you think is sensitive. If you dec to use e-mail, please tell your care provider if there are certain types of information that you do not want to discuss b e-mail.

- Do not use e-mail in an emergency because e-mail can be delayed, or your care provider may not be able to reac soon enough.

Please Note:

- Your provider will talk to you about which types of conversations you are both comfortable having over e-mail. care provider may not feel comfortable discussing some topics by e-mail and will tell you if another way will be u
- If you have not received a response to an e-mail within in a reasonable period of time it is your responsibility to follow up with your care provider.
- Your care provider may make decisions about your care based on information you provide in an e-mail.
- If an e-mail has information that is important to your clinical care, it will be copied or summarized into your med record – much like a phone conversation.
- E-mail may be forwarded or read by other WCH Family Practice staff who need the information to provide you w care. Your care provider will tell you if another person will read or reply to your e-mail on their behalf.

This consent form lets us know when we may use e-mail to communicate with you or with others who are outside th hospital. If at any time you no longer want to communicate by e-mail, please tell your care provider as soon as possi *By signing below you accept the risks of communicating by e-mail.*

I consent and agree to:

☐ Communicating with my care team at WCH Family Practice using e-mail

☐ My care team communicating with the following person, named below, by e-mail (e.g. family member, friend, lawyer, substitute decision maker, etc.)

Name: ____________________

Relationship:

The last decade has taught us that there are new data types emerging in at least six categories….

	Genomic	Phenomic	Social
Institutions/ Providers	NIH and Major Cancer Centres	The EHR!	Figure1
Consumer/ Caregivers	23&me Geneyouin	Wearables and Wellness	Facebook

The Phenomic Data may actually split in to two parts: Medical and ADL/Social Determinants. Which would make Eight!

Thank you…

@WillFalk