Agenda

- What Is RWE?
- Case Studies & Examples – Overcoming the “Challenges” in RWE
- Future Outlook
A common lexicon

Real-World Data (RWD)
• Patient-level data not collected in conventional randomized controlled trials
• Examples: electronic medical records, claims data, mortality data, consumer data, registries, data collected in observational studies, chart reviews

Real-World Insights (RWI)
• Insights generated from RWD using appropriate scientific and/or generated commercial analytics

Real-World Evidence (RWE)
• Insights generated from RWD using appropriate scientific and/or generated commercial analytics with the intention to support a claim or belief to produce evidence for multiple stakeholders

See www.rwedictionary.com for more definitions
RWD is PATIENT-level data
The vast majority of data around patient exposure to interventions occurs outside of traditional clinical trials.

![Diagram showing the number of patients treated over time with different categories of surveillance: patients are treated with no active surveillance, patients in observational studies, registries, etc., and patients in RCTs (or other interventional studies).]
RWE is relevant and critical, since the real world does not consist of “ideal patients”

The Example of Cardiovascular Drugs: Percentages of All Patients in a Given Age Group Treated with Cardiovascular Drugs (Italy) versus Percentages in Each Age Group Included in Cardiovascular Drug Trials (Globally).

Data on all patients treated are for 2011 and come from the Italian census and the Italian ministry of health; data on patients in clinical trials are for drugs approved between 2009 and 2012 and come from the drug-registration dossiers submitted to the EMA during that period.

Quintiles + IMS Health, integrating evidence generation

Largest real world data company (secondary collection)

Bridging Clinical with Real World Evidence

World’s largest clinical research organization (primary collection)

Smarter evidence design & execution:
- Enriched Study (aka Hybrid Study, Enhanced Study)
- Evidence Platforms & Technologies (aka Evidence Hub)
- Low Intervention Clinical Trial (aka Minimally Interventional Trial)
- Predictive Analytics
- One-Armed Study with External Comparator
- Pragmatic Randomized Trial
Challenges in using RWE

Data Access & Sharing
Methodology
Technology
Standards
Human & Financial Resources
Governance & Privacy

Innovating Solutions

Innovation = Change
Models of Innovative Evidence Generation in Regulatory Setting

Combining Primary with Secondary sources of information opens up new options

**1. EXTENSION**

**In time**

- **PURE PRIMARY**
  - Randomization Clinical Trials
  - Prospective research (registries)

- **PURE SECONDARY**
  - Admin Database studies
  - Evidence Platforms

- **Blend & Extend the use of Secondary data**
  - RCT data collection ends
  - Direct to patient
    - and / or
    - Secondary data

**2. AUGMENTATION with comparators**

- **Primary data collection**
  - agent + comparator

- **Secondary data**
  - Comparator

**3. ENRICH with more data sources**

- **Primary data collection**
  - agent + comparator

- **Secondary data**
  - agent + comparator

- **EXTENSION**
  - Low-cost follow-up for long-term safety & effectiveness

- **AUGMENTATION with comparators**
  - Comparative evidence for product registries or single-arm clinical trials

- **ENRICH with more data sources**
  - Improved efficiency of data capture to address several research questions
  - Accelerated evidence generation
Extend follow-up after a clinical trial

Understanding long-term benefits of treatment through direct-to-patient research

Why RWE:
• Can measure long-term benefits / risk
• Much lower cost than extending follow-up through RCT framework: 
  $5k >$15K per patient, + enhances RCT investment
• Bulk of budget is directed to following up potential CVD events (not all patient information)
• Reduces number of sites needed, simplifying operations

The Approach:
• Direct to patient follow-up for effectiveness (up to 10 yrs)
• Follow-up both treated and placebo patients
  - 10,000 patients from 100 sites
  - Patients are consented before trial ends by RCT sites
  - Single investigative site per country
• Selected clinical validation for events of special interest
• Link to administrative datasets for long-term follow-up
EMR Chart Audits simplify and greatly reduce the time required for data collection and generation of real world insights.

**Overall Project Approach**

1. **Opportunity identification**
   - Strategy & approach

2. **Facilitate partnership**
   - Between Clinic & Sponsor

3. **Manage restructuring/standardization of EMR**

4. **Manage contracting & study set-up**

5. **De-identification and risk mitigation of patient data**

6. **Secure transfer of de-identified EMR to QI**

7. **Data validation & Data analysis**

8. **Publication & Study Dissemination**

9. **Protocol Design & Ethics submission**

10. **In Parallel**
Liraglutide Real World Study – A Multi-Stakeholder Approach

Study Objective: What is the real world clinical effectiveness of liraglutide 3.0mg for weight loss?

Collaborative Approach

Figure 3b: Categorical Percentage Weight Loss

<table>
<thead>
<tr>
<th></th>
<th>All Subjects</th>
<th>≥4 months</th>
<th>≥6 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss of ≥5% body weight</td>
<td>58.8%</td>
<td>62.6%</td>
<td>63.4%</td>
</tr>
<tr>
<td>Loss of &gt;10% body weight</td>
<td>30.5%</td>
<td>18.2%</td>
<td>35.2%</td>
</tr>
</tbody>
</table>

Key Findings:

- Characterization of real-world patient population
- Significant improvements in
  - Weight reduction
  - HbA1c
  - SBP
- Results in-line with clinical trial results

Source: Real-World Clinical Effectiveness of Liraglutide 3.0mg for Weight Management in Canada S. Wharton et al. Value in Health; May 2018, Volume 21, Supplement 1, Page S246: https://doi.org/10.1016/j.jval.2018.04.1668
The Engage platform – How it is employed on a study

Fully enabled real-world data collection and reporting

PROs | QOL | eDiaries | Study EDC integration

Outcomes
- Adherence, persistence, health outcomes, quality of life

Engagement
- Satisfaction, feedback, interactions

Utilisation
- Visits, tags, hits, favourites
Partnering with ICES real world data to understand the treatment landscape and burden of disease

Objective: Describe the Burden of Illness of Gout

1. Describe the demographic and comorbidity profile of incident gout patients in Ontario
2. Estimate the incremental resource utilization and healthcare costs associated with the first 6 years of gout

**Total Average 6-year MD/ Facility Visit Count by Healthcare Touch Point**

<table>
<thead>
<tr>
<th>Healthcare Touch Point</th>
<th>Gout</th>
<th>Gout-Free</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Care</td>
<td>$54,744</td>
<td>$54,744</td>
</tr>
<tr>
<td>Medication</td>
<td>$13,742</td>
<td>$13,742</td>
</tr>
<tr>
<td>Hospital</td>
<td>$21,895</td>
<td>$12,944</td>
</tr>
<tr>
<td>ED</td>
<td>$10,877</td>
<td>$14,642</td>
</tr>
<tr>
<td>OHIP</td>
<td>$1,926</td>
<td>$13,745</td>
</tr>
</tbody>
</table>

Gout patients cost an incremental $11,738 over 6 years

*Data source: patients identified between 2008-2014 in ICES’ RPDB, DAD, NACRS, OHIP, ODP, and HCD datasets.*
IQVIA Canada utilized EMR data and predictive analytics to undertake a new analysis on the prevalence of CHF in Canada.

IQVIA Canada utilized EMR data and predictive analytics to undertake a new analysis on the prevalence of CHF in Canada. EMR records available after cleaning N = 109,861, with patients treated with a cardiovascular product N = 26,249. Patients not treated with a cardiovascular product N = 83,612, randomly removed non-CHF patients N = 24,734. The final cohort available for modeling N = 1,515, with CHF patients N = 675 (574 to teach, 101 to test) and non-CHF patients N = 840 (716 to teach, 124 to test).

We taught the predictive model only using patients treated with a cardiovascular product, because we are predicting treated CHF patients. Therefore, if a patient is not receiving a cardiovascular product, then they are not a treated CHF patient.
Using predictive analytics to leverage smaller, richer datasets to apply insights to larger, national data

The prediction model has a 87.3% accuracy

- To evaluate the overall model, we tested it against all available patients in the EMR with a cardio treatment.
- The model has:
  - 87.3% accuracy
  - 74.8% positive predictive value (PPV)
  - 87.6% negative predictive value (NPV)
- The method used by Blais et. al. has a PPV of 55.6%¹

[Table showing predicted vs. true diagnoses]

Note: Of the 3,171 patients incorrectly predicted as CHF, 25.3% have a pre-CHF diagnosis (Hypertensive Heart Disease, Old Myocardial Infarction, Mitral Insufficiency Or Stenosis, Pulmonary Embolism with Infarction)

Data source: EMR patients within selection period Jan 2006 – Jan 2015

¹PPV = \frac{\text{Number of True Positives}}{\text{Number of Patients With a CHF Diagnosis}}

NPV = \frac{\text{Number of True Negative}}{\text{Number of Patients Without a CHF Diagnosis}}
Using data within a patient support program to understand patient outcomes: The COMPANION Study

**Objective**

To evaluate the impact of the services provided by the HUMIRA® AbbVie Care PSP on the adherence, persistence and clinical outcomes of patients within the program

**Methodology**

- Pharmacy-level longitudinal data (LRx database from QuintilesIMS) was linked to the AbbVie Care PSP dataset
- Patients were matched using an externally validated algorithm based on a combination of variables

n = 10,857 patients

In IBD patients receiving ongoing care coach calls, **12% more patients achieved remission** (according to HBI score) after 6-18 months

In remission (HBI < 5) vs. not in remission (HBI ≥ 5):

- Hazard ratio (HR): 1.12, CI: 1.04-1.21, p=0.003

HBI remission over 6-18 months

<table>
<thead>
<tr>
<th>Patients in remission (%)</th>
<th>With ongoing CCCs (n=880)</th>
<th>Without ongoing CCCs (n=523)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>74%</td>
<td>66%</td>
</tr>
</tbody>
</table>

12% difference


PSP: Patient support program  
HBI, Harvey-Bradshaw index; IBD, inflammatory bowel diseases
Breaking barriers: RWD as registry comparators for FDA label expansion

**Value Points:**
- Design was discussed and agreed upon in advance with FDA after close, collaborative consultations.
- Sourcing comparators from claims reduces enrollment risk by 50%.
- External comparator study design merges many data sources → Methodologic complexities + Innovative operational solutions

**Clinical setting enabled innovative design:**
- Rare outcome (~5%) – Required sample size too large for site-based RCT
  + Infeasible and arguably unethical to recruit patients into placebo group
  → Observational Study
- Safe device marketed for >20 years
  + Broadly prescribed and reimbursed off-label
  → External comparator

**Regulatory Timing:**
- The 21st Century Cures Act (US)

**CASE STUDY**

**External comparators**
- Design was discussed and agreed upon in advance with FDA after close, collaborative consultations.
- Sourcing comparators from claims reduces enrollment risk by 50%.
- External comparator study design merges many data sources → Methodologic complexities + Innovative operational solutions

**Value Points:**
- Direct-to-Patient Device Registry
- Insurance Reimbursement Forms
  - Patient ID + Medical History
  - Device-Recorded Data
  - Compliance Data
- Direct from Patient
  - PROs + Medical Information
- Physician Office Billing Records
  - Study Outcome
- Match
- External Control Via Claims
CODE is a broad Collaboration aiming to connect the European Cancer Community with data in powerful ways

**CODE Lead:** IQVIA

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**Pharma**

“Do we have to build access to these data and the infrastructure ourselves?”

“A medicines company, not a data/information company”

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**Healthcare Systems: Payers/Providers**

“Dealing with single companies creates challenges for us – not least in terms of the inefficiencies and compliance paperwork”

“There is a growing number of product-related requests for data collection and form filling. This is fast becoming problematic”

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**Founding Members:**

- Bristol-Myers Squibb
- Lilly
- Pfizer
- Merck
- AstraZeneca
- AMGEN
RWE is here to stay, and holds the promise to greatly improve healthcare decision-making.

REAL-WORLD DATA (RWD)

Pharma data (RCT, observational)
Electronic medical and health records
Pharmacy data
Mortality, other registries
Test results, lab values, pathology results
Hospital visits, service details
Claims databases
Social media
Consumer data

Meaningful questions
Fit-for-purpose data & analytics
Externally validated findings

REAL-WORLD EVIDENCE (RWE)
Real-World Evidence as a capability—data, tools, processes, organization—underpinning several functions to drive business intelligence.
RWE holds the promise of improving healthcare

Where we need to apply RWE

What is the health value of the

$370 Billion

total worldwide increase in medicine spending 2017-21

What can we do to address

$500 Billion

in avoidable annual medical costs globally because medicines are not used responsibly?

Can we increase adherence of the

60%

of patients on chronic therapy who are not refilling their prescription after 6 months?

Can we reduce the

$2.1B

development cost for a drug today, and ultimately lead to lower drug prices?

Can we find the

20-40%

of Canadians diabetics who are undiagnosed and untreated?

Can we prevent the

4,000-8,000

Canadian deaths due to diagnostic errors every year?
Questions?
Improving the Use of Real World Evidence in the Regulatory Environment: Where Are We Heading in Canada?

Rhonda Kropp
Marketed Health Products Directorate, Health Canada
rhonda.kropp@canada.ca
Health Canada: Context for Regulatory Reform

• 2015 Mandate Letter Commitment for the Canadian Minister of Health:
  – Engage provinces and territories in the development of a new multi-year Health Accord, including **improved access** to necessary therapeutic products

• January 2016 Health Ministers Meeting:
  – Commitment to improve **the affordability, accessibility and appropriate use** of therapeutic products

• 2016: Health Canada’s Health Products and Food Branch (HPFB) launches Regulatory Review of Drugs and Devices (R2D2) initiative
  – Delivers on elements of this commitment, in particular those pertaining to therapeutic product access

• R2D2 forms the umbrella under which work is underway in three areas:
  • Expanded Collaboration with Health Partners
  • More Timely Access to Drugs and Devices
  • **Enhanced Use of Real World Evidence (RWE)**
Enhanced Use of RWE Projects: What are they?

Goal
• To improve Canada’s ability to assess and monitor safety and effectiveness across the health product life cycle by optimizing the use of RWE through engagement with key stakeholders

Objectives
• Understand the key information gaps across the product life cycle
• Understand how RWE can be used to inform regulatory decision making
• Determine potential return on investment for use of existing/new RWE sources
• To implement the strategic use of RWE across the product life cycle
• Collaborate with partners to explore access to, and use of, RWE

Desired Outcomes
• The health-related risks to Canadians associated with use of drugs and devices are minimized, while the benefits are maximized
• Accessibility, affordability & appropriate use of drugs & devices are improved
Current Status in Canada: We already use RWE.....

- **Pre-Market:**
  - Where a conventional RCT was unfeasible or unethical & RWE was therefore submitted and assessed in lieu
  - Where a product was previously approved and marketed in a foreign jurisdiction and RWE from clinical registries in the foreign jurisdiction was used in the Canadian submission

- **Post-Market:**
  - Submitted to address requirements in the Risk Management Plans (RMP) to address residual risks
  - Monitor for adverse reactions and signals domestically and internationally
  - To inform change in indications, monograph or label revisions for products already marketed in Canada

  - Can ask/compel MAH to develop the evidence:
    - Minister of Health can require holders of drug product (and establishment) licenses to perform tests or other monitoring related to their products (but not NHPs) where...
      - Significant uncertainties exist about the drug’s harms or benefits (or activities of license holders)
      - Company is unable to provide the needed information, & it is not available through other regulatory powers

  - Can undertake or solicit research: Canada’s Drug Safety and Effectiveness Network (DSEN)
    - CIHR and Health Canada have partnered to establish the DSEN to increase...
      » ...evidence on drug safety and effectiveness available
      » ...capacity within Canada to undertake high-quality post-market research in this area.
    - Health Canada, and others, work with DSEN to formulate research questions and gather information on safety & effectiveness of pharmaceuticals used by diverse patient populations outside of clinical trials.

  ...but there is much room to improve....
Areas to Improve (1)

Address challenges to collaboration domestically and with international partners

- Privacy legislation
  - Domestically, privacy legislation differs between the Federal government, Provinces and Territories (PTs).
  - When agreements for sharing between PTs, and between the PTs and Federal government, are achieved, there are economies of scale in capitalizing on that arrangement rather than putting in place multiple arrangements

- Variability in data sources and analytic approaches: lack of standardization
  - Domestically, within Canada, health information solutions vary between PTs
  - Need to ensure that when collaborating we are not comparing apples and oranges

- Everyone is busy….very busy
  - Need to dedicate time to explore and operationalize collaboration; time dedicated will payback via increased efficiencies in the longer term

- Trust and accountability
  - Trust in each other’s scientific capacity, rigor of each other’s work, etc…. 
Areas to Improve (2)

Address challenges to partnerships with research community

- Issues of data ‘ownership’
  - Publish or perish culture challenging when ownership of data is not outlined through a contractual approach

- Research umbrella involves Research Ethics Board approvals which vary
  - Time to coordinate REBs is not aligned with regulatory safety questions that are urgent
  - Research or public health imperative? Requirements differ…..

- Research culture and regulatory culture mis-alignment
  - Questions required to answer a regulatory question may not be of greatest interest to research community
  - Timing needed/proposed by research community may not be aligned with regulatory needs
Way Forward

Moving forward, HC will publish a strategy outlining how we will optimize the use of RWD/RWE across the product life cycle. Snapshot of the approach....

1. Developing Guidance for Industry and Data Partners
   - Publishing principles and guidance for industry and data partners on the key data elements needed for decision points across the product life cycle and how HC and Industry can work together to optimize RWE use early on in submission discussions

2. Developing and Implementing a Transparent Approach to Assessing Quality of Evidence
   - Documenting the approach to assessing quality of evidence submitted across the life cycle to support data producers in collecting the right data of sufficient quality to inform regulatory decision making

3. A Phased Approach to Implementation
   - Health Canada already accepts RWE as part of submissions across the life cycle, however, with the Guidance and Quality of Evidence (QoE) approach clarified, we will work with willing partners to phase in deliberate use of RWE starting with product lines for which use of RWE provides clear value-add to the health system and to Canadians. Lessons learned will be used to optimize the approach for future phases.

4. Working with Partners to Optimize Data Availability
   - Collaborating with partners to support the development/sharing/optimization of sources with greatest Return on Investment (RoI) for Canadians.
   - Monitoring the safety and effectiveness of medical devices on the market requires data, both to identify signals and proactively assess for potential issues
     - Regulatory and non-regulatory solutions will be assessed
Improvements Underway!

Domestically, making changes and partnering to ensure we are…

• Asking the right questions at the right times, and addressing these through the right venue(s)
• Increasing transparency in our short & longer term post market plans, and consulting with key users on those plans
• Taking lessons learned through the DSEN-Health Canada partnership and adjusting
• Updating our IT and HR capacity to meet current and future needs
• Learning from, and aligning work, with our partners
• Aiming to provide clear guidance to Industry on how RWE will be used for decision making across the life cycle, how quality of evidence will be assessed, and the QoE required for use in different regulatory decisions
• Working closely with our HTA colleagues to align our efforts and where appropriate our approaches

Internationally, we are partnering….  

• Collaboration between US FDA Sentinel Network and CNODES
  – Common Data Model (CDM): standardized data structures and code/programs
  – Goal: implement Sentinel’s CDM in four Canadian provinces (ON, MB, SK, NS)
  – Can be used for queries on drug utilization (general and specific demographic cohorts) and cross-tabulations

• Collaboration between European Medicines Agency (EMA) and CNODES
  – Proof of concept to demonstrate how collaboration on a study could occur between regulators
  – Study of interest: Characterising the risk of major bleeding in patients with Non-Valvular Atrial Fibrillation: non-interventional study of patients taking Direct Oral Anticoagulants in the EU

…but can we do more in Canada between our Research, Patient, Health Care Provider, Data Holder, Industry and Federal Decision Maker communities?
Opportunities: Individually and Together

Can we better collaborate across disciplines and organizational boundaries to….

1. CLARIFY OUR QUESTIONS?
   • Can we define key safety and effectiveness questions that are of interest to multiple partners across the life cycle in Canada?

2. OPTIMIZE DATA COLLECTION, USE AND SHARING IN CANADA?
   • Different pieces of the story being held across the country.
   • Can we share our data or findings? Improve our sample size and analytic power through collaborative work within Canada and internationally?

3. DEFINE STANDARDS?
   • Can we advance in standardizing approaches, data analysis methods to optimize comparability?
   • Can we define how RWE will be used in decision making in Canada, and see if standardization might be possible in terms of quality of evidence review approaches across the life cycle?

4. SHARE WORK?
   • Can we divide/partner, capitalize on each others strengths, and conquer?

We can, and we are…
Meetings, such as this, which allow for collaborative discussions across disciplines are important venues to discuss potential economies of scale in our **common objective** to protect and support the health of Canadians.

Thank you!
Disclosure

• CADTH is funded by federal, provincial, and territorial ministries of health.

• Application fees for three programs:
  – CADTH Common Drug Review (CDR)
  – CADTH pan-Canadian Oncology Drug Review (pCODR)
  – CADTH Scientific Advice
Life Cycle HTA: Unlocking the Potential for Real World Evidence in Support of Health Technology Management

Tammy J Clifford, PhD
Chief Scientist and Vice-President, Evidence Standards
@TammyJClifford

CAPT 2018
October 22, 2018
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CADTH is an independent, not-for-profit organization responsible for providing Canada’s health care decision-makers with objective evidence about the optimal use of drugs and medical devices.
2018–2021 Strategic Plan

Transforming How We Manage Health Technologies

Mission
CADTH consistently delivers credible scientific evidence and management strategies that enable the appropriate use of health technologies.

Vision
Canada has a world-class system for assessing and managing health technologies to achieve better outcomes and value for Canadians.

Values — These foundational values guide CADTH decision-making and activities at all levels.

Excellence
CADTH is trustworthy, delivers what it promises, and exceeds expectations by focusing on impact to drive better health, better patient experience, and better value for Canadians.

Responsiveness
CADTH understands and meets the needs of its customers in a timely fashion.

Collaboration
CADTH creates and nurtures partnerships with those who produce, acquire, deploy, and use health care technologies to promote their appropriate use.

Transparency
CADTH makes timely and user-friendly information about its programs, processes, and performance widely available, with a special emphasis on engaging key stakeholders.
Strategic Goals and Objectives

Close the Gap Between Evidence, Policy, and Practice

1. Provide customized implementation support.
2. Strengthen engagement with patients, clinicians, and other stakeholders.
3. Enhance analytics and performance measurement.

Adopt a Life-Cycle Approach to Health Technology Assessment

4. Align drug and medical device review processes with federal, provincial, and territorial priorities throughout all phases of the technology life cycle.
5. Implement programs for reassessment and disinvestment.
6. Advance initiatives across the health technology life cycle that will improve access, appropriate use, and affordability.

Anticipate Health System and Technology Trends, and Develop Agile Management Strategies

7. Advance initiatives that anticipate, influence, and manage technological advancement and health system evolution.
8. Focus on health technologies that have the most potential to meet patient and health system needs.
9. Align CADTH efforts and investments with federal, provincial, and territorial priorities for health improvement.

EDITORYAL

BREAKING THE ADDICTION TO TECHNOLOGY ADOPTION

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\textsuperscript{b}Centre for Clinical Epidemiology & Evaluation, Vancouver Coastal Health Research Institute, Canada
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\textsuperscript{d}Yunus Centre for Social Business & Health, Glasgow Caledonian University, UK

ABSTRACT

A major driver of cost growth in health care is the rapid increase in the utilisation of existing technology and not simply the adoption of new technology. Health economists and their health technology assessment colleagues have become obsessed by technology adoption questions and have largely ignored ‘technology management’ questions. Technology management would include the life-cycle assessment of technologies in use, to assess their real-world performance; and monitoring of technology indication creep. A rebalancing of focus might serve to encourage a more self-critical and learning culture amongst those involved in technology evaluation analysis. Further, health economists and health technology assessment analysts could make a more significant contribution to system efficiency through rebalancing their efforts away from technology adoption questions towards technology management issues. Copyright © 2014 John Wiley & Sons, Ltd.
Achieving optimal technology use: A proposed model for health technology reassessment

Lesley JJ Soril¹,², Gail MacKean¹,², Tom W Noseworthy¹,², Laura E Leggett¹,² and Fiona M Clement¹,²

Potential Zone of Reassessment

Experimental Stage → Adoption of Health Technology → Reduced Use of Health Technology

- Update and Introduction of Health Technology
  - Testing for safety and efficacy
  - Initial HTAs (safety, efficacy)
  - Field evaluation
- Further HTAs (safety, efficacy, effectiveness)
- Cost-effectiveness,
- Health technology appraisal (ethical, legal, social, policy issues)
- Reassessment of health technology (disease treatment regimen, broader comparisons, stakeholder and other considerations)

- Decommissioning and Obsolescence
- Actions to reduce use (clinical practice guidelines, specialist-specific use, pre-approval, etc.)
- Decommission Plan

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CADTH Evidence Driven.
A life-cycle approach ...

- **Development/R&D**
  - Scientific Advice/Early Dialogues
    - Joint with regulator +/- other HTA
- **Market Access & Initial Reimbursement Recommendation**
  - Regulator – safety, efficacy, quality
    - NOC, NOC/c
  - HTA – comparative effectiveness, value for money
    - Possibility for conditional coverage recommendation
      - Conditions specified re: additional data collection
  - Opportunities for parallel review & joined up data collection requirements
- **Reimbursement Decision**
  - Payers
- **Implementation**
  - System
- **Reassessment** →
What does the evidence say?
Living Systematic Reviews

Initial Network Meta-analysis

Online Dissemination

Iteration 1

Iteration n

Adaptive search strategy

Update of the network and synthesis

Assessment of risk of bias

Every months

Screening and selection

Data extraction

http://bmjopen.bmj.com/content/6/8/e011841
CADTH METHODS AND GUIDELINES

Guidelines for the Economic Evaluation of Health Technologies: Canada

4th Edition

Current and emerging health knowledge ecosystems.
RWE - Challenges & Opportunities

• Not a replacement for comparative RCT data
  • Different questions require different data
    • What type(s) of evidence for which decisions?
• Need “good” data on the outcomes that matter
  • Quality, timeliness, efficiency
    • Require collaboration & linkages
      • use data collected by others
      • inform subsequent data needs
        • e.g., HC, CIHI, CIHR
• Appetite to re-visit decisions in light of new evidence?
Myeloma Canada
Bringing Research to Patients

Martine Elias
Executive Director
Why patients matter

As the only national organization exclusively devoted to the Canadian myeloma community, we have been making myeloma matter since 2005.

Aldo Del Col
Co-founder & Chairman
As a patient organization, Myeloma Canada promotes its commitment to patient-focused clinical research in collaboration with the Myeloma Canada Research Network (MCRN).

**GOAL:** Accelerating access to treatments

- Clinical trials
- Peer-reviewed consensus statements
- National database
Collaboration

Myeloma Canada Scientific Roundtable
September 2018

• An incubator for clinical trial ideas and developing made-in-Canada trials
• The patient voice has a seat at the table!
The MCRN is comprised of 27 centres in 9 provinces across Canada.

Bringing more clinical trials, to more patients, in more centres across Canada.
1. Evaluate **the health outcomes** of multiple myeloma patients
2. Identify the **differences across Canada** in the treatment of multiple myeloma
3. Identify the **strengths and weaknesses in the management** of multiple myeloma in all centres across the country
4. **Understand the regional needs** to provide adequate care to multiple myeloma patients
5. Support the **development of centres of excellence** in multiple myeloma research
6. Understand the **impact of novel therapeutic strategies** on outcome of multiple myeloma patients
7. Inform **future clinical trial** activity of the MCRN and beyond for patients
8. Generate **RWE** to inform HTA and funding bodies
Database Steering Committee
Evaluation Criteria

Is the research question original?

Does the research question confirm prior known information?

Would there be enough clinical data available in the database to answer the question?

If one or more comparison groups are used are they concurrent comparators or is the use of historical comparison group(s) justified?
RWE questions

- Does standard therapies in first line (+/- stem cell transplant) produce consistent outcomes across the country?
- Captures the number of treatment lines and their evolution over time
- Evaluate treatment duration and discontinuation due to toxicities or side effects
- Impact of new treatments and their sequencing
What have we accomplished

- 14 centres that are committed
- 4589 retrospective patient data uploaded
- New patient data being captured
- Number of lines of treatments, stem cell and non stem cell
- One presentation at ASH2018
- Two presentations at EHA2019
Insights

Quality of data capture templates

Looking at prospective studies and how to enter the data in a consistent manner across centers

Credibility of the data – somewhat dictated by the quality of the data coordinator

Toxicity measures are different from clinical setting to those of clinical trials

Collaboration with governments is required
Patient empowerment:

- Adapting the CCTG patient input process to the MCRN system
- Training on clinical trials – PaCER (Patient and Community Engagement in Research)
- Educating our patient representatives on PROMs and REW
THANK YOU!

JOIN OUR COMMUNITY
www.myeloma.ca

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Building Capacity for Real World Evidence

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Director of Health Services Research & Real World Evidence
Cancer Control Alberta
@winsoncheung
Overview

• Main reasons for a provincial cancer program in real-world evidence (RWE)
• Creating the necessary infrastructure and building future capacity for RWE
• Barriers, facilitators, and lessons learned
Need for RWE

- Cancer care is increasingly complex:
  - Access and disparities
  - Follow-up and survivorship
  - Costs and resources
  - Quality of care
  - Models of care
  - Real world “effectiveness”
Reasons for a Provincial Program

• Healthcare is provincially administered
• Population-based research
• Data are already collected
• Cost-effective study method
• Variations in care based on geography/centre
• Provincial data enable and facilitate larger national and international collaborations
Current Provincial RWE Programs
Key Items for a Provincial RWE Program

- Data are readily available, accessible, and high quality for patients across the entire province
- Use of data for research is strongly encouraged
- Release of data is relatively expedient
- Expertise in data cleaning and analyses
- Critical mass of researchers
- Leaders invested in RWE generation
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Secondary Use Data Project (SUDP)

• SUDP is a provincially led initiative to facilitate the enhanced and advanced secondary use of health data for the health and socioeconomic benefit of Albertans

• Still in formative stages of planning and development

• Initial focus on non-cancer patients
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CDI provides clinicians and researchers on demand access to a minimal dataset of cancer information, including demographics, diagnosis, treatment, and outcome data, to enable some preliminary analysis.
Welcome to the Breast Tumor Team Datamart!
Bringing Your Data To You

Demographics

No. of reported breast cancer primaries between 2004 and today: 34,842

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<tr>
<th>Age at Dx (yr)</th>
<th>No. Cases</th>
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<td>30-39</td>
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<td>40-49</td>
<td>8,228</td>
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<td>50-59</td>
<td>8,833</td>
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<table>
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Click here for Cohort Definition

Alberta Cancer Registry

Current Coding Year: 2015

% Cases Complete: 99%

Stage at Diagnosis

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<th>Stage</th>
<th>No. Cases</th>
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No. Cases to be Coded*: 44 2,650

ER/PR/HER2 Status

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<td>HER2+</td>
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No. Cases to be Coded*: 44 2,650

The Alberta Cancer Registry provides initial basic data on case incidence 2-3 days after diagnosis via a screening process; however, continues an in-depth coding and staging analysis following the patient’s cancer journey which may take up to 1 year to complete.

Go To

Shared Reports
My Reports
Run Dashboard
CDI
### Adjuvant Treatment by Type by Stage

#### Prompt Details

**Prompt 1: Diagnosis Year**


#### Table

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<tr>
<th>Diagnosis Year</th>
<th>ACR Initial Treatment Type</th>
<th>ACR Collaborative Stage Grouped</th>
<th>Metrics</th>
<th>% Receiving Adjuvant Therapy</th>
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<td><strong>Total</strong></td>
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Methodologists

• Forging strong partnerships with biostatisticians data engineers, and epidemiologists:
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Alberta Cancer Outcomes Research Network
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Provincial Pillars of Research

- Basic Science
- Clinical Trials
- Precision Medicine
- Real World Evidence
Early Successes

• Provincial projects:
  • Patterns of care and outcomes in Indigenous cancer patients (access and disparities)
  • Urban vs. rural differences in post-treatment surveillance (follow-up care)
  • Adoption and impact of new drug therapies on outcomes (quality of treatment)
  • Health services utilization and costs during different phases of cancer care (resource use)
Lessons Learned

• Barriers:
  • Data and research silos
  • Lack of analytical support
  • Ownership and authorship guidelines
  • Unrealistic expectations of data quality and complexity
Facilitators for Moving Forward... The 3 C’s

CONNECTING people and researchers

CREATING support and solutions

CATALYZING projects and priorities