

Disease Burden of Anal Carcinoma in Chinese Male Patients under Current Care: A Model Simulation Study

Shiyi He,¹ Liang Tan,¹ Yang Tang,¹ Li Yan,¹ Wendong Chen^{1,2}

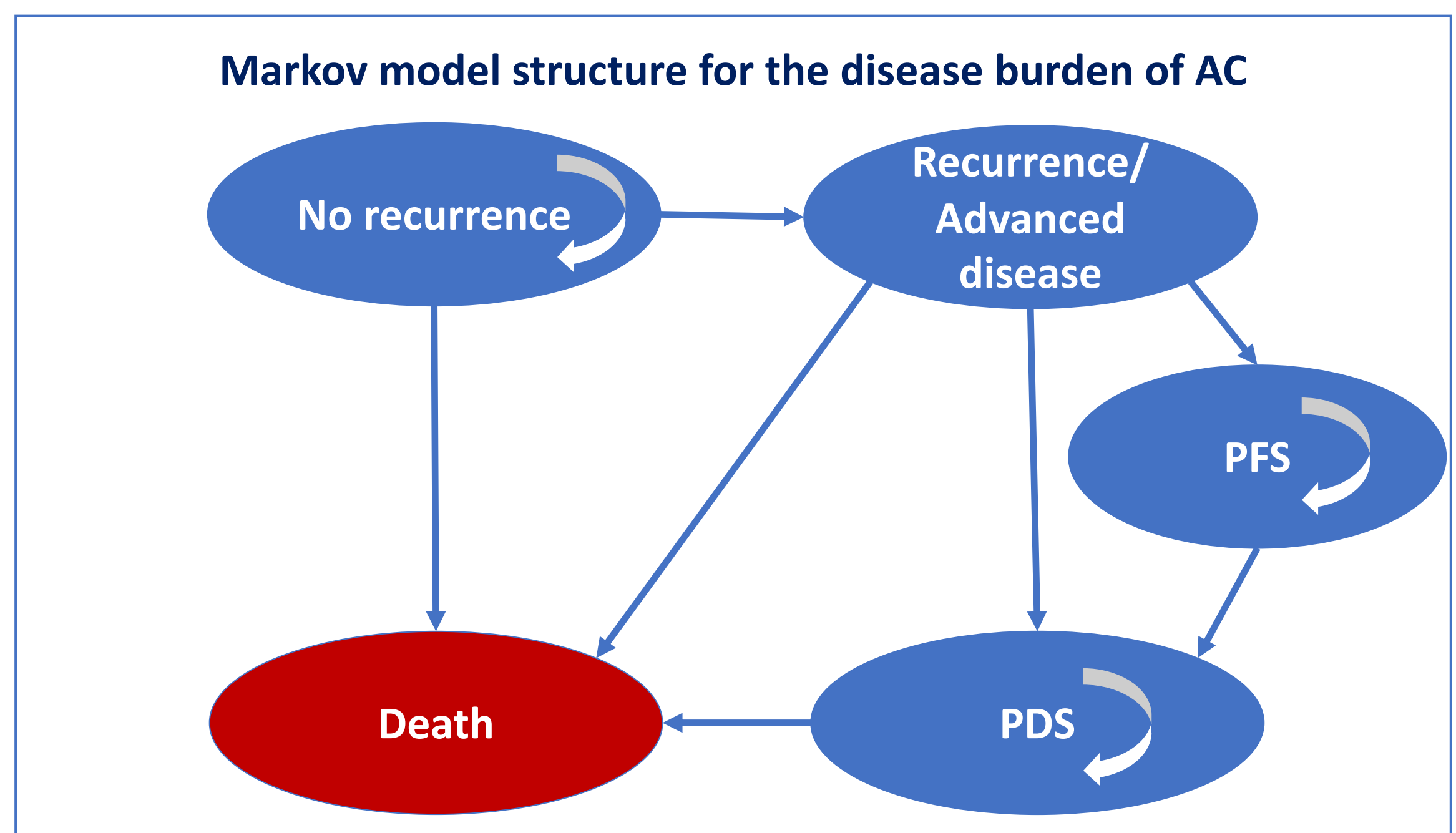
1. Changsha Normin Health Technology Ltd, Changsha, Hunan, China; 2. Normin Health Consulting Ltd, Mississauga, Ontario, Canada

INTRODUCTION & OBJECTIVES

- Anal carcinoma (AC) is a malignant tumor that occurs in the anal region, mainly in the anal canal, perianal skin and mucosa of the recto-anal junction¹. Patients who have been treated for anal carcinoma experience a long-term decline in quality of life compared to the healthy population, accompanied in part by defecation, urination, and sexual dysfunction². The epidemiological trend of AC has been increasing globally in the last decade^{3,4}. In China, the prevalence of anal AC was 0.62/100,000 by 2020⁵.
- To quantitate the disease burden of AC in Chinese male patients under current care.

METHODS: Disease Burden Model Design

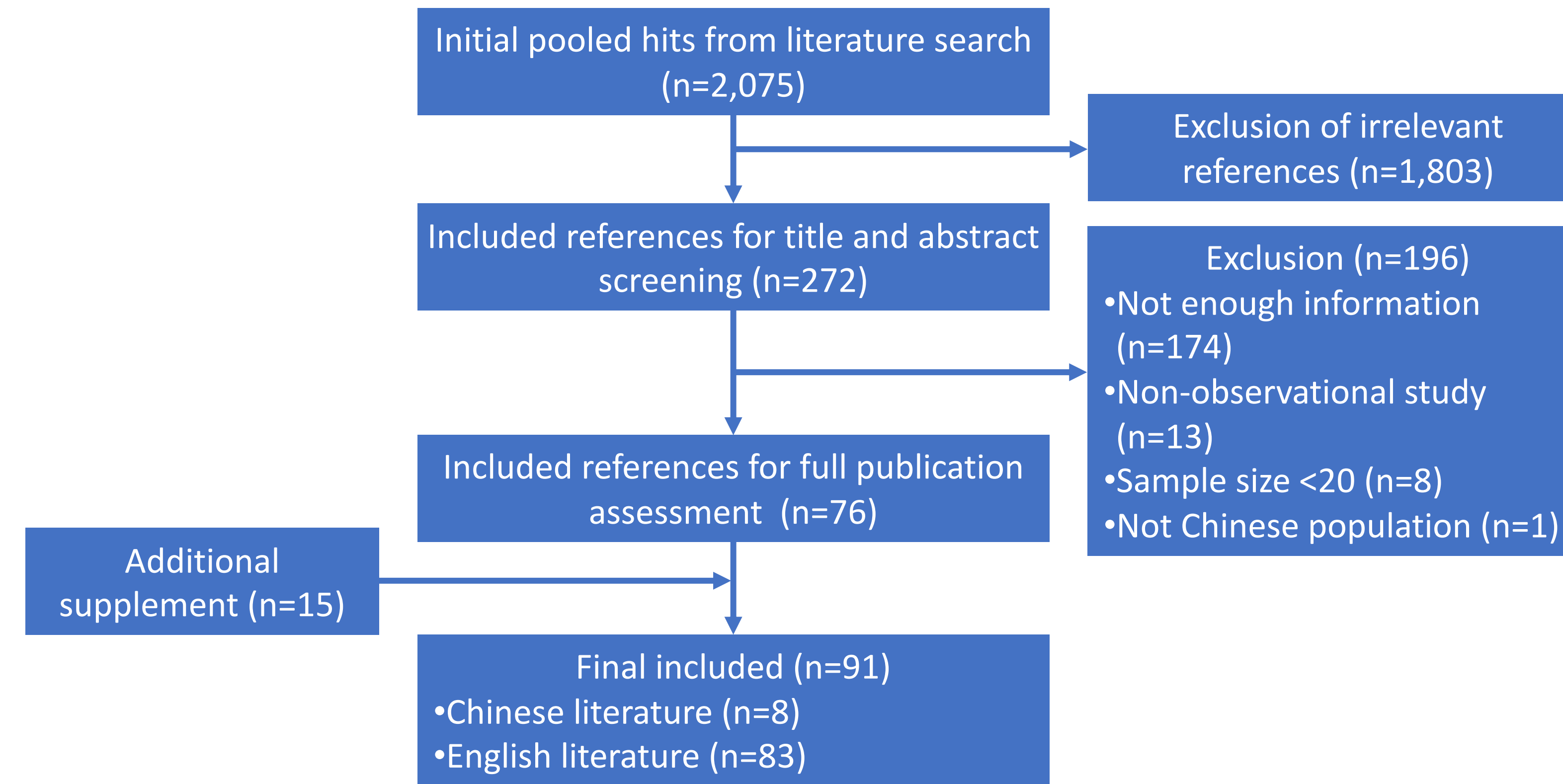
Model cohort	Chinese male patients with AC vs. Age matched Chinese general male population
Health status	- Early stage of AC: AC recurrence, no AC recurrence, death - Late stage: progression-free survival (PFS), progressive disease survival (PDS) and Death
Cycle length	Annually in the limited stages and monthly in the advanced stages.
Time horizon	Lifetime
Model outputs	Life years(LY), quality-adjusted life years (QALY), direct medical costs, and indirect costs



METHODS: Literature Search and Evidence Synthesis

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

RESULTS: Literature Search Flowchart



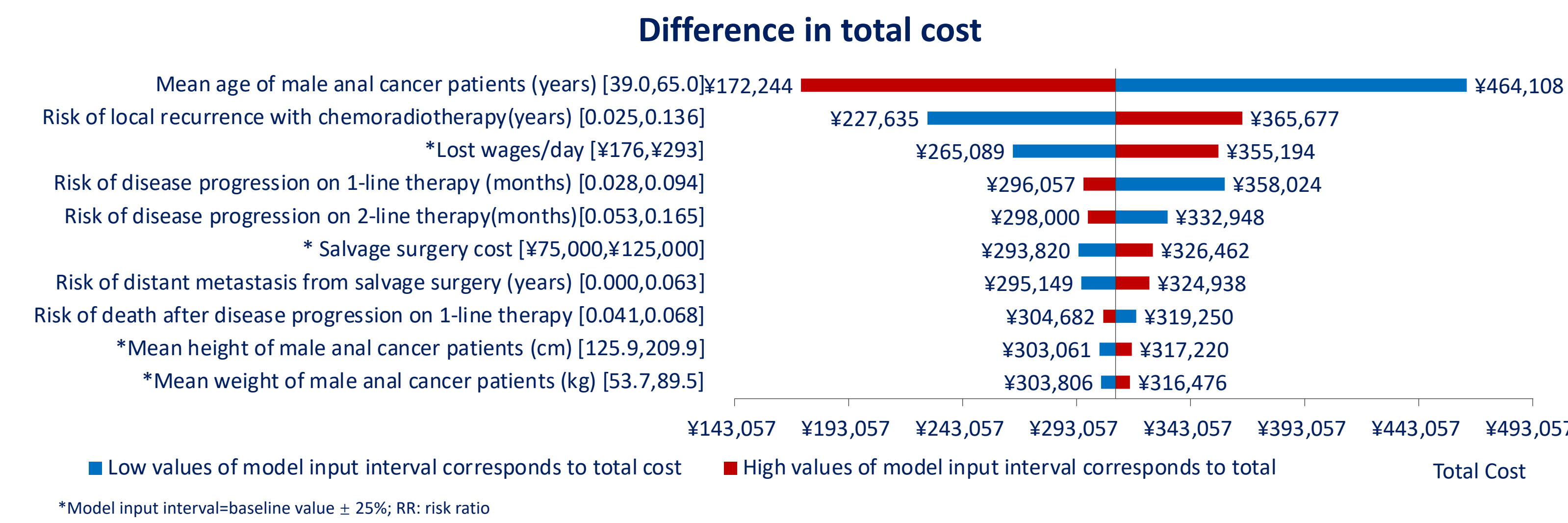
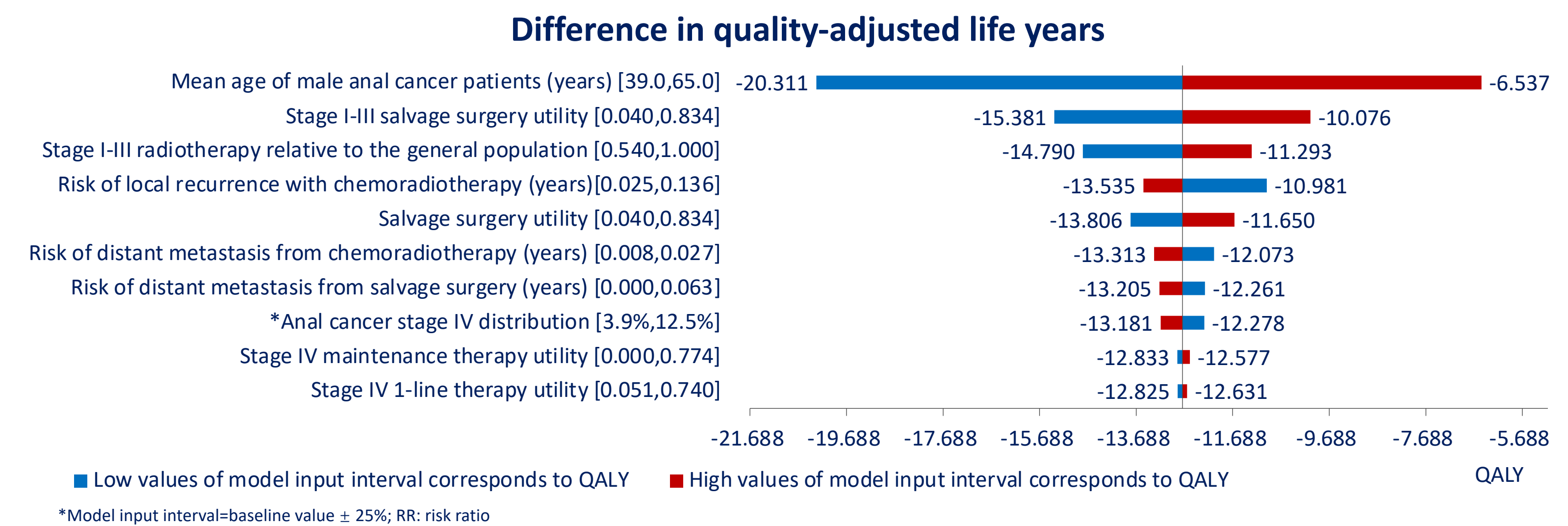
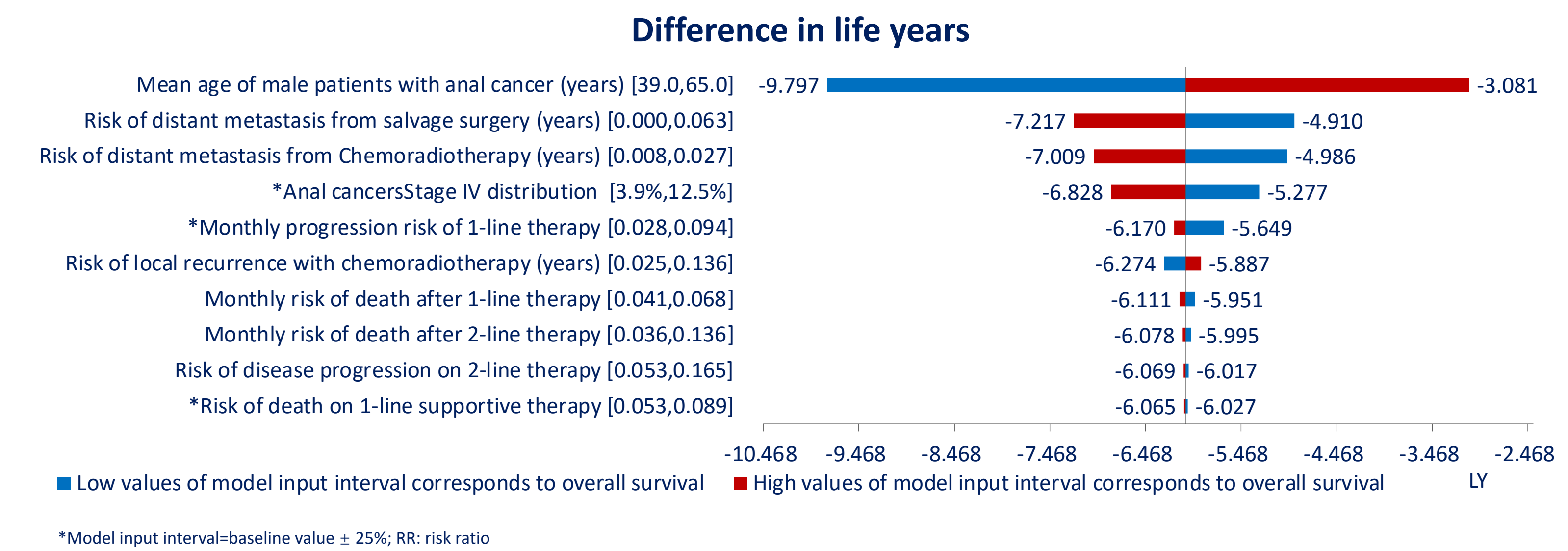
RESULTS: Model Inputs Summary

Model inputs	Baseline	Model inputs	Baseline
Demographics		Quality of life (utility)	
Age (years)	52.0	Stage I-III	
Body weight (kg)	167.9	Post-chemoradiotherapy	1.000
Height(m)	71.6	Local excision	0.763
		Salvage surgery	0.437
Distribution of stage		Stage IV	
Stage I-III	91.8%	1-line therapy	0.316
Stage IV	8.2%	2-line therapy	0.395
		Maintenance therapy	0.395
Treatment efficacy		Costs	
Stage I-III		Surgery	
Annual risk of local recurrence with chemoradiotherapy	0.081	Local excision	¥13,751
Annual risk of distant transfer with chemoradiotherapy	0.017	Inguinal lymph node dissection	¥34,578
Annual risk of distant transfer with salvage surgery	0.029	Salvage surgery	¥100,000
Monthly progression risk of 1-line therapy	0.061	Costs for Stage I-III	
Monthly progression risk of 2-line therapy	0.095	Chemoradiotherapy	¥23,889
Monthly risk of death after 1-line therapy of disease progression	0.055	Costs for Stage IV	
Monthly risk of death after 2-line therapy of disease progression	0.071	The average cost of 1-line therapy	¥2,064
Monthly risk of death after maintenance therapy of disease progression	0.071	The average cost of 2-line therapy	¥48,071

RESULTS: Base Case Analysis

	Male patients with AC	General male population	Difference
Life years (LY)	19.190	25.241	-6.051
Stage I-III	18.407		
Stage IV with progressive disease	0.404		
Stage IV with progression free	0.379		
Quality-adjusted life years (QALY)	11.980	23.272	-11.293
Stage I-III	11.719		
Stage IV with progressive disease	0.120		
Stage IV with progression free	0.141		
Total costs	¥454,430	¥141,340	¥313,090
Direct medical costs	¥243,988	¥141,340	¥102,648
Indirect costs	¥210,442	¥0	¥210,442

RESULTS: One-Way Sensitivity Analysis



RESULTS: Probabilistic Sensitivity Analysis

Model outputs	Median	95% credible interval	
		Lower	Upper
Difference in life years	-5.955	-7.145	-5.213
Difference in QALY	-12.693	-16.282	-9.220
Difference in total costs	¥312,181	¥293,877	¥347,198

CONCLUSIONS

- The disease burden of AC in Chinese male patients is primarily evident in substantially reduced QALY and tripled costs relative to the matched general population.
- Age is the primary factor driving the disease burden of AC in Chinese male patients. Controlling the risk of AC in young male population should be considered in the future strategies in reducing the disease burden of AC in Chinese males.

REFERENCES

- [1] China Anti-Cancer Association C C P C. Chinese malignant tumors integrated diagnosis and treatment guideline-anal canal cancer section[J]. Chinese Electronic Journal of Colorectal Diseases, 2022, 11(01): 13.
- [2] Sterner A, Derwinger K, Staff C, et al. Quality of life in patients treated for anal carcinoma-a systematic literature review[J]. International Journal of Colorectal Disease, 2019, 34(9): 1517–1528.
- [3] Gondal T A, Chaudhary N, Bajwa H, et al. Anal Cancer: The Past, Present and Future[J]. Current Oncology, 2023, 30(3): 3232–3250.
- [4] Lu Y, Wang X, Li P, et al. Clinical characteristics and prognosis of anal squamous cell carcinoma: a retrospective audit of 144 patients from 11 cancer hospitals in southern China[J]. BMC Cancer, 2020, 20(1): 679.
- [5] <https://www.iarc.who.int/news-events/latest-global-cancer-data-globocan-database-2020/>

Presented at ISPRO 2024, May 5-8, 2024, Atlanta, GA,USA/Abstract #138376

Correspondence: wendong.chen@normin.ca