Examining the Cost-Effectiveness of Biomarker Testing in Oncology Studies: Should the Health Systems Invest in It?

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OBJECTIVES

Predictive biomarkers testing approach in the oncology field could represent **a virtuous model** to invest in for the **treatment optimization** and improvement in the **patients'quality of life**. However, in an era of clearly limited resources the debate about the value of immunotherapy in cancer care is deepen discussed. We aimed to describe literature evidence about the cost-effectiveness of biomarkers use in solid tumours and evaluated the opportunity **cost of testing** by discounting the detected costs.

METHODS

A two-step approach was designed:

i. **A systematic literature review** (PROSPERO ID: CRD42020201549) according to the PRISMA statement guidelines querying PubMed and Embase (2010-2020), using PICO Model to identify economic evaluations (EE) on biomarker testing in oncology;

ii. **Uncertainty evaluation**: addressing the issue of EEs-uncertainty in terms of parameters used such as type of cost outcomes and discount rate.

RESULTS

The abstracts and full-text screenings has yielded:

- ✓ **60 articles** identified with PICO Model
- ✓ **74%** of them were cost-effectiveness analysis
  - ✓ **84%** of those based on a Markov model
- ✓ **65%** of the economic evaluations rated **predictive-biomarker testing as cost-effective**

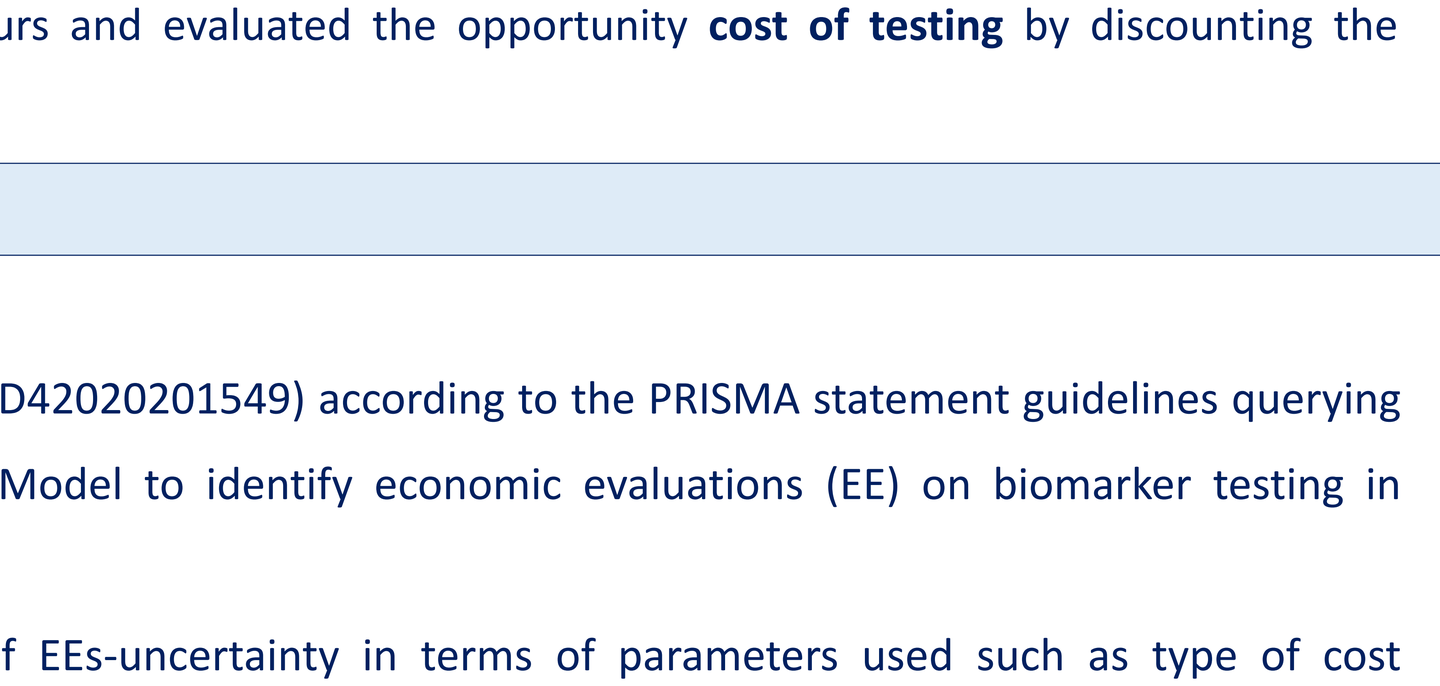

Figure 1. Global distribution of papers reporting an economic evaluation of an ICI associated to a biomarker test.

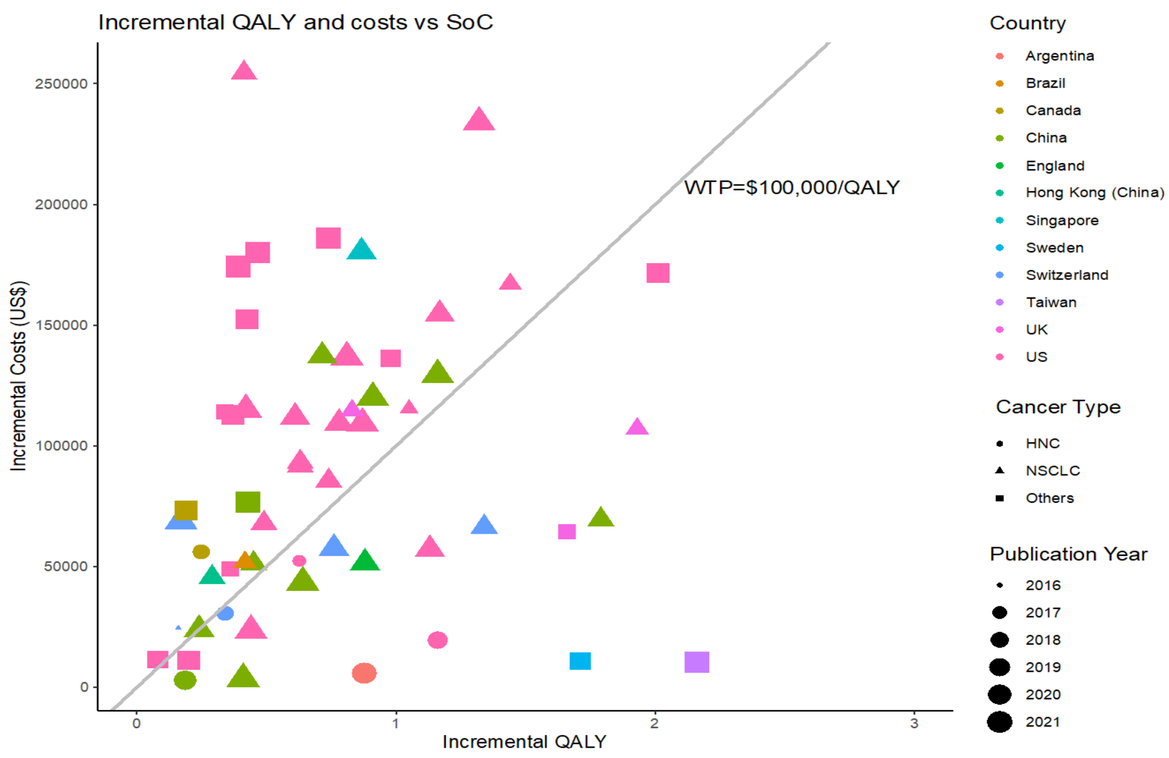

Figure 2. Cost-effectiveness plane

➢ The EEs-cost analysis process will allow for uniform unit currency of cost outcomes considering the actual discount rate having an assessment of cost-efficacy of predictive-biomarkers profiles.

CONCLUSIONS

Despite the critical role of the cost-effectiveness of predictive biomarkers indecision making, no systematic review has compared the cost-effectiveness by discounting the costs in the current scenario and assessing its feasibility in terms of resource allocation.