

# Cost-effectiveness of sacubitril/valsartan for the treatment of essential hypertension in Chinese setting

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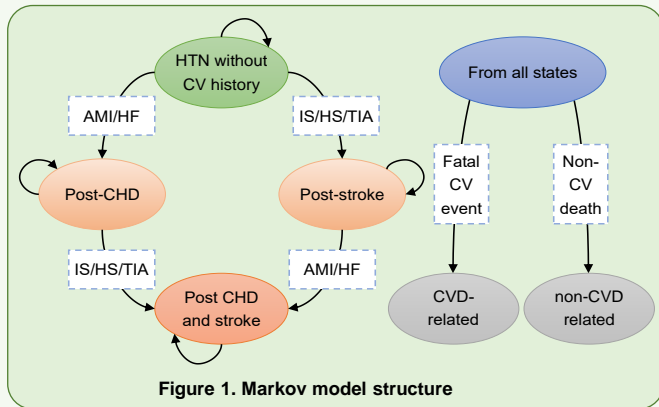
Funding: The design and conduct of this study were funded by Novartis Pharmaceutical Co., Ltd.

## OBJECTIVES

To simulate the *long-term clinical performance* and *cost-effectiveness* of **sacubitril/valsartan** for the treatment of *essential hypertension* from a **Chinese healthcare system perspective**.

## METHODS

A **Markov model** was constructed.



- **Intervention:** Sacubitril/valsartan
- **Comparators:** Allisartan isoproxil and valsartan
- **Target population:** Chinese adults  $\geq 18$  years of age with essential hypertension
- **Data sources:**

<b>Efficacy</b>	Network meta-analysis, literature
<b>Transition</b>	SBP & LVMI (dual mechanism) <span style="border-bottom: 1px solid black;">Risk functions &amp; HRs</span> Cardiovascular disease risks
<b>Costs</b>	Literature, expert opinions
<b>Utilities</b>	Literature

- **Time horizon & cycle length:** lifetime horizon with an annual cycle

Table 1. Input variables of economic model

Determinants of effectiveness	
Parameter	Value
<b>Change in office SBP</b>	
Sacubitril/valsartan, mmHg	-16.24
Allisartan isoproxil, mmHg	-11.06
Valsartan, mmHg	-11.65
<b>Change in LVMI</b>	
Sacubitril/valsartan, g/m <sup>2</sup>	-6.83
Allisartan isoproxil, g/m <sup>2</sup>	-3.55
Valsartan, g/m <sup>2</sup>	-3.55
Resource utilization and direct cost data	
<b>Cost of different antihypertensive medications</b>	
Sacubitril/valsartan (annual)	CN¥2,322.99
Allisartan isoproxil (annual)	CN¥1,570.58
Valsartan (annual)	CN¥1,680.15
<b>Cost of additional antihypertensive drug after CVD</b>	
Sacubitril/valsartan (annual)	Post-CHD CN¥431.58 Post-stroke CN¥428.26 Post CHD & stroke CN¥587.32
Allisartan isoproxil (annual)	Post-CHD CN¥508.65 Post-stroke CN¥795.33 Post CHD & stroke CN¥795.33
Valsartan (annual)	Post-CHD CN¥608.84 Post-stroke CN¥795.33 Post CHD & stroke CN¥795.33

Total annual management cost	
HTN without CVD history	CN¥1,383.14
Post-CHD (year 1)	CN¥18,268.0
Post-CHD (year 2+)	CN¥9,896.8
Post-stroke (year 1)	CN¥33,384.0
Post-stroke (year 2+)	CN¥5,238.4
Post CHD & stroke (year 1)	CN¥51,652.0
Post CHD & stroke (year 2+)	CN¥15,135.2
Cost of acute events (per admission)	
Cost for non-fatal AMI	CN¥39,431.2
Cost for non-fatal HF	CN¥31,639.6

### Cost of acute events (per admission) (Cont'd)

Cost for non-fatal IS	CN¥49,649.6
Cost for non-fatal HS	CN¥28,025.6
Cost for TIA	CN¥13,987.2
Cost for fatal AMI	CN¥54,748.8
Cost for fatal HF	CN¥64,788.0
Cost for SCD	CN¥29,232.8
Cost for fatal IS	CN¥47,778.4
Cost for fatal HS	CN¥58,105.6

### Utility estimates for health states

#### Utility for different health states, male/female

Hypertension without history of CVD	0.91/0.85
Post-CHD	0.86/0.79
Post-stroke	0.80/0.75
Post CHD & stroke	0.59/0.57

#### Disutility for different acute events

AMI (duration, days)	-0.01 (9.32)
TIA (duration, days)	-0.09 (13.58)
Acute HS (duration, days)	-0.09 (13.20)
Acute IS (duration, days)	-0.09 (15.04)
Acute HF (duration, days)	-0.05 (10.58)

**Model validation, deterministic and probabilistic** sensitivity analyses were conducted to test the *robustness*.

## RESULTS

For simulated patients with hypertension:

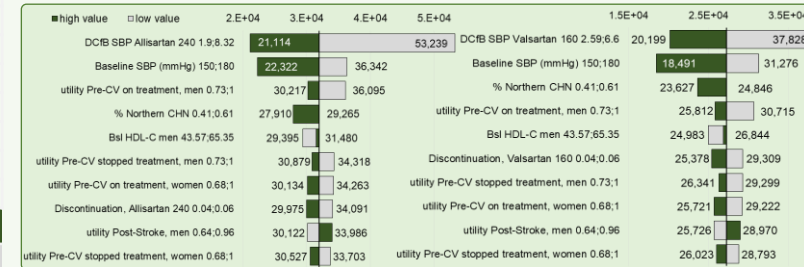
Table 2. Deterministic results of base-case analysis (discounted)

Outcome	Sacubitril/valsartan (1)	Allisartan isoproxil (2)	Valsartan (3)	Difference (1 vs. 2)	Difference (1 vs. 3)
Total cases of CV events	<b>642</b>	<b>705</b>	<b>702</b>	RR: 0.910	RR: 0.914
Total LYs (per patient)	13.0772	12.9296	12.9381	0.1476	0.1392
Total QALYs (per patient)	11.3843	11.2431	11.2514	0.1412	0.1329
Total costs (per patient)	CN¥59,110	CN¥54,602	CN¥55,488	CN¥4,508	CN¥3,622
Incremental cost per QALY gained	—	—	—	<b>CN¥31,938</b>	<b>CN¥27,252</b>

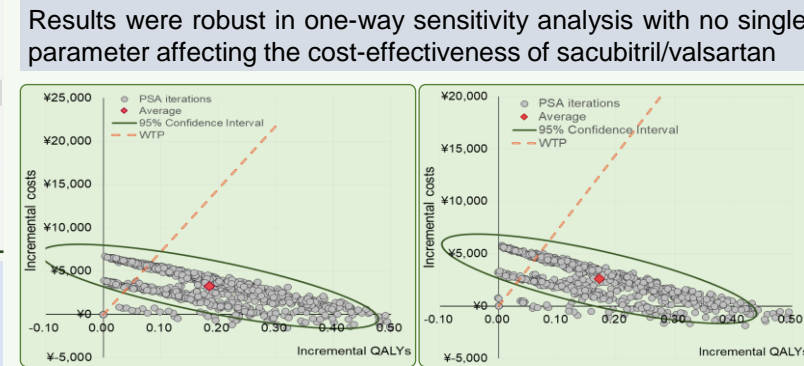
## CONCLUSIONS

Sacubitril/valsartan compares favorably with allisartan isoproxil and valsartan in Chinese setting.

- **Similar results** were obtained in various *sensitivity analysis*.



Results were robust in one-way sensitivity analysis with no single parameter affecting the cost-effectiveness of sacubitril/valsartan



There was more than 80% probability for sacubitril/valsartan to remain cost-effective at a WTP threshold of CN¥72,447/QALY