

# An Investigation of Value for Money of Oncology Drugs in Canada

EE53

## Background

- As the leading cause of death in Canada, cancer places a significant burden on affected Canadians and the healthcare system [1]
- Newer therapies to treat cancer come at an increasing cost
- The cost of cancer care is increasing to unsustainable levels due, in part, to rising oncology drug prices [2]
- Although the cost of oncology drugs is increasing, there is concern that the clinical benefit of these treatments is not increasing at the same rate [3-5]

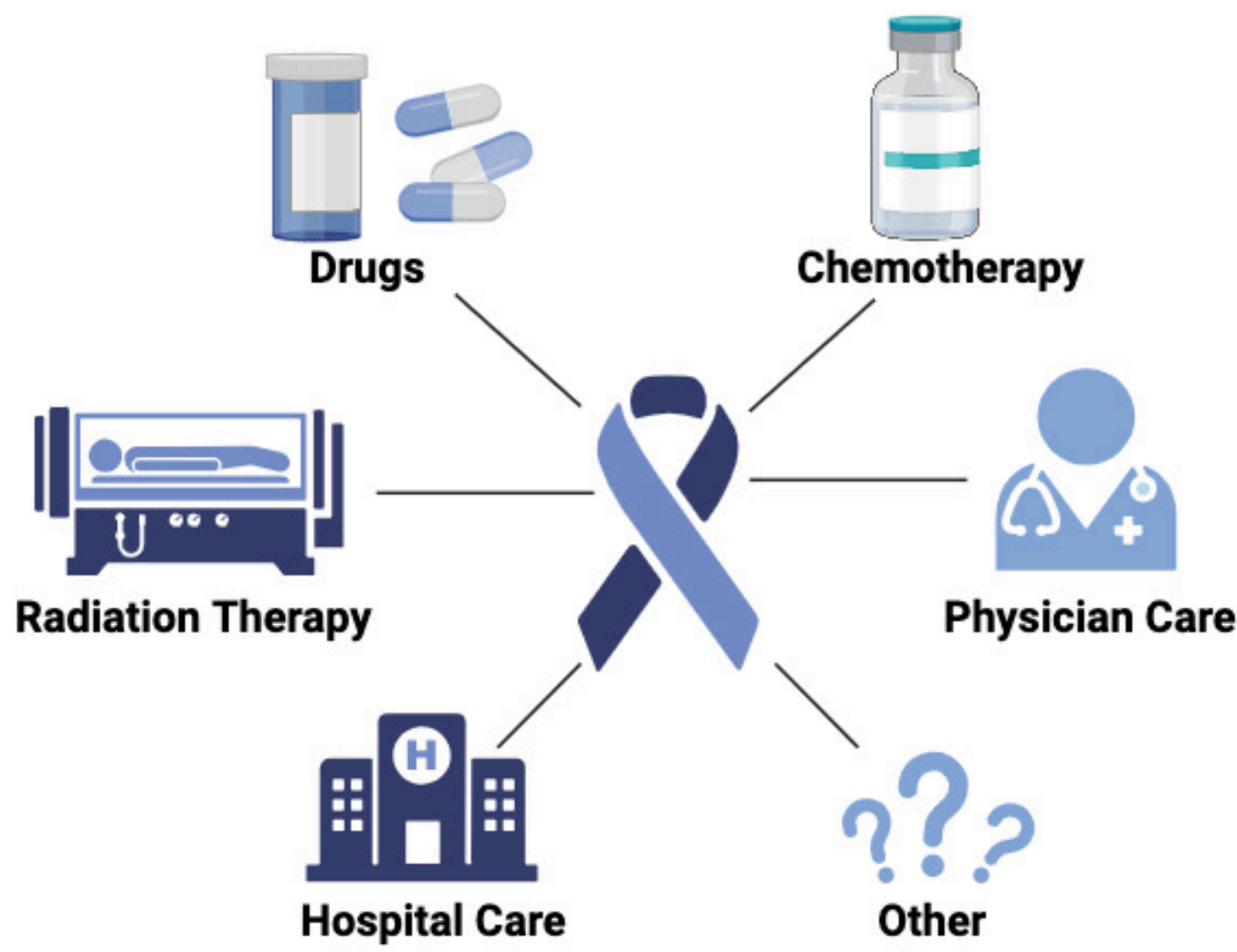


Figure 1.1. Sources of cancer care spending in Canada [2].

## Aims & Methods

### Aims

- Characterize the oncology drugs that have undergone reimbursement review in Canada over a 10-year period to assess trends
- Review their costs and clinical benefits to assess trends in the value for money of oncology drugs

### Methods

- In Canada, new oncology drugs undergo assessment by the pan-Canadian Oncology Drug Review (pCODR) which makes a funding recommendation to the provinces
- We reviewed all consecutive oncology drugs that underwent pCODR assessment between January 2012 and August 2019
- Drug characteristics, clinical benefit, and cost were collected through a retrospective review of pCODR Expert Review Committee (PERC) documents available through the Canadian Agency for Drugs and Technologies in Health (CADTH)

## Results

Table 2.1. Characteristics of drugs reviewed by pCODR between 2012-2019.

Characteristics	No. of Drugs (n=141)	%
<b>Submission Type</b>		
New submission	131	92.9
Resubmission	10	7.1
<b>Disease Site</b>		
Breast	14	9.9
Lung	13	9.2
Gastrointestinal	18	12.8
Genitourinary	15	10.6
Hematological	31	22.0
Skin	18	12.8
Neurological	1	0.7
Musculoskeletal	4	2.8
Thyroid	3	2.1
Lung and lymphoma	20	12.7
Prostate	4	2.8
<b>Drug Class</b>		
Monoclonal antibody	41	29.1
Small molecule inhibitor	71	50.4
Cytotoxic	15	10.6
Hormonal	5	3.5
Radiopharmaceutical	1	0.7
Other	8	5.7
<b>Line of Treatment</b>		
First line	60	42.6
Second line	17	12.1
Third line	1	0.7
Fourth line	1	0.7
First line and relapse/refractory	2	1.4
>first line	47	33.3
>second line	10	7.1
>third line	3	2.1
<b>Therapeutic Intent</b>		
Curative	14	9.9
Palliative	126	89.4
Supportive	1	0.7
<b>Average Cost (n=138)</b>	\$119,599.30 (SD = \$93,250.99)	
<b>Average QALY (n=124)</b>	0.65 (SD = 0.67)	
<b>Average LYG (n=91)</b>	0.87 (SD = 1.0)	
<b>Average ICUR (n=138)</b>	\$273,003.90 (SD = \$257,249.00)	
<b>Average ICER (n=92)</b>	\$221,278.20 (SD = \$165,090.30)	

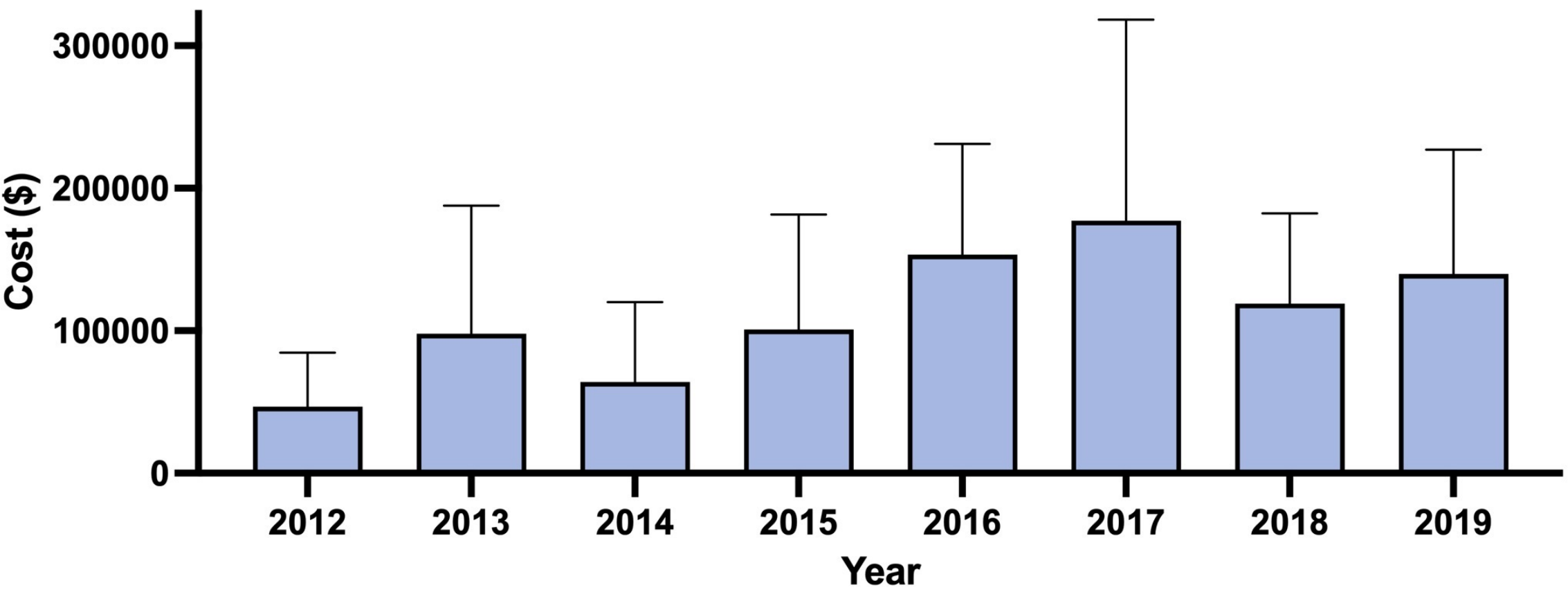


Figure 2.2. Average cost of drugs submitted to pCODR in each year (in 2022 Canadian dollars).

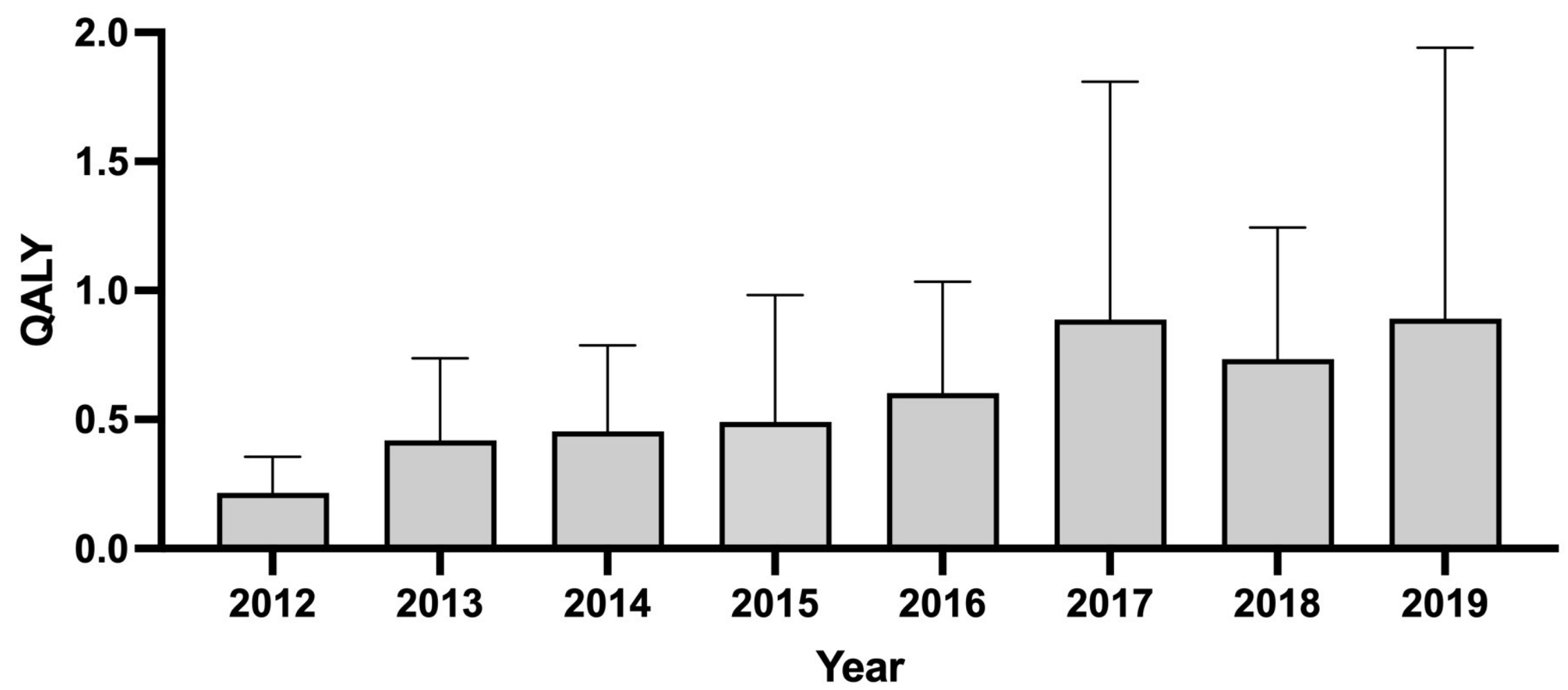


Figure 2.3. Average quality-adjusted life year (QALY) attributable to drugs submitted to pCODR in each year.

Table 2.2. Clinical characteristics of the study drugs.

Characteristics	No. of Drugs (n=141)	%
<b>Health-Related Quality of Life</b>		
Improved	46	32.6
Unchanged	51	36.2
Worse	6	4.3
Not available	38	27.0
<b>Toxicity Gain</b>		
Improved	14	9.9
Comparable/Unchanged	44	31.2
Worse	76	53.9
Not available	7	5.0
<b>Life Years Gained</b>		
>15 months	18	12.8
12-15 months	11	7.8
9-12 months	16	11.3
6-9 months	20	14.2
3-6 months	32	22.7
≤3 months	26	18.4
None	4	2.8
Not available	14	9.9

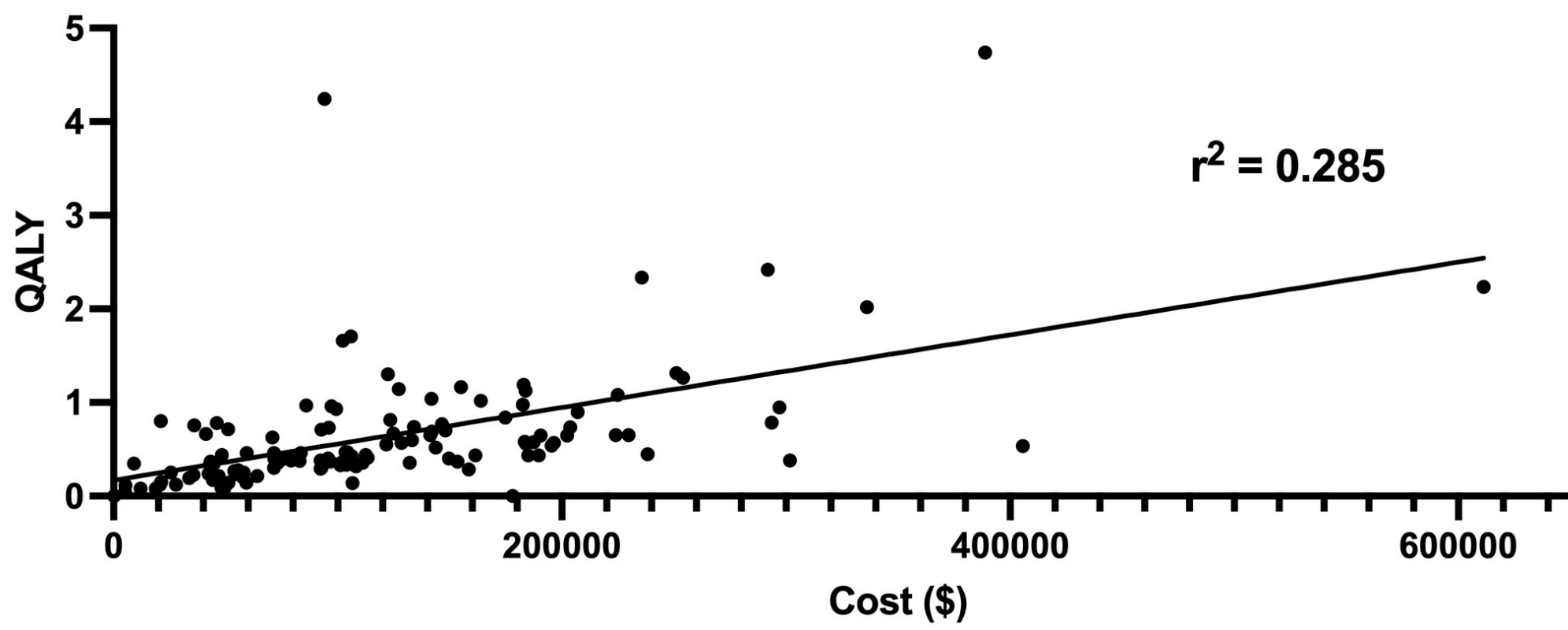


Figure 2.5. Cost per 28-day course compared to QALY (n=123,  $r^2 = 0.285$ ).

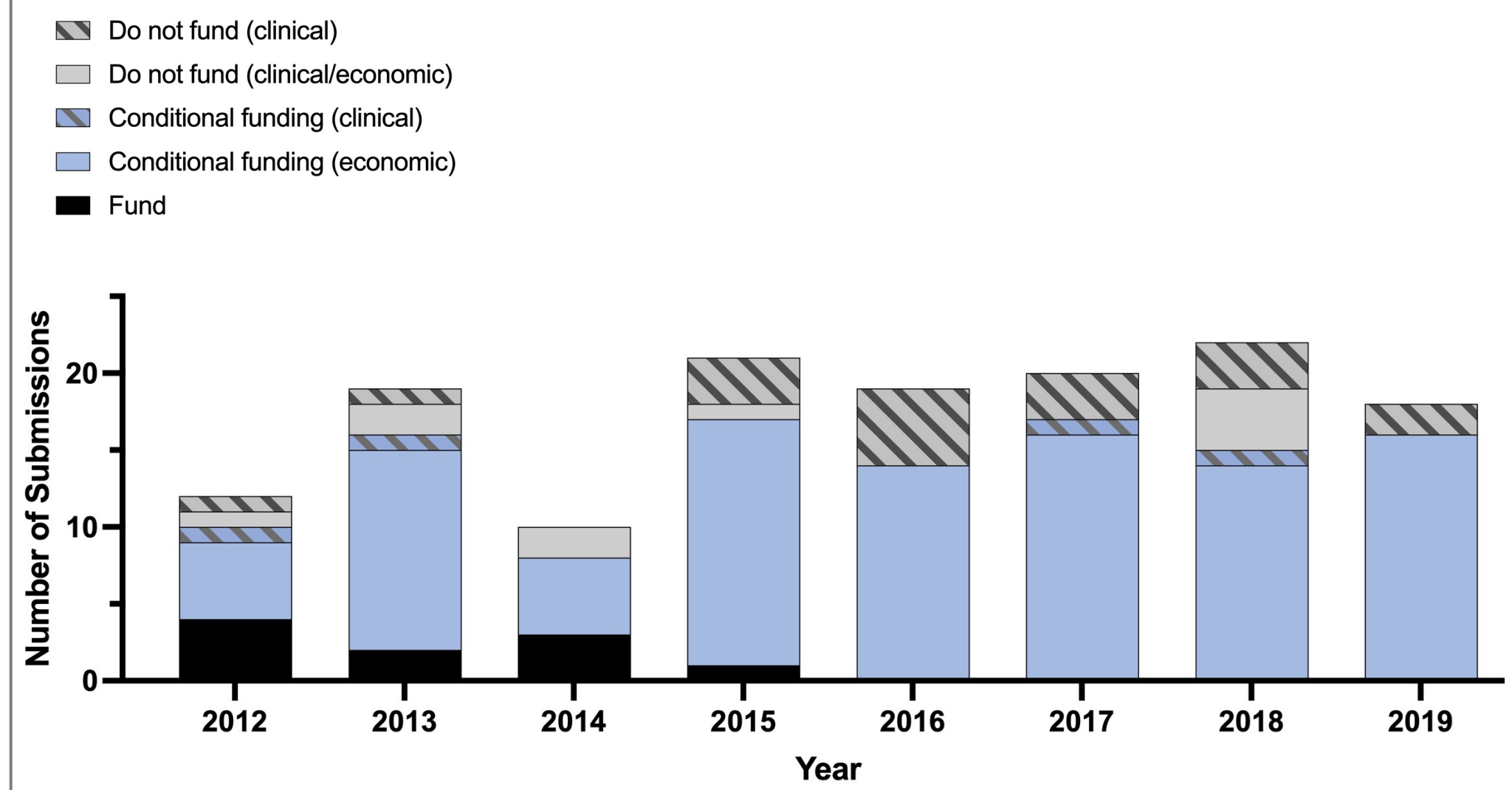


Figure 2.1. Drug reimbursement recommendations from pCODR over time.

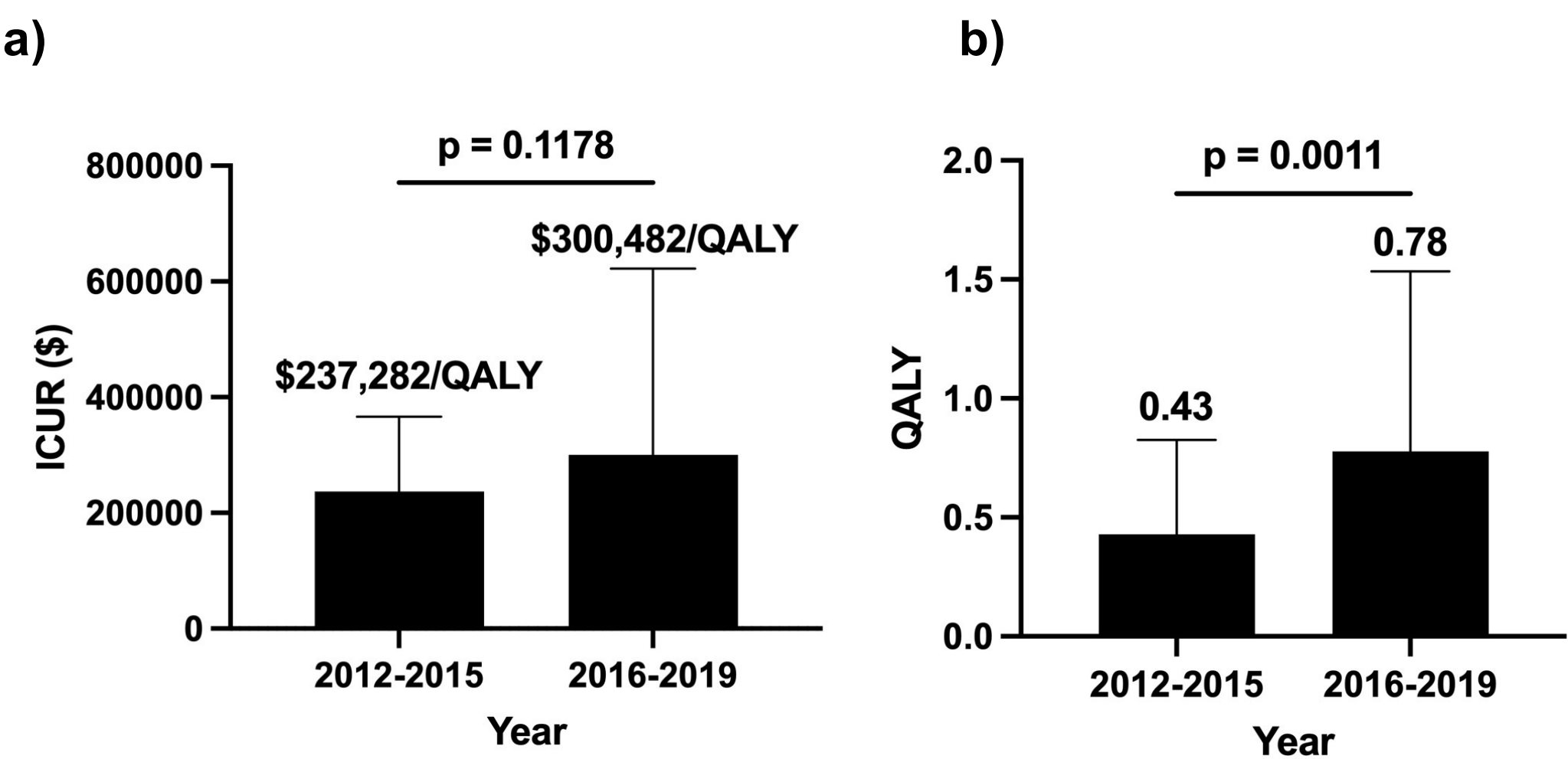


Figure 2.4. Average (a) incremental cost-utility ratio (ICUR) and (b) QALY in the first and second half of the study period.

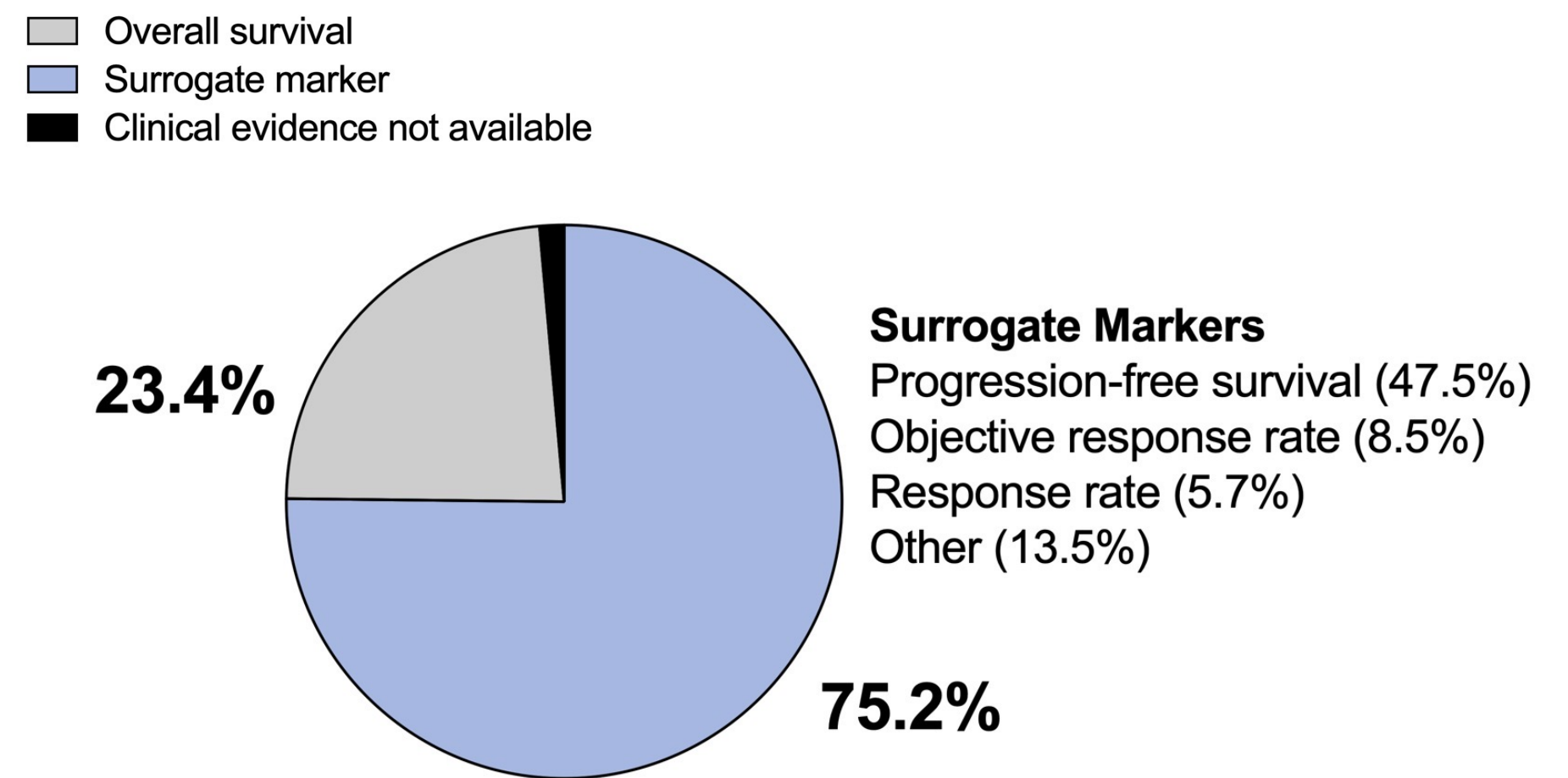


Figure 2.6. Best clinical evidence available for the drugs submitted to pCODR (n=141) and corresponding surrogate markers used.

## Conclusions

- Most drugs that undergo pCODR assessment receive a conditional funding recommendation, primarily due to poor cost-effectiveness
- The cost of oncology drugs reviewed by pCODR has been increasing over the years but so has the QALY associated with those drugs
- There is a small but positive association between the cost and QALY associated with the submitted drugs
- Many of the drugs reviewed did not demonstrate improvements in toxicity or health-related quality of life over the standard of care
- Most of the drugs submitted to pCODR used surrogate markers rather than overall survival to assess clinical benefit
- With the rise in cancer spending, provinces should make more judicious choices when making reimbursement decisions, considering not only the drug price but also the clinical benefit and value for money

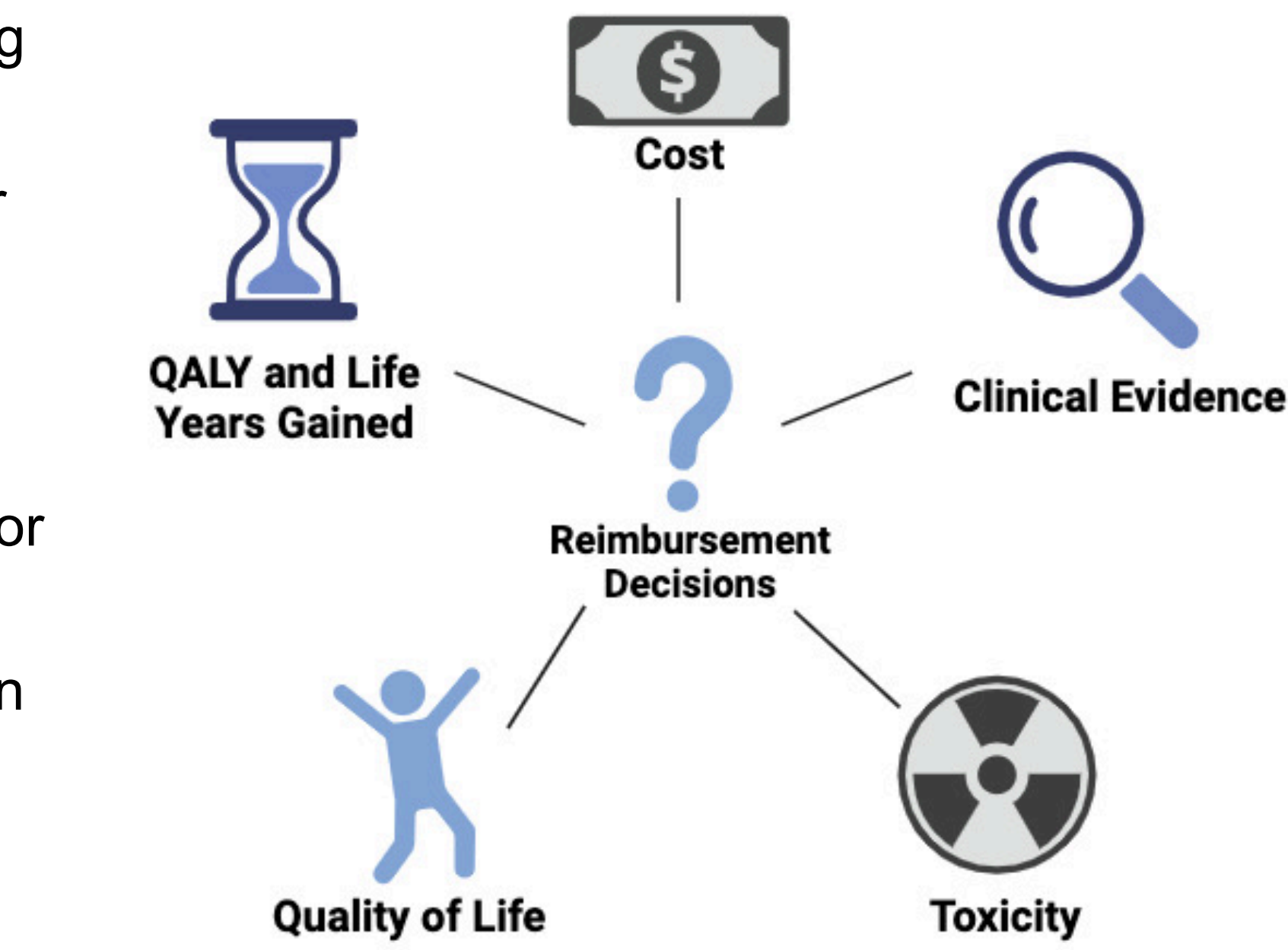


Figure 3.1. Factors which should be considered in reimbursement decisions.

## References

- Cancer statistics at a glance: Canadian Cancer Society; [Available from: <https://cancer.ca/en/research/cancer-statistics/cancer-statistics-at-a-glance>].
- de Oliveira C, Weir S, Rangrej J, Krahn MD, Mittmann N, Hoch JS, et al. The economic burden of cancer care in Canada: a population-based cost study. CMAJ Open. 2018;6(1):E1-E10.
- Vokinger KN, Hwang TJ, Grischott T, Reichert S, Tibau A, Rosemann T, et al. Prices and clinical benefit of cancer drugs in the USA and Europe: a cost-benefit analysis. Lancet Oncol. 2020;21(5):664-70.
- Salas-Vega S, Shearer E, Mossialos E. Relationship between costs and clinical benefits of new cancer medicines in Australia, France, the UK, and the US. Soc Sci Med. 2020;258:113042.
- Meyers DE, Jenei K, Chisamore TM, Gyawali B. Evaluation of the Clinical Benefit of Cancer Drugs Submitted for Reimbursement Recommendation Decisions in Canada. JAMA Intern Med. 2021;181(4):499-508.

## Acknowledgements

We would like to acknowledge the support of our funding resources, the University of Ottawa Faculty of Medicine Summer Studentship Program.