

Cost-effectiveness of Finerenone in Addition to Standard-of-Care in Treating Type 2 Diabetes and Chronic Kidney Disease in China

Jian Ming¹, Guanqi Hong¹, Yunzhen He¹, Jing Chen¹, Yingrui Xu², Paul Mernagh³, Michał Pochopień⁴, Hongchao Li⁵

1. Real World Solutions, IQVIA China, Shanghai, China; 2. Medical Affairs, Pharmaceuticals, Bayer Healthcare Company Ltd, Beijing, China; 3. Bayer AG, Berlin, Germany
4. Assignity, Krakow, Poland; 5. School of International Pharmaceutical Business, Centre for Pharmacoeconomics and Outcomes Research, China Pharmaceutical University, Nanjing, China

†Correspondence to: Dr. Hongchao Li (E-mail: lihongchao@cpu.edu.cn).

Background & Objectives

- Type 2 diabetes (T2D) has been recognized as one of the leading health problems around the world¹. In China, the prevalence of diabetes has risen from 10.4% in 2013 to 11.2% in 2020, of which T2D accounts for approximately 90%².
- Chronic kidney disease (CKD), a serious complication of T2D, is associated with an increased risk of cardiovascular (CV) disease and corresponding CV mortality risk³.
- Adding finerenone to current standard-of-care (SoC), including first-line ACEi/ARB and other therapies as recommended by Chinese guidelines, has shown substantial benefit in delaying CKD progression and reducing cardiovascular risk in patients with CKD and T2D in the landmark FIDELIO-DKD (NCT02540993) trial^{4,5}.
- This study aimed to evaluate the cost-effectiveness of finerenone+SoC versus SoC alone among patients with T2D and CKD in China from a healthcare system perspective.

Methods

- A **cost-effectiveness model (FINE-CKD model)** has been previously published and validated^{6,7}, with health states defined according to stages of CKD progression (CKD 1/2, CKD 3, CKD 4, and CKD 5 without renal replacement therapy (RRT), dialysis or transplant) and history of cardiovascular events. (**Figure 1**)
- The model differentiated between first and subsequent modelled cardiovascular events and other health events. **Transition probabilities** and event risks were calculated using patient-level data of the Asian population from the FIDELIO-DKD trial for SoC. **Hazard ratios (HRs)** sourced from the Asian subpopulation of FIDELIO-DKD trial were applied to estimate the transition probabilities of CKD stage 5 with RRT, dialysis, kidney transplantation as well as other health events for finerenone+SoC. (**Table 1**)
- EQ-5D-5L utility scores** were estimated using the data from the FIDELIO-DKD trial with China EQ-5D-5L value set. An annual **discount rate** of 5% was applied.
- Healthcare costs**, expressed in 2023 Chinese Yuan (CNY), were gathered from literature and supplemented by physician interviews. Since the latest price of finerenone is commercially confidential after recent price negotiations, the **daily cost of finerenone** in model was assumed to be the same as SoC, which was 13.94 CNY per day. One-way sensitivity analysis (OWSA) and probabilistic sensitivity analysis (PSA) were performed to assess the model robustness.

Figure 1. Model structure

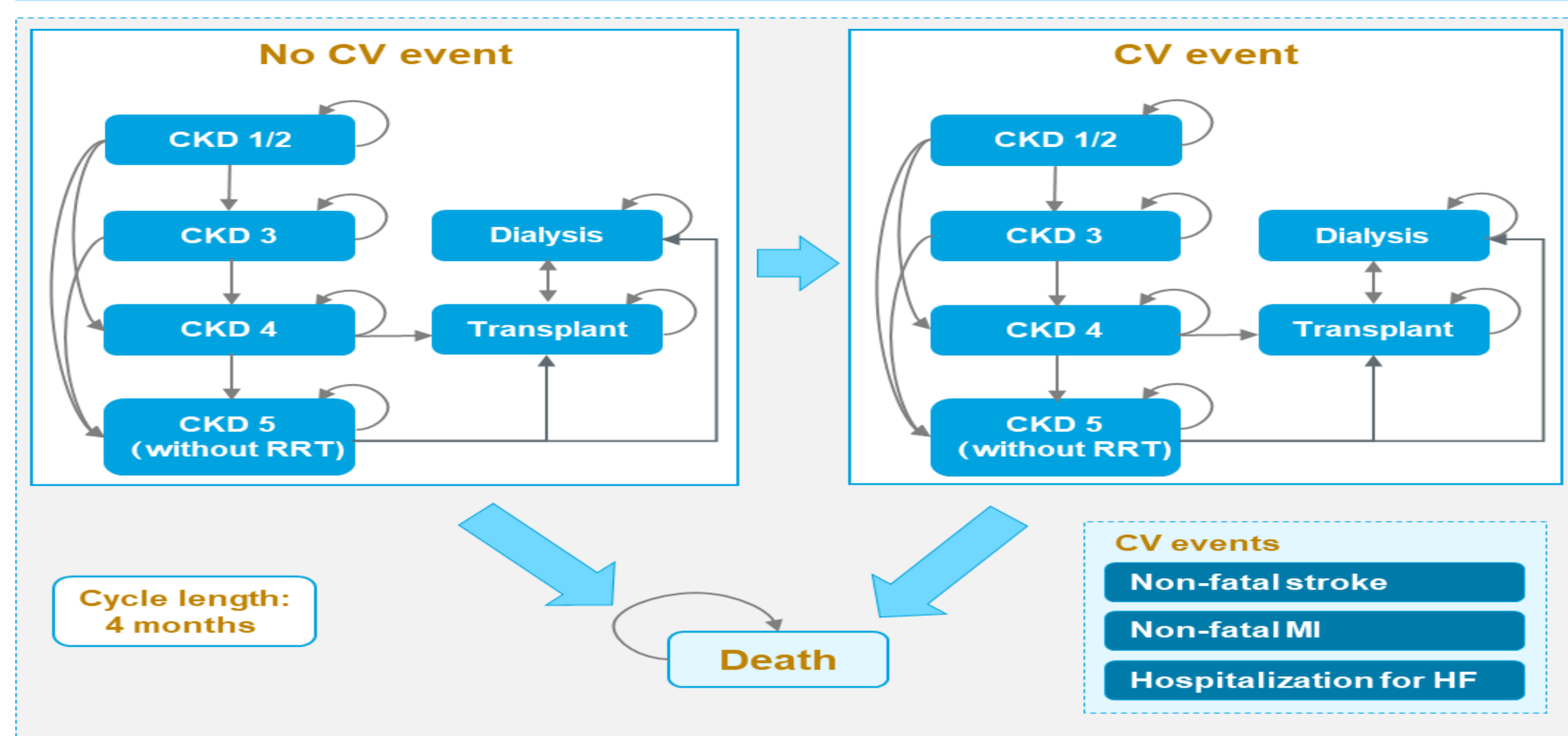


Table 1. Key model inputs

Parameter	Value	Source
Clinical inputs		
Transition probabilities	Transition matrix between CKD stages for SoC	Asian subpopulation of the FIDELIO-DKD trial ⁸
Event risk and mortality	CV risk, adverse event risk, etc.	
HRs	HRs of finerenone + SoC vs. SoC	
Health utility inputs		
	Health state utilities, disutilities	Asian subpopulation of the FIDELIO-DKD trial ⁸
Key cost inputs		
SoC	13.94 CNY per day	IQVIA MIDAS database
Finerenone	13.94 CNY per day	Assume same as SoC

Table 2. Base case results

Outcome measures	Finerenone + SoC	SoC alone	Incremental
Total costs	381,130 CNY	392,390 CNY	-11,260 CNY
Total LYs	10.115	9.778	0.337
Total QALYs	8.660	8.338	0.321
ICER			Dominant

Abbreviations: LYs: life years; QALYs: quality-adjusted life years; ICER: incremental cost effectiveness ratio

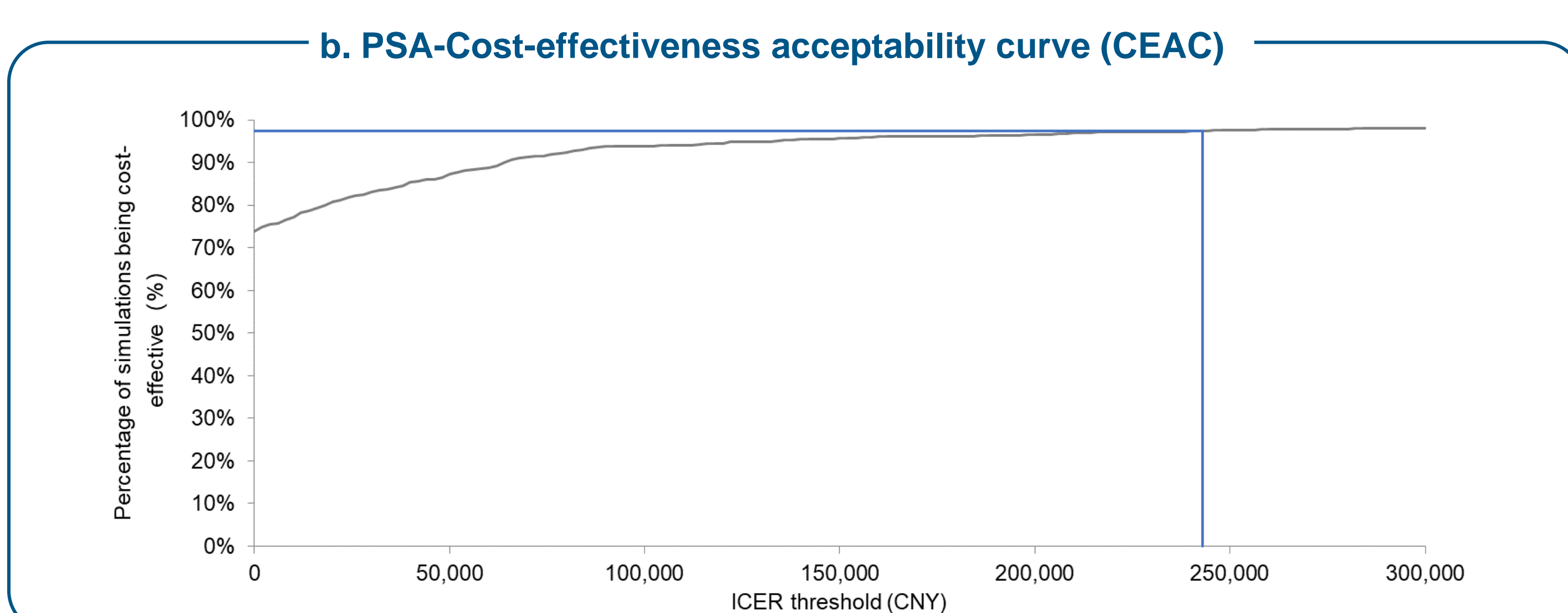
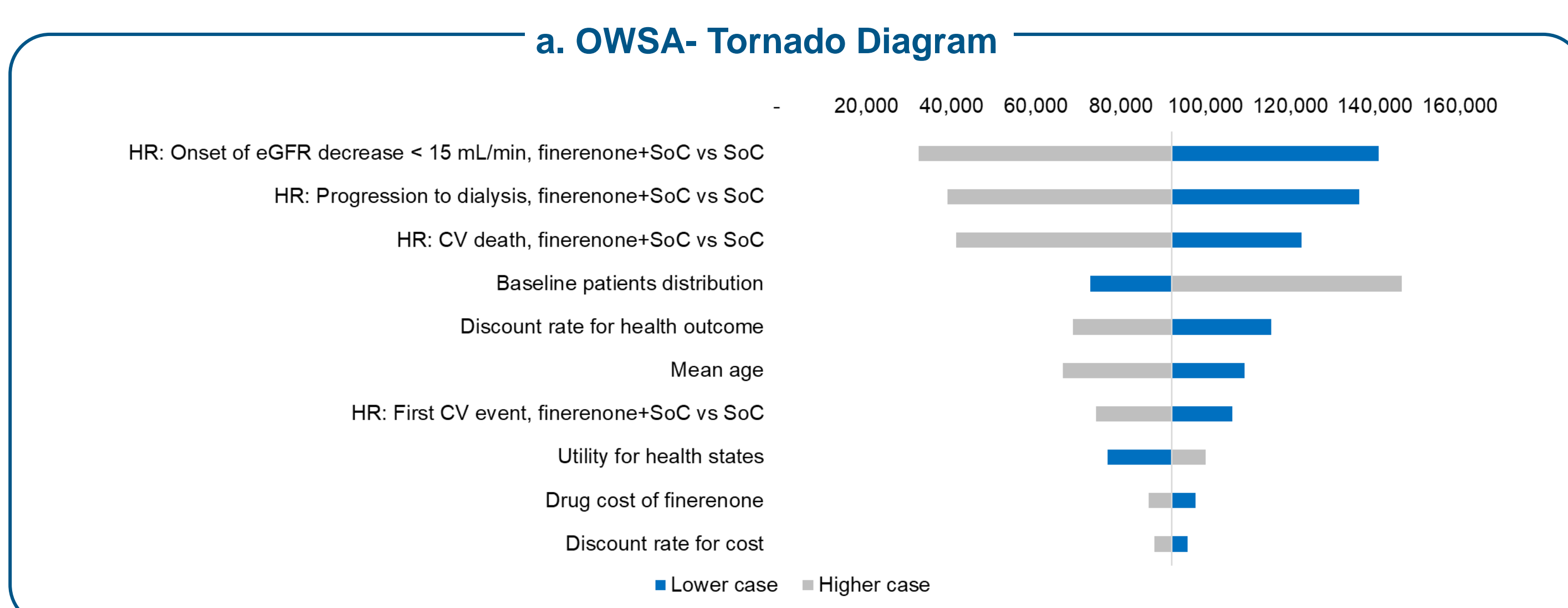
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DISCLOSURES: Jian Ming, Guanqi Hong, Yunzhen He and Jing Chen are employees of Real World Solutions, IQVIA China. Yingrui Xu and Paul Mernagh are employees of the Bayer Healthcare Company Ltd. Michał Pochopień is co-founder of Assignity. Hongchao Li has nothing to disclose.

Results

- With a lifetime horizon, **base case results** showed that finerenone+SoC increased life years (LYs) by 0.337 and quality-adjusted life years (QALYs) by 0.321 versus SoC alone (10.115 vs. 9.778 years, 8.660 vs. 8.338 QALYs), which was driven by a reduction in the incidence of cardiovascular events and dialysis. (**Table 2**)
- Total costs per patient were lower under finerenone+SoC than SoC alone (381,130 CNY vs. 392,390 CNY), demonstrating finerenone+SoC to be a **dominant** treatment strategy.
- OWSA** results showed that the HR for onset of eGFR<15 mL/min, HR for progression to dialysis, HR for CV death were the top three influencing factors on the resulting NMB, followed by baseline patient distribution and the discount rate for health outcome. (**Figure 2a**)
- PSA** results demonstrated that the probability that finerenone + SoC being cost-effective compared with SoC alone was approximately 97.4% given WTP threshold of ¥257,094/QALY. (**Figure 2b**)

Figure 2. Sensitivity analysis results



Discussion and Conclusion

- Assuming the daily cost of finerenone was the same as SoC, this study has found out that **finerenone + SoC was dominant over SoC alone** in patients with CKD and T2D in China based on lifelong time horizon in base case.
- The gains in LYs and QALYs mainly resulted from **reduced incidence of CV events and delayed disease progression**. Assuming the same daily cost of finerenone and SoC, the cost-savings of adding finerenone were primarily due to lower costs of end-stage renal disease and CV management.
- This study had several **strengths**. Firstly, a well-established FINE-CKD model has been utilized in our study to simulate modelling both CKD progression and the occurrence of clinical events. Secondly, clinical inputs were derived from the Asian subpopulation analysis of the FIDELIO-DKD trial to inform the FINE-CKD model to improve the accuracy of prediction on Chinese patients.
- As the **first study** exploring the long-term health outcomes and cost-effectiveness of finerenone + SoC compared with SoC alone in Chinese patients with CKD and T2D, this study may provide valuable information for evidence-based and value-oriented clinical and reimbursement decision-making in **National Reimbursement Drug List (NRDL) adjustment** in China.

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