Erasmus School of
Health Policy
& Management

One size does not fit all: The cost-effectiveness of several indications of Pembrolizumab in the Netherlands

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Tumor-agnostic novelty (1): a blessing ….

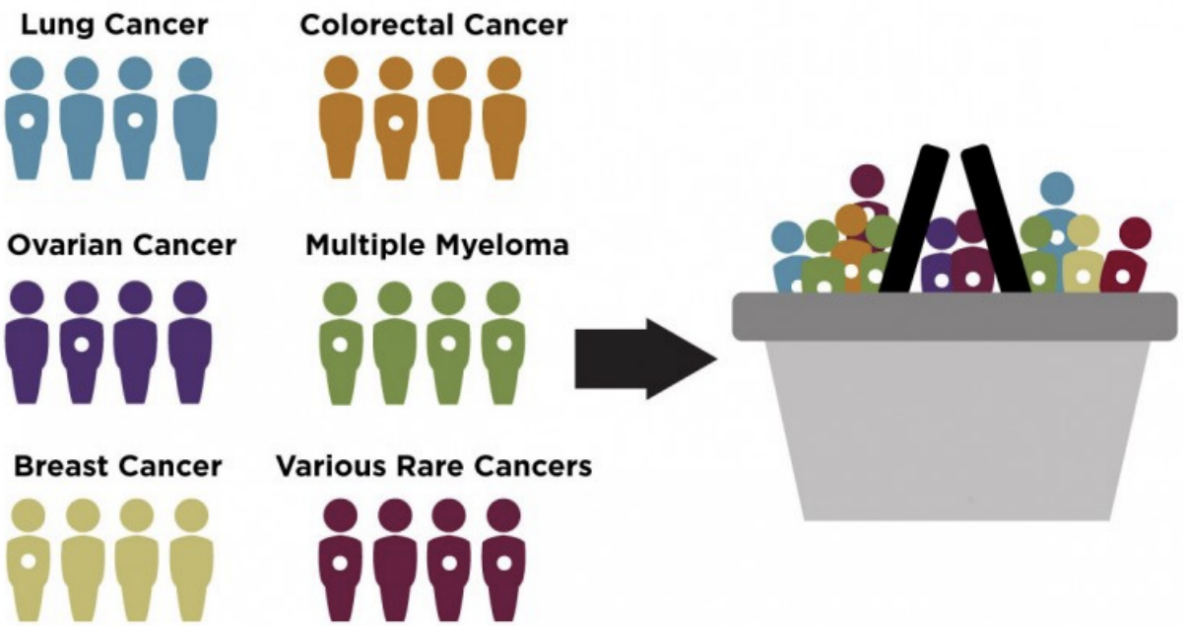


Image: CoFactor Genomics, 2019

Cost-effectiveness analysis approach in The Netherlands

Knowledge gap

- One single financial arrangement for all new indications up until end of 2023

- Therefore:
  → Approval based on added clinical value
  → No new CE-analyses for new indications

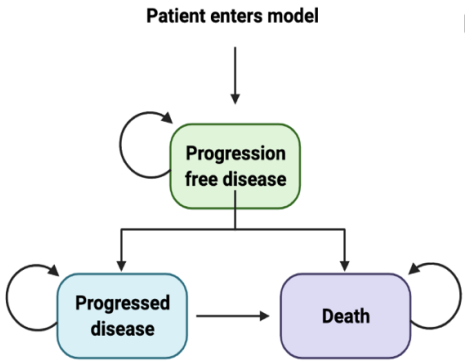
- Current extent of cost-effectiveness of pembrolizumab in The Netherlands is unknown

- Research question:

  What is the cost-effectiveness of pembrolizumab in The Netherlands?

Methods

- Performing multiple CE-analyses using a Markov model
  - Lifetime horizon, healthcare perspective
- First-line NSCLC indication served as framework
- 7 other indications across 4 different histologies
  - 1L HNSCC, NSCLC, RCC and melanoma
  - 2L HNSCC and NSCLC
- These indications were subjected to:



Fixed parameters	Variable parameters
Utilities of each health state	Parametric distributions of OS and PFS based on KM-curve
Costs associated with adverse events	Treatment duration based on PFS
Drug acquisition costs of pembrolizumab	Costs associated with comparator
Costs associated with end of life	

HNSCC, head and neck squamous cell cancer; RCC, renal cell carcinoma

Results

- Same CE-approach yields wide range of ICERs
  - € 126,474/QALY to € 2,600,719/QALY

Indication	Obtained ICER
NSCLC (1L)	€ 126,474 / QALY
HNSCC (2L)	€ 136,723 / QALY
NSCLC (2L)	€ 337,885 / QALY
HNSCC (1L), with platinum-containing chemotherapy	€ 426,508 / QALY
RCC (1L), with axitinib	€ 662,678 / QALY
NSCLC (1L), with platinum-containing chemotherapy	€ 2,600,719 / QALY
Melanoma (1L)	- € 400,524 / QALY
NSCLC (1L), with carboplatin and paclitaxel	- € 4,322,049 / QALY

Discussion

- What could drive this difference in obtained ICERs?
  1. Cancer histology?
  2. Line of treatment?
  3. Treatment context?
  4. Efficacy data?
     - RCTs funded by Merck Pharmaceuticals, follow-up of 1-3 years
     - Most conservative scenario of survival data of pembrolizumab
     - Little difference in accrued QALYs, lot of difference in accrued costs

Tumor-agnostic novelty (2): …. and a curse

- Tumor-agnostic drugs might not fit into picture of Dutch reimbursement system

- Histology-independence creates more indications by definition
  - Effect of installing full reimbursement based on CE-analysis of a single indication?

  → One size does not fit all

- How to proceed?
  - More and more immunotherapies will enter the market
  - Current (Dutch) tumor agnostic CE-approach risks reimbursing threshold-exceeding healthcare
  - Apply caution using ‘one compound, one price’

Thank you for your attention

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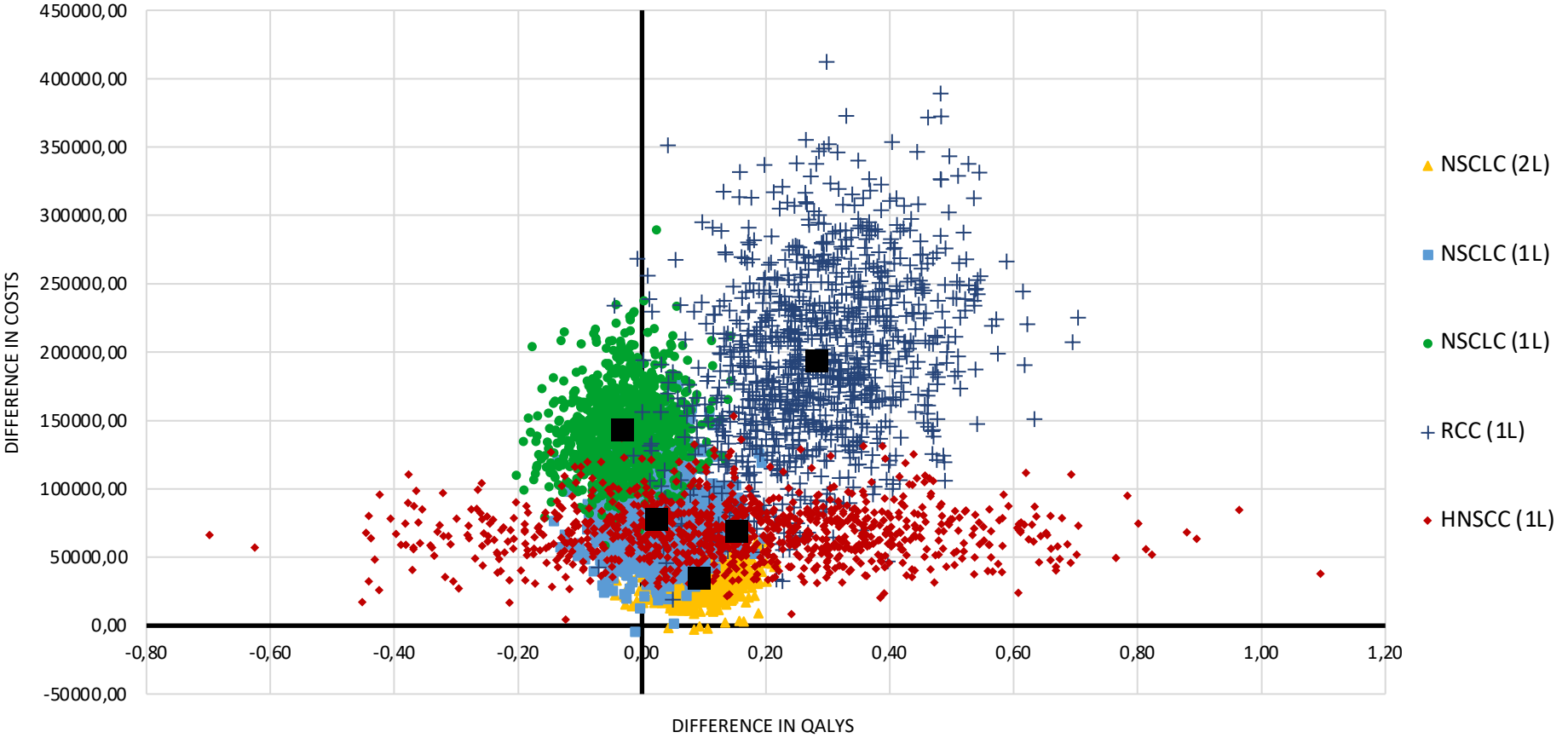
Overview of all studied indications

Cancer histology	Full Indication	Line of treatment
Head & Neck Squamous Cell Carcinoma (HNSCC)	Monotherapy of recurrent or metastasized HNSCC with PD-L1 expression (TPS ≥ 50%) with disease progression on or after platinum-containing chemotherapy	2L
	Monotherapy as first line treatment of metastasized or unresectable recurrent HNSCC with PD-L1 expression (CPS ≥ 1), combined with 5-fluoro-uracil and platinum-containing chemotherapy	1L
Melanoma	Monotherapy of unresectable or advanced melanoma	1L
Non-Small Cell Lung Cancer (NSCLC)	Monotherapy as first line treatment of metastasized NSCLC with PD-L1 expression (TPS ≥ 50%) with no EGFR- or ALK-positive genomic mutations	1L
	Monotherapy of locally advanced or metastasized NSCLC with PD-L1 expression (TPS ≥ 1%) and disease progression on or after previous chemotherapy. Patients with EGFR- or ALK-positive genomic mutations should have disease progression after receiving approved therapy for these mutations prior to pembrolizumab	2L
	Combination therapy as first line treatment of metastasized NSCLC with no EGFR- or ALK- positive genomic mutations, with Pemetrexed and platinum-containing chemotherapy	1L
	Combination therapy as first line treatment of metastasized NSCLC, with carboplatin and either paclitaxel or (nab-)paclitaxel	1L
Renal Cell Carcinoma (RCC)	Combination therapy as first line treatment of advanced RCC with axitinib	1L

High incurred costs and few gained QALYs



More gained QALYs for less costs