Generating Real World Evidence to Promote Sustainability of Cancer Drug Funding

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• Why should we generate real world evidence (RWE)?
• How are we going to generate RWE?
Drug costs for claims approved under the New Drug Funding Program.

NDFP increase if aligned with provincial budget forecast for health sector (from 2016 budget) 1.8% (14/15-18/19)

NDFP projected growth based on historical increases 12% (10/11-14/15)

Cost of Approved Submitted Claims

Forecast on NDFP Growth

Forecast on Health Care Growth

Goal
Ensure a sustainable cancer system for future generations

Ontarians want to know that, should they ever face a diagnosis of cancer, high-quality care will be available to them. Even more, they want to know that these cancer services will be there for their loved ones in the future. In order to ensure the sustainability of our cancer system, we must slow the growing need for services while simultaneously ensuring we make the best use of our human, infrastructure and financial resources.

Successful strides with several strategies under OCP III have been made. For example, prevention initiatives, such as smoking cessation programs and sun safety messaging, aim to reduce the incidence of cancer. The release of Cancer Risk Factors in Ontario reports will form the basis for future policy advice and prevention initiatives. In addition, highly successful breast, cervical and colorectal screening programs are helping to prevent and detect cancers at earlier, more treatable stages. New and innovative models of care are ensuring breast and colorectal cancer survivors receive standardized high-quality followup care by their primary care providers.

We are also increasing our capacity to evaluate programs in order to determine which healthcare investments are having the most significant impact.

Over the next four years we need to be bolder in our approach to building a sustainable cancer system, using our resources wisely and ensuring patients receive appropriate care in the right setting. There is an opportunity to do this by expanding our prevention and screening efforts and developing innovative solutions to deliver high-quality services while ensuring the greatest benefit to patients and the cancer system.

At the same time, we need to measure and respond to patient-, provider- and system-related outcomes as well as conduct robust system planning and ongoing evaluation to inform future decisions.

By 2019...
We will have begun implementation of the chronic disease prevention strategy and have developed the evaluation framework.

Participation in breast, cervical and colorectal cancer screening programs will be increased and followup for those with an abnormal screening result will be improved.

Drugs funded through the Provincial Drug Reimbursement Program will be evaluated for the greatest benefit to patients and impact on healthcare resources.

Innovative, person-centred models of care will enable the right provider to deliver the right care, at the right time, in the right place.

Data-driven, system-level plans will be used to allocate key health human, infrastructure and financial resources for all cancer services.

Radiation, gynecology and medical oncologist positions will be expanded consistent with capacity planning models.
5. Real world evidence (RWE) should be used to inform and monitor the effects of funding decisions (this includes validating assumptions, evaluating the benefits of funded therapies, revisiting funding decisions, informing future funding decisions).

  *Accountabilities: CCO, MOHLTC, CAPCA*

6. A consistent process for disinvestment (or “reinvestment”) and renegotiation of prices with buy-in from the public, patients and clinicians should be explored (i.e., delisting drugs should be considered alongside the prioritization of new drugs).

  *Accountabilities: CCO, MOHLTC, CAPCA, pCODR/CADTH*
Collecting Evidence to Reduce Uncertainty in the Clinical Benefit and Cost-Effectiveness of Bosutinib

Given the considerable uncertainty in the magnitude of clinical benefit of bosutinib in patients with chronic, accelerated, or blast phase Philadelphia chromosome-positive (Ph+) chronic myelogenous leukemia (CML), pERC concluded that any additional prospective evidence that could be collected to decrease the uncertainty in the incremental effect would be of benefit in understanding the true cost-effectiveness of bosutinib. Specific information on efficacy, safety and quality of life would be of particular value.

Pricing Arrangements to Limit Budget Impact

Given that pERC was satisfied that there is a net clinical benefit of bosutinib in patients with chronic, accelerated, or blast phase Philadelphia chromosome-positive (Ph+) chronic myelogenous leukemia (CML), jurisdictions may want to consider pricing arrangements and/or cost structures that may help reduce the uncertainty in the budget impact of bosutinib.
HTA Committee Requesting Real World Evidence

- pCODR 60 reviews (Up to Feb 2016)
  - Total of 21 pCODR reviews requested Real World Evidence
    - 13 pCODR reviews *explicitly* requested Real World Evidence
    - 10 pCODR reviews *potentially* requested Real World Evidence

Potential RWE Request:
Unclear if pERC requested RWE, but it could be beneficial
Next Steps for Real World Evidence Collection

- Inform magnitude of clinical benefit and cost-effectiveness or the true cost-effectiveness
- Define the potential clinical benefit or magnitude of clinical benefit
- Define the population or disease
- Inform duration of treatment
- Inform duration of treatment and cost-effectiveness
- Inform sequencing of available therapies

23 requests for RWE for 21 reviews
RWE: Potential Deliverables (verify economic models)

- Number of Cycles
- Number of Patients
- Number of Cycles
- Dose Intensity
- Or Dose Reduction
- Changes in Utilization of other Drugs
RWE: Potential Deliverables (effectiveness, safety, quality of life, cost-effectiveness)

- Real World Survival Data
- Real World Side Effects & Toxicities
- Real World Quality of Life
- Real World Utilization (Based on real world patterns of care & toxicities)
- Real World Cost-effectiveness data
How are we going to generate RWE?

• Provincially
  • Using Drug Database (NDFP) and Population-Based administrative databases available in CCO and ICES

• Nationally
  • Collaborate with multiple provinces to generative RWE nationally
Real World Comparative Effectiveness vs. RCT

Efficacy data (Provincial)

Sources:
- Khor et al, BMC Cancer 2014
Real world cost-effectiveness (Provincial)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Extra Cost</th>
<th>Extra Survival</th>
<th>ICER ($/LYG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All ages</td>
<td>$16,298</td>
<td>0.26</td>
<td>$61,984</td>
</tr>
<tr>
<td>&lt;60</td>
<td>$9,172</td>
<td>0.29</td>
<td>$31,789</td>
</tr>
<tr>
<td>60-79</td>
<td>$18,812</td>
<td>0.23</td>
<td>$80,601</td>
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<tr>
<td>80+</td>
<td>$40,017</td>
<td>0.36</td>
<td>$110,071</td>
</tr>
</tbody>
</table>

CHOP vs RCHOP: Total cost

Khor et al. BMC Cancer 2014, 14:586
## Ongoing Work (Provincial)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Cancer</th>
<th>Pivotal Study Median Overall Survival</th>
<th>Real World Median Overall Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Colorectal Cancer</td>
<td>Panitumumab</td>
<td>10.4 months (Price et al, 2014)</td>
<td>5.9 months</td>
</tr>
<tr>
<td>Metastatic Pancreatic Cancer</td>
<td>Nab-Paclitaxel + Gemcitabine</td>
<td>8.5 months (von Hoff et al, 2013)</td>
<td>5.9 months</td>
</tr>
<tr>
<td>Metastatic Pancreatic Cancer</td>
<td>FOLFIRINOX</td>
<td>11.1 months (Convoy et al, 2011)</td>
<td>8.5 months</td>
</tr>
<tr>
<td>Myelodysplasia</td>
<td>Azacitadine</td>
<td>24.5 months (Fenaux et al, 2009)</td>
<td>11.6 months</td>
</tr>
</tbody>
</table>

Supported by CCO PDRP/PE, ARCC, Mozessohn et al.
Ongoing work (National)

- Bevacizumab (ON, BC, SK)
  - Supported by CPAC, ARCC, CCO PDRP/PE

- Ibrutinib (AB, SK, MB, ON)
  - Supported by multiple cancer agencies and ministries, Janssen, ARCC
Envisioning the future state for cancer RWE

**Current State**
- Consideration of drugs individually and sequentially
- Rare reassessments of funding
- RWE consideration come late in evaluation process
- RWE, when it occurs, tends to focus on utilization and costs
- Financial risk wholly assumed by payer
- Few pan-Canadian data linkages
- Lack of dedicated resources
- Limited coordination & cooperation

**Possible Future State**
- Disease-pathway consideration of drugs
- All funding is “conditional”
- Early planning of RWE approach that is built into decision-making process
- RWE examines outcomes and value
- RWE evaluations inform funding reassessments
- More sophisticated risk-sharing
- Pan-Canadian collaboration and resourcing
- Dedicated resources in place to complete RWE work
Ongoing Collaborations

- CAPCA
- CPAC
- Provincial Cancer Agencies
- Provincial Ministries of Health
- pCPA (national price negotiation)
- Applied Researchers (e.g., ARCC)
- HTA (pCODR/CADTH, OSCCD)
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- Danica Wasney (Manitoba CA)