Disease Burden of Epithelial Ovarian Cancer under Current Care in China: A Model Simulation Study

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INTRODUCTION

- Epithelial ovarian carcinoma (EOC) is a heterogeneous disease at clinical, pathological and molecular levels. The mortality rate of ovarian cancer ranks the second among gynecological malignancies worldwide. In China, the incidence of ovarian cancer ranks the third among gynecological malignancies and it is increasing persistently[1].

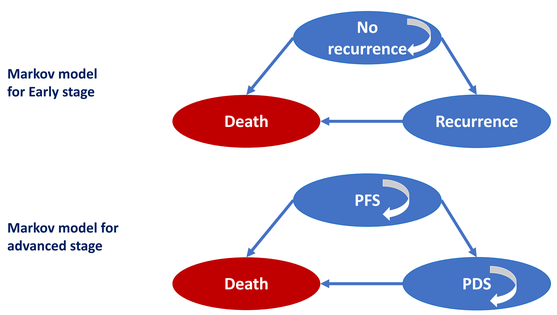
OBJECTIVES

- To quantitate the disease burden of EOC under current care in China.

METHODS: Model design

Model cohort	• Chinese patients with EOC vs. Age matched Chinese female population
Health status	• No recurrence, progression-free survival (PFS), progressive disease survival (PDS), and death
Cycle length	• Early stage: annually • Late stage: monthly
Time horizon	• Lifetime
Model outputs	• Life years (LY), quality-adjusted life years (QALY), lifetime direct medical costs

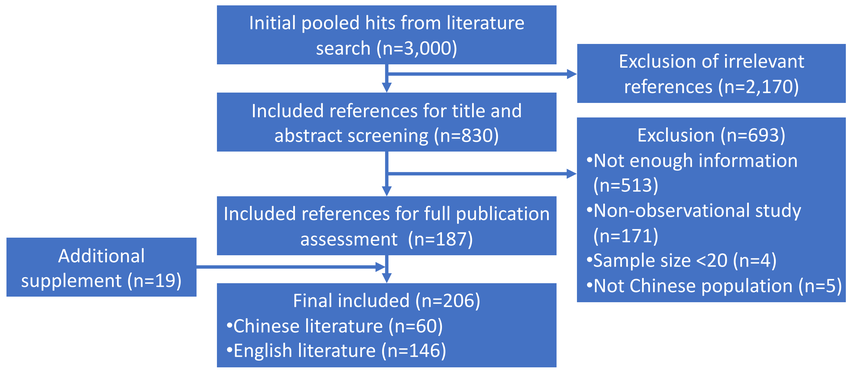
Markov model structure



Methods: literature search and evidence synthesis

Bibliographic databases	English: MEDLINE, EMBASE, Web of Science Chinese: WANFANG, CNKI, and VIP
Literature search strategies	Publication date range: 2018-2023 Keywords: • Disease: ovarian cancer • Region: China • Study design: observational study • Intervention: surgery, chemotherapy, targeted drugs • Outcome: Clinical efficacy results, quality of life, cost
Evidence synthesis	Single-arm meta-analysis

RESULTS: Literature Search Flowchart



Methods: Model Inputs

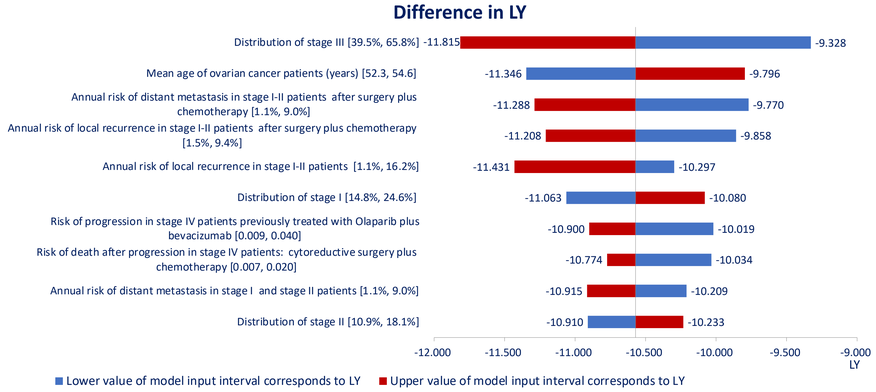
Model inputs	Baseline	Model inputs	Baseline
Model cohort		**Quality of life (utility)**	
Age (years)	53.4	*Early stage (stage I,II)*	
Body weight (kg)	60.7	No recurrence	0.936
Height (cm)	157.0	Recurrence	0.756
Distribution of stage		*Advanced stage (stage III,IV)*	
Stage I	19.7%	Primary cytoreductive surgery	0.670
Stage II	14.5%	Intermediate cytoreductive surgery	0.740
Stage III	52.6%	Maintenance treatment	0.680
Stage IV	13.2%	**Costs**	
Treatment efficacy		*Surgery*	
Early stage (stage I,II)		Comprehensive staging	¥17,657
Annual risk of local recurrence	0.055	Cytoreductive surgery	¥48,436
Annual risk of distant metastasis	0.051	*Costs for early stage*	
Recurrent stage		Regular follow-up	¥1,907
Response rate to chemotherapy	69.5%	*Costs for recurrence*	
Annual risk of distant metastasis after maintenance therapy	0.437	Chemotherapy	¥55,030
Advance stage (stage III,IV)		Regular follow-up	¥13,040
Monthly progression risk of primary cytoreductive surgery + chemotherapy	0.040	*Costs for advanced stage*	
Monthly progression risk of intermediate cytoreductive surgery + chemotherapy	0.044	Chemotherapy	¥50,917
Risk of death in the month after progression	0.014	Monthly follow-up	¥14,944

Results: Base Case Analysis

	EOC patients	Matched general female population	Difference
LY	**9.796**	**20.367**	**-10.571**
QALY	**7.107**	**18.195**	**-11.088**
Lifetime direct medical costs	**¥369,267**	**¥112,207**	**¥257,060**

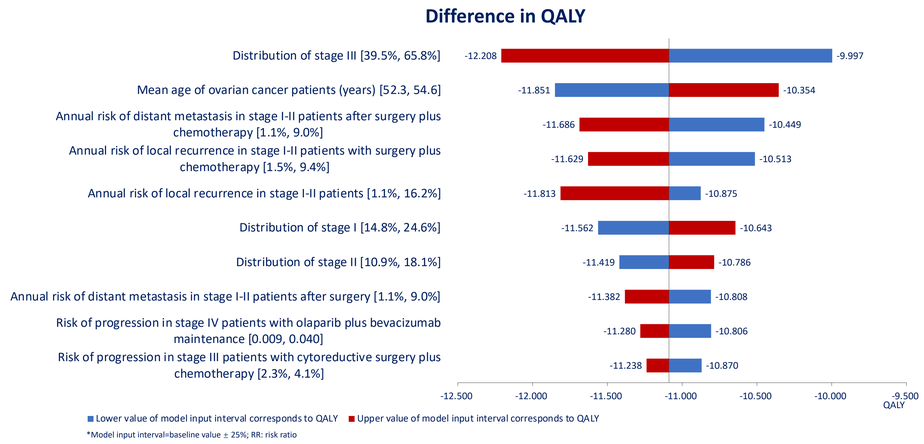
Results: One-Way Sensitivity Analysis

Difference in LY



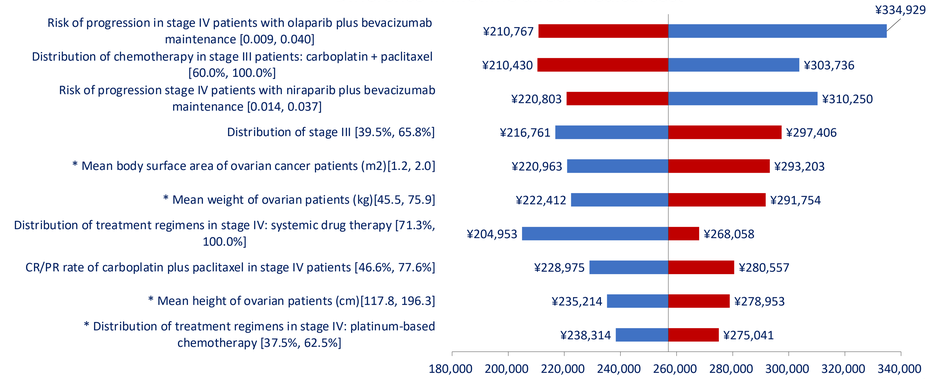
Results: One-Way Sensitivity Analysis

Difference in QALY



*Model input interval=baseline value ± 25%; RR: risk ratio

Difference in lifetime direct medical cost



*Model input interval=baseline value ± 25%; RR: risk ratio

Results: Probabilistic Sensitivity Analysis

Model outputs	Median	95% credible interval	
		Lower	Upper
Difference in LY	-10.414	-12.039	-8.856
Difference in QALY	-11.007	-12.347	-9.760
Difference in lifetime direct medical costs	¥261,568	¥198,389	¥347,458

CONCLUSIONS

- The disease burden of EOC in Chinese patients is primarily evident in substantially reduced LY and tripled medical costs relative to the matched female general population.
- Distribution and disease progression of advanced EOC are the key factors driving the disease burden of EOC. This suggest that early diagnosis and early treatment could be highly effective in reducing the burden of EOC in China.

REFERENCES

[1] .Feng J, Xu L, Chen Y, Lin R, Li H, He H. Trends in incidence and mortality for ovarian cancer in China from 1990 to 2019 and its forecasted levels in 30 years. J Ovarian Res. 2023 Jul 14;16(1):139.

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