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# Data Driven Healthcare: the Canadian experience

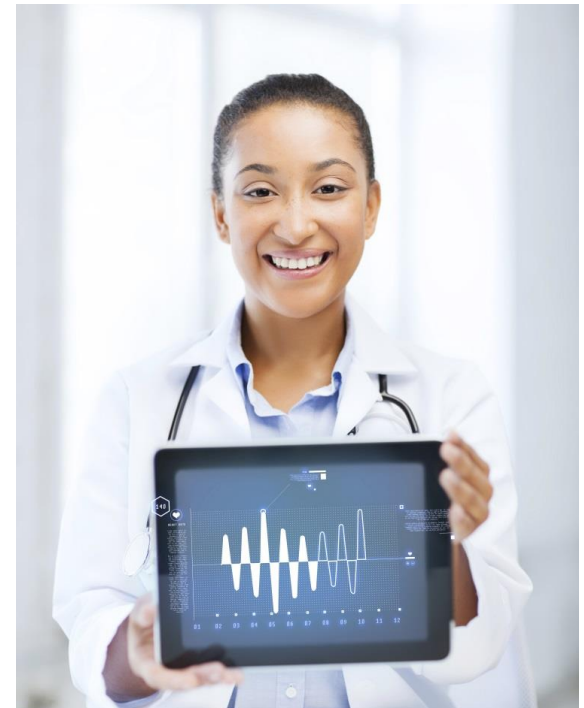
June 3, 2015

**CGI Health**

Innovative solutions. Smarter decisions. Better outcomes.

# Presentation Overview

- **What is “Health Analytics”?**
- **Why is HA important?**
- **Where are we at now in Canada?**
  - Who is doing this?
  - What are the benefits?
  - Where will this take us?
- **Summary of Findings:**
  - Unprecedented Pressure For Health Systems to Perform,
  - The Risk of Inaction.



# What is “Health Analytics”?



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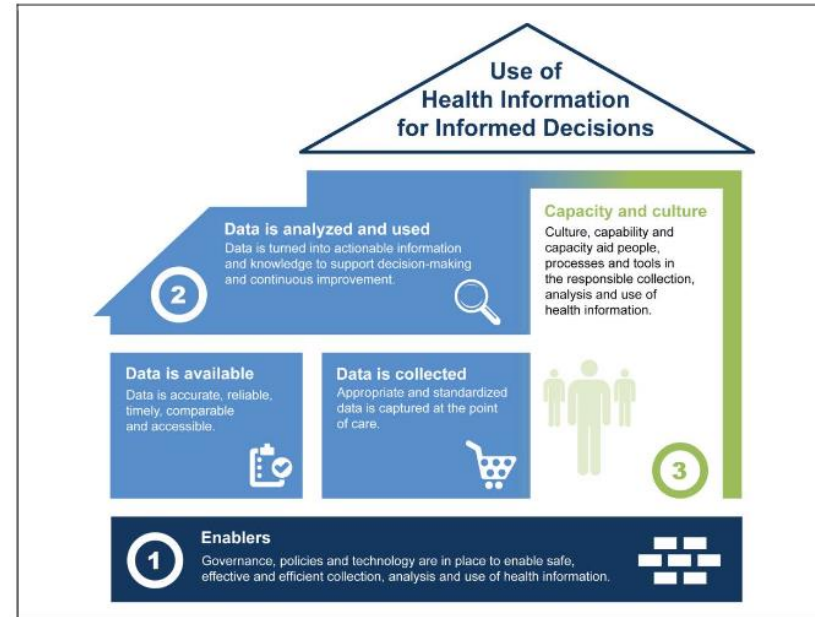
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# What is “Health Analytics”?

- Leveraging organizational data for decision-making.
- Strategic “secondary use” of existing data.
- Extended understanding of what data exists and what it means.
- Improved integration and normalization to facilitate comparisons.
- Health Analytics often approached in levels:

- **Causal and Investigative Analysis** – why did an event occur?
- **Predictive and Preventative Analysis** – how to stop it from occurring again?
- **Prescriptive Analysis** – how to understand and improve behaviours?



Big Data Analytics in Health (Infoway 2013)

# Why are Organizations Looking to Analytics?

**25% of acute-care patients experience preventable clinical errors.** (IBM 2008)

- Medical errors were preventable if existing data was available at the right time to the right people.

**3% of all healthcare spending—or \$68 billion annually—is lost to fraud.**

(National Health Care Anti-Fraud Association 2012)

- Most fraud investigation conducted manually is retroactive analysis rather than real time.

**Analytics-driven organizations had 33% more revenue growth and 32% more ROI.** (HIMSS CFO Study 2013)

**\$2 TR+**

Wasted annually through inefficiencies in the management and delivery of healthcare  
(IBM 2010)

Inefficiencies tied to ineffective data gathering, sharing and use.

# Why is HA and Data-driven Decision Making Important?



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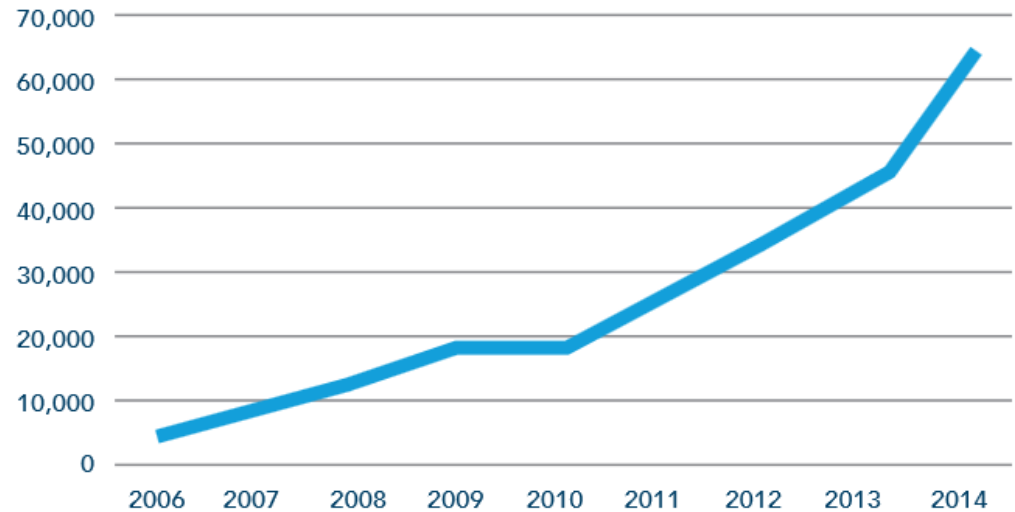
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# “Much of the Heavy Lifting is Complete”

- Infoway’s 2013-2014 Annual Report:
  - Since 2001, Infoway has received **\$2.1 billion** through five separate federal government grants.
  - Investments have produced an estimated **\$10.5 billion in benefits** for Canadians and the health care system since 2007.
  - Conference Board of Canada estimates that **\$1.48 is added to Canada’s GDP for every dollar invested in** Canadian Healthcare.



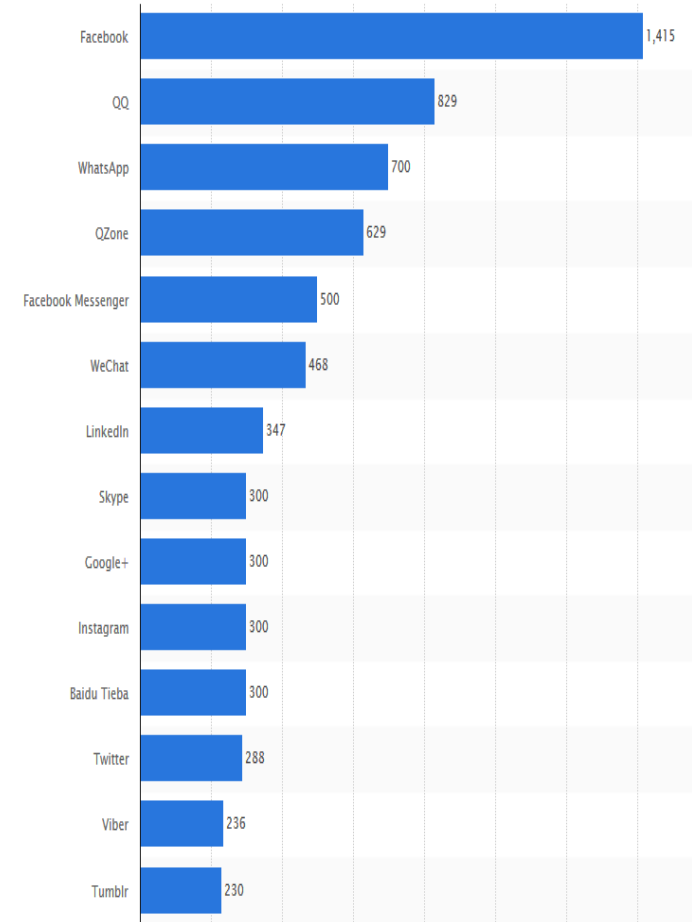
Canada EHR Active Users

# The Data is There ..

In addition to our existing health data stores:

- Internet availability and use – **3 billion people online daily**
- Mobile devices – **over 6 billion mobile phones** in use worldwide (5.6 billion in 2013) and **average teen texts over 4700 times per month**
- Social Media Stats:
  - Over **1.44 billion active Facebook users** in first quarter of 2015
  - Over **288 million active Twitter accounts**
  - **230 active blog sites**

Statistica.com





# Why is Health Analytics Important in Canada?

- Canada invests over \$100 billion annually in our healthcare industry (Infoway Canada's next generation of healthcare at a glance 2015)
- Estimated that the **ROI** for initiating data driven decision making is **5-6%** of the **\$100 billion** spent annually on healthcare in Canada (Infoway Big Data Analytics in Health 2013)
- McKinsey Global Institute estimate that if US health care begins to use the potential big data available in current systems they could create more than **\$300 billion** in value annually

**Rank**

**#10**

If the Canadian  
Healthcare Industry  
was a Fortune 500  
Company  
(Infoway 2015)

# Where are we at now with Health Analytics?



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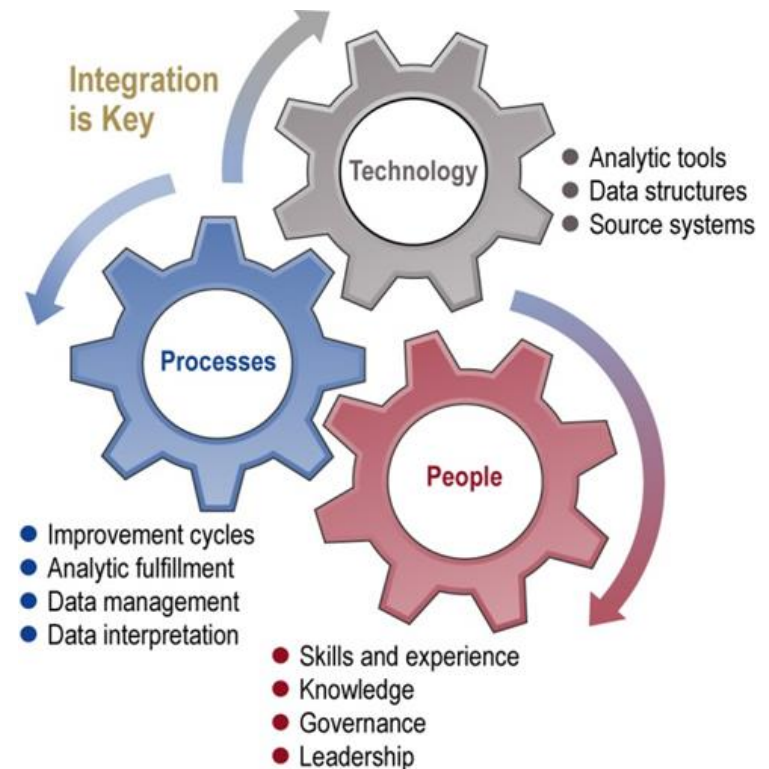
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# “Canadian Health Analytics Still in the Teen Years”

CTO CMA 2013

- Every Canadian Province has initiated some degree of a cross domain data warehouse(s) where integrated data is being “pooled”
- Many provinces/regional health authorities have embarked in Health Analytic Strategies to develop the foundation to better use and manage the data being collected.
- The implementation of using the data for operational and clinical decision making is still evolving.
- Interoperability is key – technology will only solve 10% of the problem

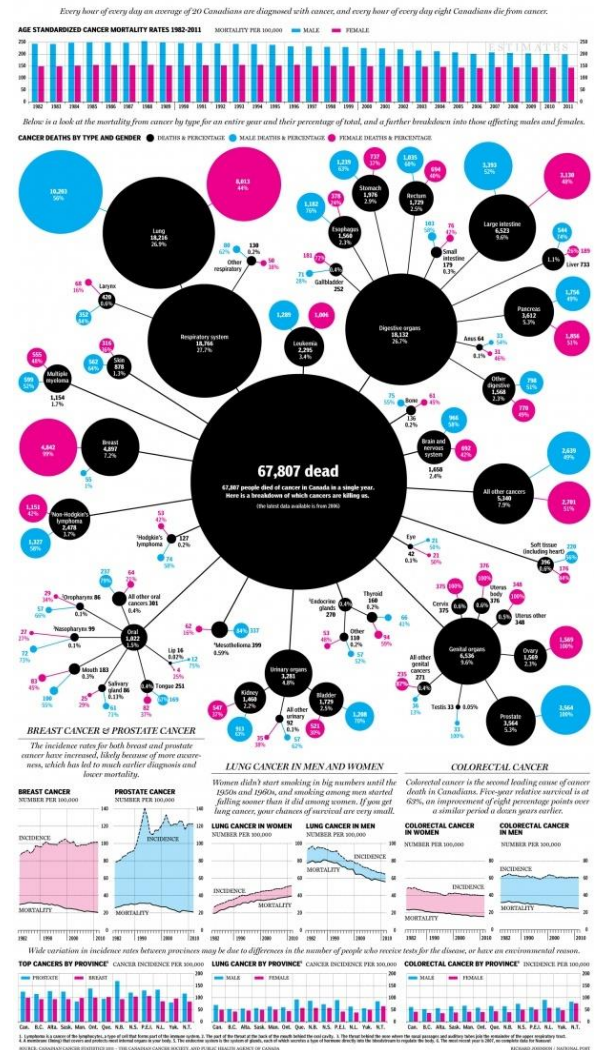


# Canadian Analytic Investments

Opportunities currently receiving investments:

- Clinical Decision Support
- Personalized medicine and integrated genomics
- Public health and population health solutions
- Surveillance and Monitoring
- Chronic Disease Management
- Clinical Value and Practice Efficiencies
- Clinical operational solutions – resource management, usage and deployment
- Policy and financial solutions – research and policy data analytics

## CANCER IN CANADA



# What are the potential benefits?



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# Analytics for Financial Improvement

**\$1M**

**SAVINGS**

In monthly  
revenue  
leakage

Community Health Services  
(Florida)

**\$3-5M**

**SAVINGS**

In annual costs  
of manual data  
analysis

Community Health Services  
(Florida)

- Early adopters leverage existing data to solve specific business issues.
- Tools are developed to locate gaps, predict errors and correct issues.
- Can identify problems long before retrospective reporting could identify the issue.
- Early adopters in revenue cycle (mostly US) are reporting almost immediate results with:
  - Reduction in revenue leakage,
  - Incorrect or incomplete billing,
  - Overall cost of care,
  - Greater transparency,
  - Increased accountability.

# Analytics for Fraud Reduction

- As fraudulent billing or claims detection is very difficult to identify, most fraud detection is conducted through manual sampling after the billing is complete.
- Some examples of healthcare fraud include:
  - Fraudulent billing or overbilling,
  - Performing unnecessary or up-coded procedures,
  - Fraudulent use of health cards/insurance.



The National Health Care Anti-Fraud Association (NHCAA) estimates conservatively that 3 percent of all healthcare spending—or \$68 billion annually—is lost to fraud.”

– THE BIG DATA HUB (2012)



# Analytics for Operational Efficiency

- Early adopters have also targeted organizational improvements in the area of resource utilization and planning
- Analytics have also helped early adopters improve operational effectiveness by reducing hospital readmissions.

**\$809 M  
SAVINGS**  
Through  
alignment of  
outpatient  
services

Metrohealth  
(Cleveland)

**\$3-8%**  
REDUCTION  
In overstaffing  
of ER nursing

Community Health  
Services (Florida)

# Analytics to Drive Clinical Decisions

- Little tangible evidence to support the use of analytics to improve the quality of clinical decision-making – but all report that it is increasing:
  - Clinical data analytics predicted to grow at a compound annual growth rate (CAGR) of 37.9%,
  - Anticipate adoption growth from 10% in 2011 to 50% by 2016. (Frost and Sullivan 2012).
- The projected increase in clinical analytics is driven by the understanding that while data is available, it is not always accessible, which creates safety risks.
- Medical errors may be preventable – if the existing, available data is organized and accessible to support clinicians making diagnostic and treatment decisions.



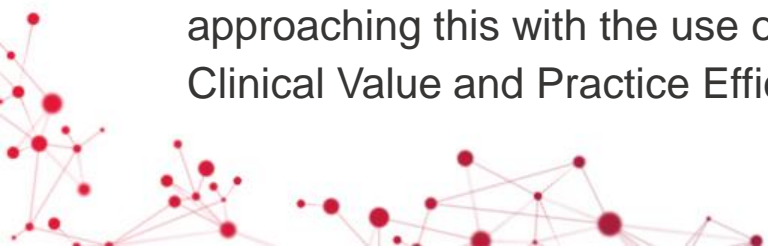
The Institute of Medicine has estimated that up to 98,000 US residents die each year as the result of preventable medical errors.”

– BRITISH MEDICAL JOURNAL (2005)

# Analytics for Chronic Disease Management

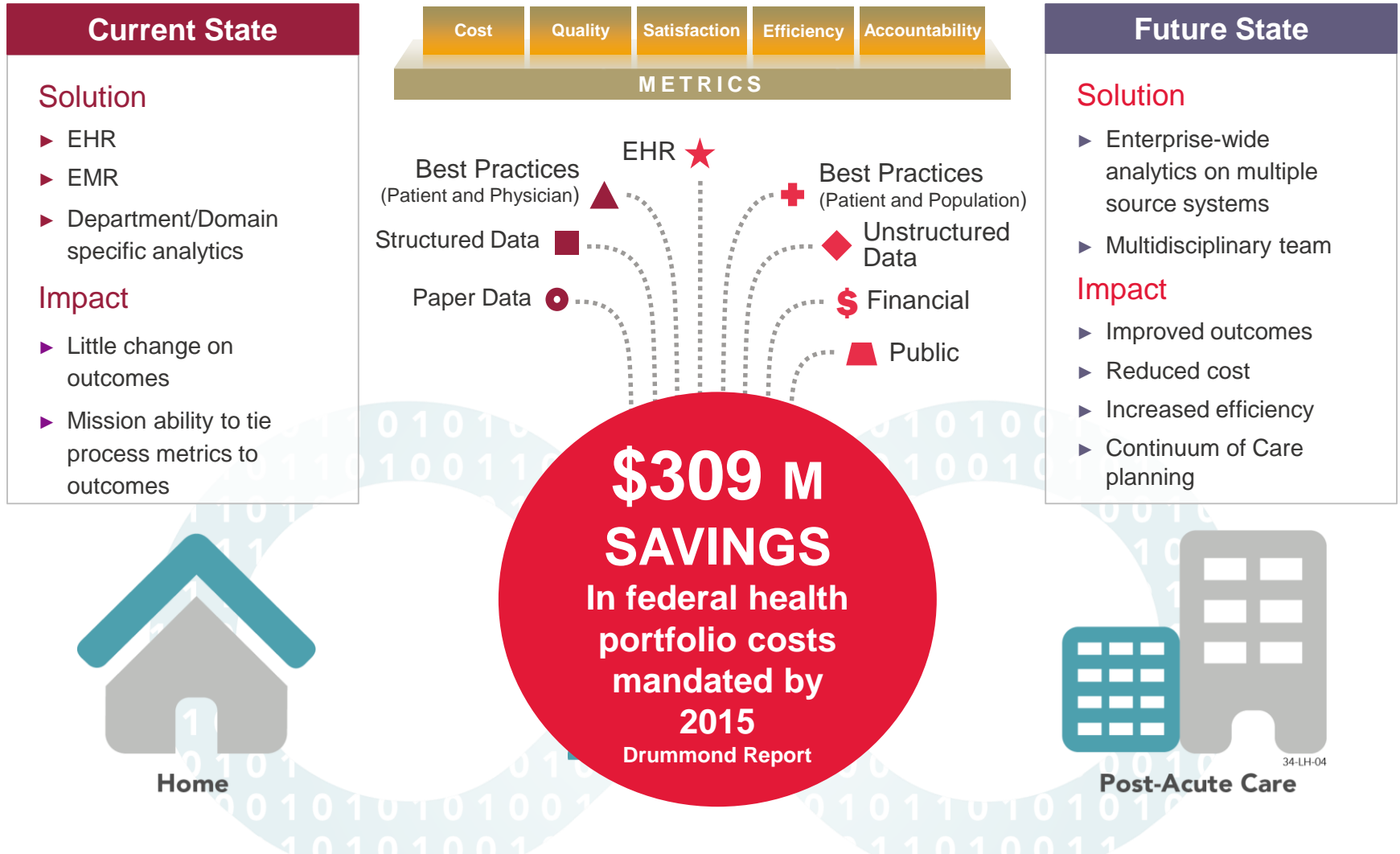
## Chronic disease management is an early focus area for achieving clinical analytic benefits:

- Based on an analysis of medical claims of 5.5 million patients, 69% were related to treatment of chronic conditions and 60% of the costs were related to ambulatory care delivery. (Becker's Hospital Review 2013)
- The Centers for Disease Control and Prevention (CDC) states that chronic disease accounts for approximately 75% of U.S. aggregate healthcare spending. (Analytic Magazine 2012)
- The detection and identification of chronic disease patients and subsequent use of a telehealth system reduced spending by 7.7% to 13.3%, or \$312 to \$542 per person, each quarter. (Stanford University 2011)
- CIHI and many Canadian jurisdictions are currently approaching this with the use of EMR Data Content Standards, Clinical Value and Practice Efficiency Metrics.



# In Summary

# Unprecedented Pressure to Perform



# Call to Action

- 2013 Big Data Analytics in Health suggests the following challenges need to be addressed to move forward:
  - Data policies – policy, legislation, governance
  - Legacy technology and techniques – technology refresh potentially
  - Business and operational models
    - change management and ROI potential
  - Culture of Innovation and experimentation

“Canada’s healthcare system needs to start consolidating data from disparate sources, analyzing it and creating an environment of data-driven decision-making, which in turn leads to better care for patients, more useable data for researchers and lower costs for everyone

- Drummond Report

# The Risk of Inaction

- The key to an effective analytics strategy is finding the balance between IT sophistication and user apprehension. (2013 HIMSS Task Force)
- A successful analytics strategy leverages the quick wins but focuses on long-term organizational vision.
- By addressing quick wins organizations gain greater buy-in for analytic investments.
- Expanding analytic programs to improve health care delivery is in the strategic plan for many high-performing health systems.



A 2013 CFO study suggests that analytics-driven organizations had 33% more revenue growth and 32% more ROI than organizations not using analytics to support organizational decisions.

– HIMSS (2013)

**As we better understand how to leverage our huge volumes of medical data, health analytics will become the key to improving the end-to-end performance of the health sector as well as patients' health and quality of life.**



# Questions?

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