Estimating QALY Gains of Oncology Drugs: A Review of Cost-Utility Analyses of Negotiated Drugs in China

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BACKGROUND & OBJECTIVES

- Cost-utility analyses (CUA) has become increasingly important in the National Reimbursement Drug List (NRDL) price negotiations in China.
- Quality-adjusted life year (QALY) is the most preferred indicator of effectiveness by Chinese payer.
- This review aims to evaluate the study design and QALY gains of negotiated oncology drugs.

METHODS

- A systematic review was conducted to identify the latest China CUA studies of the 2020 NRDL listed negotiation oncology drugs by March 2021.
- Data sources included PubMed, Embase, Web of Science, CNKI, WanFang and SinoMed.
- Descriptive analyses were conducted to summarize the study design and corresponding QALY gains.

RESULTS

- 64 studies (115 results) were included, involving 18 drugs (13 targeted therapies, 4 biologics and 1 chemotherapy) out of 42 2020 NRDL listed negotiation oncology drugs.
- Markov model (85%), healthcare perspective (67%) and 10-year time horizon (57%) were the most common choice for study design.
- 89% of studies obtained utility parameters from published literature and 8.7% from clinical trials. In terms of the original source of utility parameter, only 28% of them included Chinese population.
- The mean QALY gain was 0.597 [SD: 0.79]. CUA in breast cancer presented the highest average QALY gain (1.837), followed by myeloid leukemia (1.480) and non-small cell lung cancer (0.504).
- Overall, the average QALY gain was 0.453 compared with best supportive care/placebo and 0.610 compared with active comparators.
- QALY gains increased over longer time horizon, with a mean of 0.251 below 5 years, 0.475 for 10-20 years, and 1.293 for 20 years and beyond.

Table 1. Quality-adjusted life-year gains by tumor type

Tumor type	N	%	QALY gain	
			Mean	Standard Deviation
Colorectal Cancer	12	10.43%	0.344	0.245
Non-small Cell Lung Cancer	70	60.87%	0.504	0.518
Hepatocellular Carcinoma	9	7.83%	0.428	0.697
Breast Cancer	7	6.09%	1.837	1.131
Gastric Cancer	4	3.48%	0.163	0.042
Renal Cell Carcinoma	3	2.61%	0.220	0.075
Myeloid Leukemia	7	6.09%	1.480	1.665
Multiple Myeloma	3	2.61%	0.273	0.132
Total	**115**	**100.00%**	**0.597**	**0.790**

Table 2. Quality-adjusted life-year gains by comparator

Comparator	N	%	QALY gain	
			Mean	Standard Deviation
Chemotherapy	53	46.09%	0.532	0.603
Others	52	45.22%	0.690	0.913
Best supportive care	6	5.22%	0.676	1.116
Placebo	4	3.48%	0.119	0.053

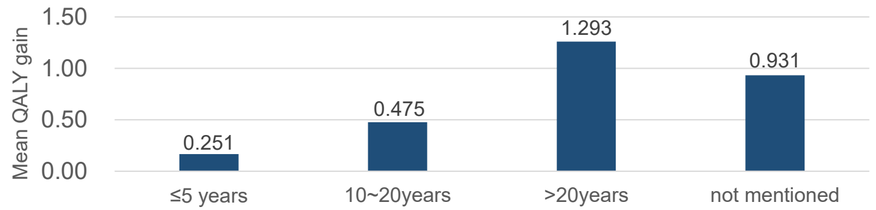

Figure 1. Quality-adjusted life-year gains by time horizon

CONCLUSION

- The methods used for estimating QALY gains were not transparently reported, and majority of utility values were still based on international data.
- This study reveals the importance of conducting more domestic research and obtain high-quality data applicable to Chinese population.

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