Valuing citizen access to digital health services: Applied value-based outcomes in the Canadian context

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Presentation Overview

1. Canada Health Infoway - *Driving ACCESS to Care’*

2. Current citizen access to their health information and digitally enabled health services

3. Summarize current and potential value-based outcomes and economic estimates for patients and the health system in the context of 4 digital health e-services currently available to Canadians

4. Summarize key policy implications and considerations critical to the path forward
Canada Health Infoway’s Driving Access to Care Strategy

**Vision**

Healthier Canadians through innovative digital health solutions

**Mission**

Infoway will bring a pan-Canadian focus to: improving the patient experience, improving the health of populations, and unlocking value for the health care system

**Strategic Goals**

Provide safer access to medications starting with PrescribeIT™, Canada’s e-prescribing service

Provide access to personal health information and digital health services for Canadians and their providers through ACCESS Gateway
ACCESS Gateway

A digital health platform that connects Canadians and their health care providers with their personal health information and digital health services; supporting the digital health ecosystem and enabling innovation.

Primary Objectives

Provide a public utility that supports the digital health ecosystem, enabling innovation.

Achieve multi-jurisdiction scale to ensure adoption by major solution providers, while reducing cost and risk for provinces.
ACCESS Gateway

HEALTH AND INNOVATION SECTOR
- HEALTH SYSTEMS
- VENDORS
- DEVELOPERS

ACCESS GATEWAY ARCHITECTURE
IDENTITY AND CONSENT MANAGEMENT

TRUSTED PLATFORM CONNECTS AND CONSENTS

PROVINCIAL DATA ASSETS
- EHR
- REGISTRIES & CLINICAL REPOSITORIES
  - LAB
  - DRUG
  - IMAGING

Consumer eServices

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A NUMBER OF PHR INITIATIVES – ARE TETHERED TO SINGLE SOURCE SYSTEMS

Nova Scotia, Saskatchewan, Alberta and Quebec’s provincial portal initiatives, now in various stages of availability to citizens – provide a single source HISTORIC VIEW OF CLINICAL INFORMATION FROM VISITS MADE across care settings.

BOTH MODELS SET A FOUNDATION FOR CONTINUITY OF CARE AND VALUE-BASED OUTCOMES.

Primary Care Physician’s EMR
Hospital/CIS
Regional HIS
Specialty Clinic
Retail Pharmacy
Insurance Company
Medical Laboratory
Private Clinic
There is an increasing desire among Canadians for accessing their medical records online. Canadians who ‘can currently’ - and who did so ‘in the last year’ is trending up. Patient access to lab results in BC and Ontario are two initiatives driving this growth.

Access your medical records electronically (e-view)

- **Can Currently**
  - % of all Canadians:
    - 2014: 6%
    - 2016: 18%
    - 2018: 22%

- **Did in past year**
  - % of Canadians who ‘can currently’
    - 2014: 5%
    - 2016: 7%
    - 2018: 15%

- **Would like to**
  - % of Canadians who ‘cannot currently’ access medical records electronically
    - 2014: 69%
    - 2016: 73%

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Q38. Can you currently..? / Q39. In the LAST YEAR, did you? / Q40. Would you like to be able to?

2018 ACCESS Digital Health Survey. Base: Respondents 18+ (n=2,272)
Among those who currently access medical records online, lab test results are the most common type of health information accessed - primarily via a lab testing company website.

Secure online access to medical records (2018) via …

- A lab testing company: 60%
- My regular family doctor / place of care: 29%
- A hospital: 14%
- My province: 9%
- My local health region: 6%
- A community-based speciality clinic not linked to a hospital: 5%
- Don’t know: 2%

Type of Health Information Accessed (2018)

- Lab test results: 83%
- List of your current Rx and medication history: 24%
- Immunization history/records: 17%
- Don’t know: 3%

71% Prefer to view lab results as soon as testing is complete

*Less than 3% not shown

Q43. You mentioned that you can currently access your own medical records electronically/online. Can you tell us the online source where you can access your own medical records? Is it a website or mobile app provided by...? Q44. What specific health information can you currently access electronically/online? Q47. Do you prefer to view your lab test results as soon as testing has been completed and your results are available? 2018 ACCESS Digital Health Survey Base: Respondents who access own medical records electronically (n=481)
In 2018, Canadians able to book appointments electronically with their regular place of care remains static from 2016. Access to e-visit and virtual visit eServices is down (-4% e-visits and -2% virtual visits). Interest for these eServices has significantly increased.

### Request a prescription renewal electronically (eRx-Renew)

<table>
<thead>
<tr>
<th>Year</th>
<th>Can Currently</th>
<th>Did in past year</th>
<th>Would like to</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>7%</td>
<td>3%</td>
<td>70%</td>
</tr>
<tr>
<td>2016</td>
<td>22%</td>
<td>10%</td>
<td>74%</td>
</tr>
<tr>
<td>2018</td>
<td>23%</td>
<td>18%</td>
<td>74%</td>
</tr>
</tbody>
</table>

### Consult with any of your health care providers online - for example, using secure email (e-visit)

<table>
<thead>
<tr>
<th>Year</th>
<th>Can Currently</th>
<th>Did in past year</th>
<th>Would like to</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>7%</td>
<td>5%</td>
<td>35%</td>
</tr>
<tr>
<td>2016</td>
<td>14%</td>
<td>5%</td>
<td>63%</td>
</tr>
<tr>
<td>2018</td>
<td>10%</td>
<td>4%</td>
<td>63%</td>
</tr>
</tbody>
</table>

### Visit with your health care provider virtually online by video (virtual visit)

<table>
<thead>
<tr>
<th>Year</th>
<th>Can Currently</th>
<th>Did in past year</th>
<th>Would like to</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>8%</td>
<td>3%</td>
<td>36%</td>
</tr>
<tr>
<td>2016</td>
<td>6%</td>
<td>3%</td>
<td>41%</td>
</tr>
<tr>
<td>2018</td>
<td>6%</td>
<td>3%</td>
<td>41%</td>
</tr>
</tbody>
</table>

Q38. Can you currently..? / Q39. In the LAST YEAR, did you? / Q40. Would you like to be able to?

2018 ACCESS Digital Health Survey. Base: Respondents 18+ (n=2,272)
“Valuing Canadians’ Secure Access” Study demonstrates potential impact at scale

- Synthesized outcomes from benefits evaluations across care settings, PHR-functionalities, provinces and patient populations
- Used contextually specific data as well as cost and outcome data from the peer-reviewed literature
- Estimated the relative economic benefit compared to business as usual from three perspectives – health system (payer); patient and caregiver; and the economic benefit resulting from improved population health (societal perspective).
Canadians’ access to health information (e-view) and eServices: Value-based outcomes from use of PHR-functionalities

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citizen access to their health information</td>
<td>An <strong>e-Visit</strong> is a patient e-service that allows patients and/or their caregivers the ability to communicate with their healthcare team through secure e-mail or SMS messaging</td>
</tr>
<tr>
<td>Secure e-mail with health provider/ place of care</td>
<td>A <strong>Virtual Visit</strong> is a patient e-service that allows patients and/or their caregivers the ability to meet with their health care provider via a face-to-face virtual encounter, through functions such as video calls</td>
</tr>
<tr>
<td>Secure face-to-face video visit with health provider</td>
<td>e-Rx <strong>Renew</strong> is a patient e-service that allows patients and/or their caregivers to renew prescriptions</td>
</tr>
</tbody>
</table>

A PHR includes the primary function of viewing health information, or e-View.
Most sources reporting benefits were from studies in Ontario.
## Indicators and Summary of Evidence:
### Patient and Health system value-based outcomes

<table>
<thead>
<tr>
<th>Perspective</th>
<th>PHR function</th>
<th>Value domain</th>
<th>Modes of Action – Value based Outcomes</th>
<th>Evidence-based Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient</strong></td>
<td>e-view</td>
<td>Productivity</td>
<td>Resources saved by Canadians due to avoiding in-person appointments</td>
<td>Avoided:</td>
</tr>
<tr>
<td></td>
<td>e-visit</td>
<td></td>
<td></td>
<td>• Travel costs</td>
</tr>
<tr>
<td></td>
<td>e-Rx renew</td>
<td></td>
<td></td>
<td>• Caregiving costs</td>
</tr>
<tr>
<td></td>
<td>Virtual visit</td>
<td></td>
<td>“Reduced our-of-pocket expenses related to health/ medical care”</td>
<td>• Time spent travelling</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Time spent arranging care</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Time off work</td>
</tr>
<tr>
<td><strong>Health system</strong></td>
<td>e-view</td>
<td>Productivity</td>
<td>Increased health system capacity</td>
<td>Time saved due to reduced patient requests for information (staff time)</td>
</tr>
<tr>
<td></td>
<td>e-visit</td>
<td></td>
<td>Increased health system capacity</td>
<td>• Avoided phone calls</td>
</tr>
<tr>
<td></td>
<td>e-Rx renew</td>
<td></td>
<td>Increased health system capacity</td>
<td>• Avoided in-person visits to primary care</td>
</tr>
<tr>
<td></td>
<td>Virtual visits</td>
<td>Access</td>
<td>Improved patient safety</td>
<td>• Avoided in-person visits to outpatient hospital services</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Increased access by patients to medical care</td>
<td>• Avoided visit to a psychiatric facility</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Avoided in-person visits to primary care</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Avoided medication-related error</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Reduction in cost per patient</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Reduction in bed-days</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Reduction in emergency department visits</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Reduction in hospital admissions</td>
</tr>
</tbody>
</table>
Care settings where current evidence-based value is generated for health systems: Summary of evidence

Value generated by care setting across functions:
- Primary care
- Hospital care
- Mental healthcare

Primary care: 100%
Hospital care: 0%
Mental healthcare: 0%
Gaps in evidence highlight important areas of value not included in health system value estimates: Summary of gaps in evidence

- Community-based mental health services
- Primary care* (primarily non-integrated model)
- Outpatient specialist care
- Primary care not estimated

Priority Research Areas

1. Community-based mental health services
2. Primary care* (primarily non-integrated model)
3. Community-based mental health services and outpatient hospital services
4. Primary care not estimated

Priority Research Areas

- e-visit
- virtual visit
- e-Rx renew
### Annual and Potential Value: Patient Estimates

<table>
<thead>
<tr>
<th>Current Benefit (UTILIZATION (2016 – 2017))</th>
<th>25% Utilization</th>
<th>35% Utilization</th>
<th>50% Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Viewing digital medical records</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$36M – $39M</td>
<td>$122M</td>
<td>$171M</td>
<td>$244M</td>
</tr>
<tr>
<td><strong>Secure e-communications (Outpatient care)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$26M – $42M</td>
<td>$132M</td>
<td>$185M</td>
<td>$265M</td>
</tr>
<tr>
<td><strong>Face-to-Face Videoconference</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$14M – $18M</td>
<td>$110M</td>
<td>$154M</td>
<td>$221M</td>
</tr>
<tr>
<td><strong>Digital e-Rx renewal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$42M – $50M</td>
<td>$105M</td>
<td>$147M</td>
<td>$210M</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$119M – $150M</td>
<td>$470M</td>
<td>$658M</td>
</tr>
</tbody>
</table>

**POTENTIAL VALUE**
Patients’ potential value of almost $1 Billion each year

Patients and caregivers can avoid costs estimated at $940M/yr

At 50% Utilization

% of Canadians who have used solutions with access to their information or e-services

- Avoided visits > Travel and expenses
# Annual and Potential Value: Health System Estimates

<table>
<thead>
<tr>
<th></th>
<th>Current Benefit ADOPTION (2016 – 2017)</th>
<th>25% Utilization</th>
<th>35% Utilization</th>
<th>50% Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>e-view</td>
<td>7% - 8%</td>
<td>$81-96M</td>
<td>$272-293M</td>
<td>$381-409M</td>
</tr>
<tr>
<td>Viewing of digital medical records</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e-visit</td>
<td>5% - 8%</td>
<td>$6-15M</td>
<td>$19-27M</td>
<td>$26-35M</td>
</tr>
<tr>
<td>Secure e-communications (Outpatient care)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>virtual visit</td>
<td>3% - 4%</td>
<td>$1.8-2.3M</td>
<td>$14M</td>
<td>$20M</td>
</tr>
<tr>
<td>Face-to-Face Videoconference</td>
<td>($27-54M)*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e-Rx renew</td>
<td>10% - 12%</td>
<td>$18-20M</td>
<td>$57M</td>
<td>$79M</td>
</tr>
<tr>
<td>Digital prescription renewal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$106-134M</strong></td>
<td><strong>$362-391M</strong></td>
<td><strong>$505-543M</strong></td>
<td><strong>$720-769M</strong></td>
</tr>
<tr>
<td></td>
<td><strong>($131-185M)</strong></td>
<td><strong>($1.3-5.4B)</strong></td>
<td><strong>($1.8-7.5B)</strong></td>
<td><strong>($2.6-10.7B)</strong></td>
</tr>
</tbody>
</table>
## Annual and Potential Value: BC Health System Estimates

<table>
<thead>
<tr>
<th>Service Description</th>
<th>Current Benefit ADOPTION (2016 – 2017)</th>
<th>25% Utilization</th>
<th>35% Utilization</th>
<th>50% Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viewing of digital medical records</td>
<td>7% - 8%</td>
<td>$19-26M</td>
<td>$38M</td>
<td>$54M</td>
</tr>
<tr>
<td>Secure e-communications (Outpatient care)</td>
<td>5% - 8%</td>
<td>$747K-2M</td>
<td>$4M</td>
<td>$4.5M</td>
</tr>
<tr>
<td>Face-to-Face Videoconference</td>
<td>3% - 4%</td>
<td>$237-297K</td>
<td>$2M ($121-653M)</td>
<td>$3M ($170-914M)</td>
</tr>
<tr>
<td>Digital prescription renewal</td>
<td>10% - 12%</td>
<td>$2-4M</td>
<td>$7M</td>
<td>$10M</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$21-32M</strong></td>
<td><strong>$51M</strong></td>
<td><strong>$71M</strong></td>
<td><strong>$101M</strong></td>
</tr>
</tbody>
</table>
Person-centred digitally enabled models of care

- Continuous Mobile
- Autonomous Sensors
- Virtual Care Clinic
- Contextualized Quality Content
- Asynchronous Access to Experts
- Nonjudgmental Social Media
- Mobile Sensors
- Quality Content
- Access to Experts
- Social Media
Improved health outcomes likely greatest value

- Medication adherence
- Better controlled Diabetes & other Chronic Conditions
- Improved mental health status (resiliency & recovery)
- Economic impact of healthy populations

**Precursors**

- **System Factors**
- **Organization Factors**
- **User Factors**
- **Technology Factors**

**Canadians’ Secure Online Access to their health information and e-services**

**Activation Levels**

1. **Empowerment**
   - Sustained engagement reinforces empowerment

2. **Activation**
   - Engagement declines
   - Re-activation required

3. **Engagement**
   - Successful empowerment enhances engagement

**Outcome**

- **Change in health & healthcare behaviours**
- **Improved health status & functioning**

**Individual or social abilities and capabilities**

**Variance and Persistence**

Adapted from Hibbard et al. 2010 and Risling & Risling 2016
Linking health outcomes to health system value

<table>
<thead>
<tr>
<th>Functionality</th>
<th>Annual Value to Health Systems in Canada</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secure e-mail with health provider/place of care</td>
<td>$552-672M</td>
</tr>
<tr>
<td>Secure face-to-face video visit with health provider</td>
<td>$116-179M</td>
</tr>
<tr>
<td>Request for Rx-renewal</td>
<td>$127-183M</td>
</tr>
</tbody>
</table>

The estimated values of E-Rx renew and e-visit functionalities resulted from:

- Increased life satisfaction
- Improved health status
- Increased positive health behaviours
Policy considerations

- Investments in PHR initiatives across provinces and organizations are showing promise – success depends on developing clear guidelines and policies about:
  - information sharing (privacy & security),
  - communication and parameters of clinical encounters
  - virtual care practice optimization and
  - provider remuneration

- Integration incentives, clinical and practice model guidance and requirements to support for PHR enabled e-services into primary care and specialist practice models.

- Strategies to monitor and inform citizen health literacy in the context of digital health, patient engagement and outcomes
Current Climate and Policy Challenges

Innovation

Sustainability

Quality /Positive

Outcomes

(system and technology)
Balance, Transformation & Performance & Health Outcomes

Education, training, practice across sectors

Evidence, policy and measures that matter to people
Questions/Discussion
Thank you!

Chad Leaver
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