Willingness-to-pay thresholds applied for health economic analyses in oncology in China: a targeted literature review

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CONCLUSION

- **Our research suggests that in China, 3x GDPc is the preferred WTPt for health interventions in oncology**

INTRODUCTION

- Health economic analyses (HEAs) are typically performed by comparing health benefits and costs of an intervention with those of one or more alternatives, eg, the standard of care for a specific disease. The probability of cost-effectiveness (CE), an HEA outcome, is positioned against a governing willingness-to-pay threshold (WTPt)
- While WTPts are well defined in health technology assessment–focused health systems, understanding the value of money for health interventions is hindered where formal WTPts are not established. In such settings, World Health Organization (WHO) guidance is often followed to determine CE

OBJECTIVE

- The objective of the study was to identify the WTPt used in daily practice in China for interventions in oncology

METHODS

- A targeted search (**Table 1**) was conducted in English and Chinese to identify research articles reporting on WTPts in literature databases (Medline, Embase, and CNKI) and conference proceedings (ASCO, CSCO, ESMO, and ISPOR) published during the last 5 years
- If the full text of an article was available, abstract-only screening was skipped, as the abstract was not expected to address WTPts

Table 1: Search syntax

Database	Search key words (years, 2015 onward)	Hits	Note
PubMed	((China OR Chinese) AND ((willingness to pay OR WTP) OR (cost effectiveness AND threshold) OR (CE AND threshold)) OR (ICER AND threshold)) AND (("Neoplasms"[Mesh] OR neoplasms[Title/Abstract] OR oncology[Title/Abstract] OR cancer[Title/Abstract] OR cancers[Title/Abstract] OR cancerous[Title/Abstract] OR carcinoma*[Title/Abstract] OR malignan*[Title/Abstract] OR neoplas*[Title/Abstract] OR tumor*[Title/Abstract] OR tumour*[Title/Abstract]))) Filters: Last 5 years	116	
EMBASE	(('neoplasm'/exp OR 'neoplasms':ab,ti OR 'oncology':ab,ti OR 'cancer':ab,ti OR 'cancers':ab,ti OR 'cancerous':ab,ti OR 'carcinoma*':ab,ti OR 'malignan*':ab,ti OR 'neoplas*':ab,ti OR 'tumor*':ab,ti OR 'tumour*':ab,ti) AND (('willingness to pay' OR WTP OR ('cost effectiveness' AND 'threshold') OR ('CE' AND 'threshold') OR ('ICER' AND 'threshold')) AND ('China' OR 'Chinese'))) AND (2015 :py OR 2016 :py OR 2017 :py OR 2018 :py OR 2019 :py OR 2020 :py)	186	81 duplicates with PubMed based on comparison of PubMed identifier (PMID)
CNKI	Database: Journal, Featured Journals, China Conference, International Conf., Newspaper, Monographic Serials Field: 医药卫生科技 [Medicine& Public health] **FULL TEXT** search terms: 支付意愿阈值 OR 效果阈值 OR 支付阈值 OR (生命质量 AND 支付意愿) [Willingness to pay threshold OR effect threshold OR pay threshold OR (quality of life AND willingness to pay)]	271	
ASCO	(Keywords:(willingness to pay OR WTP OR CE threshold OR cost effectiveness threshold OR ICER threshold) AND Keywords:(China OR Chinese))	10	All hits were included in Embase based on comparison of titles
CSCO	Willingness to pay OR threshold	0	
ESMO	Journal or book title: Annals of Oncology (official journal of the European Society for Medical Oncology) ((China OR Chinese) AND ((willingness to pay OR WTP) OR (cost effectiveness AND threshold) OR (CE AND threshold) OR (ICER AND threshold))	11	The search was conducted on the Elsevier website
ISPOR	Disease/Disorder: Oncology (willingness to pay OR WTP OR CE threshold OR cost-effectiveness threshold OR ICER threshold) AND (China OR Chinese)	5	All hits were included in Embase based on comparison of titles

ASCO, American Society of Clinical Oncology; **CNKI**, China National Knowledge Infrastructure; **CSCO**, Chinese Society of Clinical Oncology; **ESMO**, European Society for Medical Oncology; **ISPOR**, International Society for Pharmacoeconomics and Outcomes Research

RESULTS

- A total of 599 articles were identified; after deduplication, 503 underwent full-text review (**Figure 1**)
- Of 164 studies, 3 that used a WTPt of 3x the gross domestic product per capita (GDPc) included ≥1 author from an institution regulated by the government:
  - National Health and Family Planning Commission, Beijing, China*
  - Tianjin Binhai New Area Tanggu Center for Disease Control and Prevention, Tianjin Binhai New Area, China
  - Central Division, National Health Insurance Administration, Ministry of Health and Welfare, Taipei, Taiwan

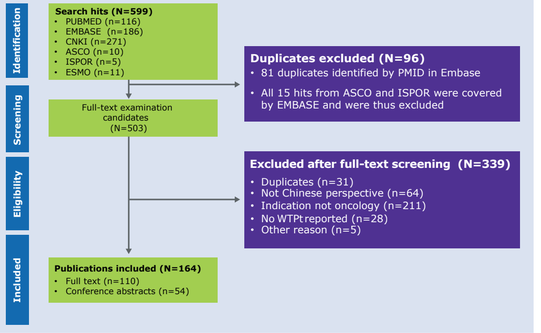
Willingness-to-pay thresholds

- Overall, 164 studies that reported a WTPt were identified (**Table 2**)
  - The most frequently used WTPt was 3xGDPc (131 studies explicitly mentioned using this threshold)
    - Two studies that mentioned using the GDPc were identified, and their threshold values were comparable to those reported in the articles using 3xGDPc
    - A total of 90 studies (69%) referred directly to WHO guidance or indirectly to China Guidelines for Pharmacoeconomic Evaluations (n=13; 10%)
  - In 9 studies, the use of a WTPt of 1xGDPc was explicitly mentioned
    - Two studies mentioned using the GDPc, and their threshold values were comparable to those reported in the articles using 3xGDPc
- There were 17 studies that did not report the underlying assumption of the applied WTPt; however, most of these studies (14 of 17) appear to have used 3xGDPc as their threshold values
- Incremental CE ratios (ICERs) were reported in 163 of 164 publications, in 23 tumor types
  - One study did not report the actual value of the ICER nor the incremental costs and benefits, which can be used to calculate the ICER, and did not report that any specific treatment was dominant

Table 2: Studies reporting a WTPt

Threshold	Number	Percentage (rounded)
3xGDPc	131	80%
3xGDPc implicit	16	10%
1xGDPc	9	6%
1xGDPc implicit	2	1%
Other threshold	6	4%

Figure 1. PRISMA flow diagram: all databases



PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses

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DISCLOSURES

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