

# A SYSTEMATIC REVIEW OF ECONOMIC EVALUATIONS BASED ON DECISION-ANALYTIC MODELING OF CANCER DRUGS

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## Introduction

• The special relevance and the great economic impact of the recent marketed Oncology medicines make essential their Economic Evaluations (EEs) to demonstrate the added value of these drugs.

## Methods

- An extensive literature search was conducted in PubMed over the period spanning 2015–2017 (**Figure 1**) to identify EE studies in the Oncology field in ten selected journals specialized on Health Economics and/or Oncology (*Annals of Oncology, BMC Cancer, Clinical Translational Oncology, European Journal of Cancer, European Journal of Health Economics, JAMA Oncology, Journal of Clinical Oncology, Journal of Medical Economics, PharmacoEconomics, Value in Health*).
- Budget Impacts and Cost Analysis were excluded from the analysis.
- Consolidated Health Economic Evaluation Reporting Standards guidelines (CHEERS)<sup>(1)</sup> and a good practice check-list in DAM<sup>(2)</sup> were used to identify the main items mentioned in these studies.

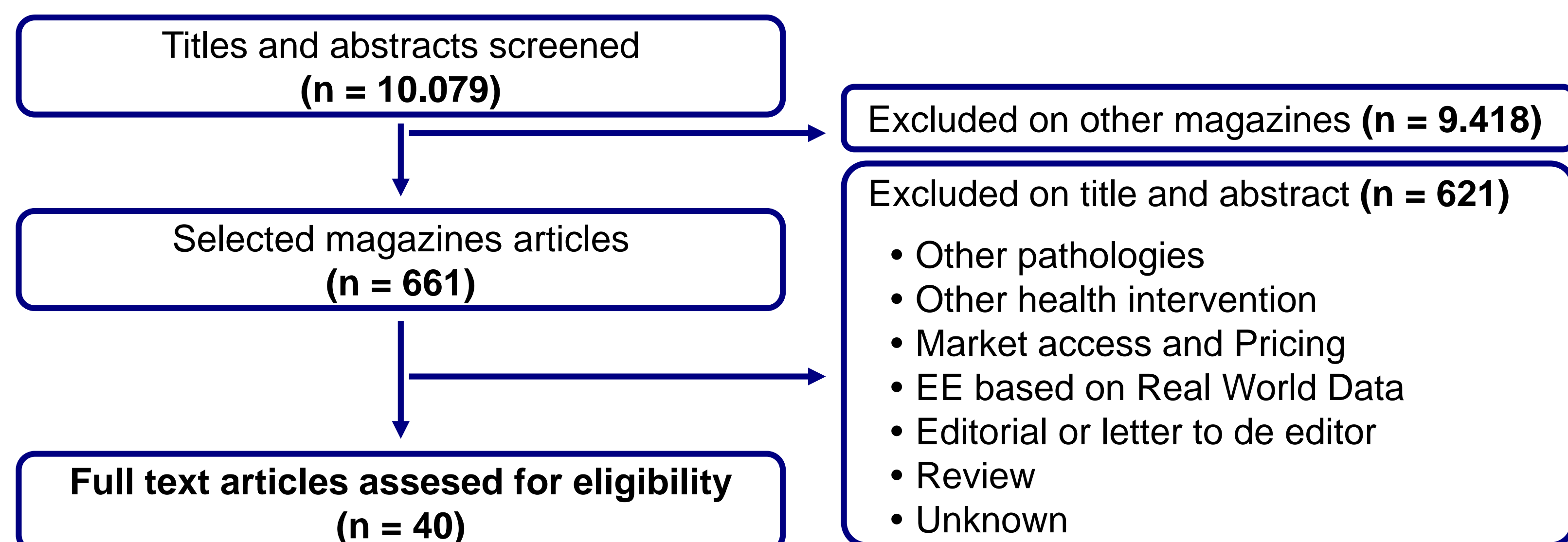
**Figure 1.** Bibliographic search (16<sup>th</sup> May 2018).

((("Neoplasms"[Mesh] OR "neoplasm"[All Fields] OR "cancer"[All Fields] OR "oncology"[All Fields]) AND (((("economics"[MeSH Terms] OR ("cost-benefit analysis"[MeSH Terms] OR ("cost-benefit analysis"[All Fields] AND "analysis"[All Fields]) OR "cost-benefit analysis"[All Fields] OR ("cost"[All Fields] AND "effectiveness"[All Fields]) OR "cost effectiveness"[All Fields])) OR ("cost-benefit analysis"[MeSH Terms] OR ("cost-benefit analysis"[All Fields] AND "analysis"[All Fields]) OR "cost-benefit analysis"[All Fields] OR ("cost"[All Fields] AND "benefit"[All Fields]) OR "cost benefit"[All Fields])) OR ((("economics"[Subheading] OR "economics"[All Fields] OR "cost"[All Fields] OR "costs and cost analysis"[MeSH Terms] OR ("costs"[All Fields] AND "cost"[All Fields] AND "analysis"[All Fields]) OR "costs and cost analysis"[All Fields]) AND utility[All Fields])) OR ("costs and cost analysis"[MeSH Terms] OR ("costs"[All Fields] AND "cost"[All Fields] AND "analysis"[All Fields]) OR "costs and cost analysis"[All Fields] OR ("cost"[All Fields] AND "analysis"[All Fields]) OR "cost analysis"[All Fields])))) AND "2015/01/01"[PDAT] : "2017/12/31"[PDAT])

## Results

- The literature search generated 661 studies and 40 of which meeting the selected criteria were analysed (**Figure 2**).

**Figure 2.** Flow chart.



- The studies were classified according to the type of EE, type of DAM and tumour (**Table 1**).

• All studies mentioned the parameters included in the CHEERS guidelines with a few exceptions: one of them did not report the discount rate, two did not describe the source of funding and two did not report the potential conflict of interest.

• Regarding the specific Check-List for DAM studies, none of the EE incorporated all its items, e.g., the half-cycle correction was not reported in 33/40 EE; eight did not provide a graphical description of the model; the adverse events of the interventions were not incorporated in four; the probabilistic sensitivity analysis was missing in three and the deterministic one in other three studies.

## Conclusions

- This study showed that some important concepts have not been incorporated or their use has not been properly justified in most of EE of Oncology drugs, based on DAM.
- Due to the new characteristics of the recent marketed Oncology medicines, such as Immuno-Oncology therapies, the development of a specific Check-List to evaluate these EE is necessary to ensure their quality.

## References

(1) Husereau D. et al. *Value in Health*. 2013;16(2):231-50.

(2) Ramos MCP. et al. *Value in Health*. 2015;18(4):512-29.

**Table 1.** Classification of the studies.

TYPE OF EE	2015	2016	2017
Cost-Effectiveness Analysis	4	3	7
Cost-Utility Analysis	10	8	20
Cost Minimization Analysis			1

TYPE OF DAM	2015	2016	2017
Markov	8	4	7
Partitioned Survival	2	2	5
Discrete Event Simulation			4
Semi-Markov			3
Decision Tree			2
Decision Tree / Markov		1	1
Partitioned Survival / Markov		1	

TUMOUR	2015	2016	2017
Breast	1	3	4
Lung	3	2	3
Colorectal	3		3
Melanoma	1	1	3
Prostate		1	3
Pancreas			2
Gastro / Oesophageal			2
Ovary		1	1
Uterus			1
Glioblastoma	1		
Soft Tissue Sarcoma	1		