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A revealed preferences analysis of formulary recommendations of the pan Canadian Oncology Drug Review

AFFORD
Appropriate e**F**fective e**F**ficient **O**ncology **R**eimbursement **D**ecisions
www.cancerdrugfunding.ca

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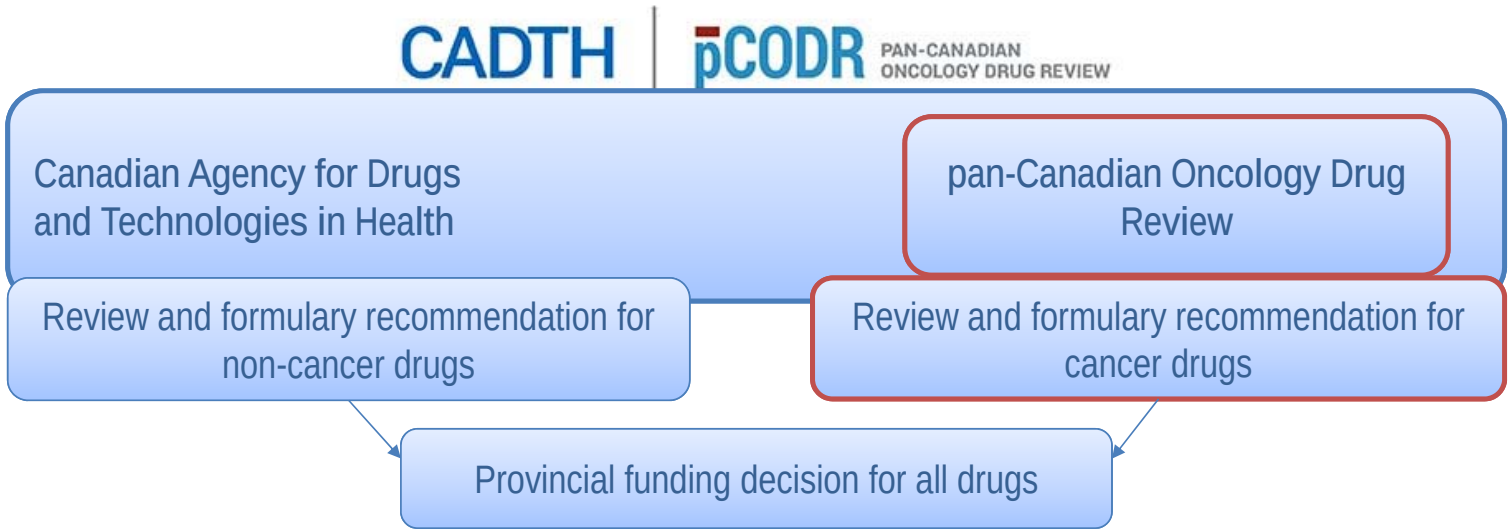
BACKGROUND



Rationale

- Support consistency across Provinces and Territories
- Speed up review process
- Cancer drugs have unique features

Review Criteria

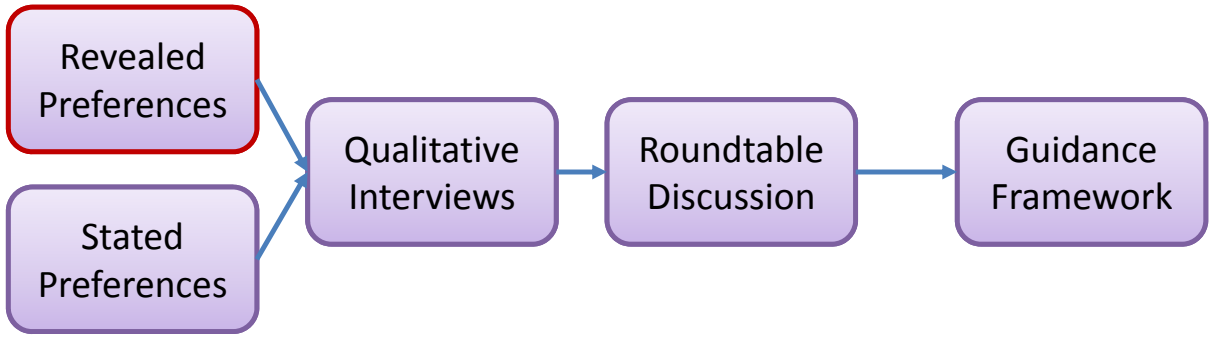
- Clinical Benefit
- Economic Evaluation
- Patient-based Values
- Adoption Feasibility

pCODR – Revealed Preferences (Skedgel Wranik Hoch Hu 2014)

RESEARCH GOAL

AFFORD STUDY

To assess the current pCODR process and identify potential improvements



REVEALED PREFERENCES

To highlight the relative importance assigned by pCODR to multiple decision criteria

Objectives

1. To identify relevant variables reported on by pCODR with each recommendation
2. To extract quantitative variables, and quantify qualitative ones
3. To estimate weights implicitly assigned by pCODR to relevant variables

LITERATURE

QUALITATIVE STUDIES OF FORMULARY COMMITTEES

- Canadian studies of pCODR and other formulary processes Jurisdictions generally followed recommendations
- Recommendations were not consistent across regions;
- Recommendations have been based primarily on clinical benefit
- Use of economic evidence compromised by insufficient availability, and challenges with interpretation

- (Armstrong et al., Bryan et al., 2007, Chabot and Rocchi, 2014, Hoch et al. 2012, Hoch and Sabharwal, 2013, McMahon et al., 2006, Martin et al., 2001, PausJenssen et al., 2003, Singer 2000, Tierney et al. 2008, West et al., 2002, Tierney et al. 2008)

QUANTITATIVE STUDIES OF FORMULARY COMMITTEES

- Three revealed preferences studies of NICE decisions;
- Cost-effectiveness negatively impacts decision An implicit ICER threshold is found Quality of clinical evidence, and patient preferences positively impact decision

- (Dakin et al., 2014, Devlin et al., 2004, Dakin et al., 2006)

POTENTIAL VARIABLES

Criterion	Variables	Frequencies	%
Clinical Benefit	Relative survival gain (heterogeneous)	43 are *>100%*	*86*
	Side effects	12 are *High*	*14*
	Unmet need	13 are *Yes*	*26*
Economic Evaluation	ICER < $100K/QALY	9 are *Yes*	*18*
	ICER < $150K/QALY	17 are *Yes*	*34*
	ICER $100K-$200K/QALY	22are Yes	44
Patient-based Values	Burden to patient	24 are *High*	*48*
	Type of drug (oral or IV)	24 are *IV*	*48*
Adaptation Feasibility	Budget Impact	42 are *High*	*84*
	Infrastructure requirements	30 are *High*	*60*
pCODR Decision	**Fund**	**11**	**22**
	Conditional	**29**	**58**
	Do not fund	**10**	**20**

pCODR – Revealed Preferences (Skedgel Wranik Hoch Hu 2014)

CHALLENGES

KEY CHALLENGE – CODING OF VARIABLES

- Coding of qualitative reports;
- Clinical benefit data are heterogeneous across drugs;
- Current code: relative survival gain (new drug versus comparator);
- Patient values discussions diverse across submissions;

KEY CHALLENGE – pCODR RECOMMENDATIONS

- Majority of recommendations are “non-decisions” i.e. conditional approval (58%);
- Majority of submissions have some clinical benefit (challenging to code consistently);
- ICER values incorporate clinical benefit;

PROPOSED MODELS

Model	**Dependent Variable**	**References**
Binary Logit	0 if recommendation is *fund* or *conditional* 1 if recommendation is *do not fund*	• Devlin et al., 2004 binary choice models of NICE decision making • Dakin et al., 2014 Logistic regression of ICER and factors of NICE decision making
Binary Logit	0 if recommendation is *do not fund* or *conditional* 1 if recommendation is *fund*	
Multinomial Logit	1 if recommendation is *fund* 2 if recommendation is *conditional* 3 if recommendation is *do not fund*	• Dakin et al., 2006 Multinomial modelling of a three categories NICE decision making

WORK IN PROGRESS – Validating the variables

DESCRIPTIVE RESULTS

Is there something that moves drugs out of the “conditional” category?

ICER ($)	APPROVE	CONDITIONAL	REJECT	TOTAL
Unreported	3	0	1	4
< 50,000	2	1	0	3
50,000 - 100,000	4	2	0	6
100,000 - 150,000	2	4	2	8
150,000 – 200,000	0	11	3	14
> 200,000	0	11	4	15
Total	11	29	10	50

pCODR – Revealed Preferences (Skedgel Wranik Hoch Hu 2014)

DISCUSSION

WHAT IS THE INCREMENTAL COST EFFECTIVENESS RATIO?

- Ratio of cost differential to clinical benefit differential;
- Cost differential between new drug and comparator;
- Clinical differential between new drug and comparator;
- Clinical benefit usually discounted by quality of life measures;
- Can we have a good ICER without a positive clinical benefit?

WHAT WOULD IT MEAN, IF ICER WAS A DRIVING FACTOR?

- Could ICER drive the decision to make a decision (reject/accept as opposed to conditional)?
- A good economic analysis SHOULD be a key decision factor, since it incorporates:
  - Clinical benefit;
  - Cost consideration;
  - Patient centered outcomes;