

# The Cost-Effectiveness of Budesonide/Formoterol Maintenance and Reliever Therapy Versus Salmeterol/Fluticasone Plus As-Needed Salbutamol Among Asthma Patients ≥12 Years in China

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## Objective

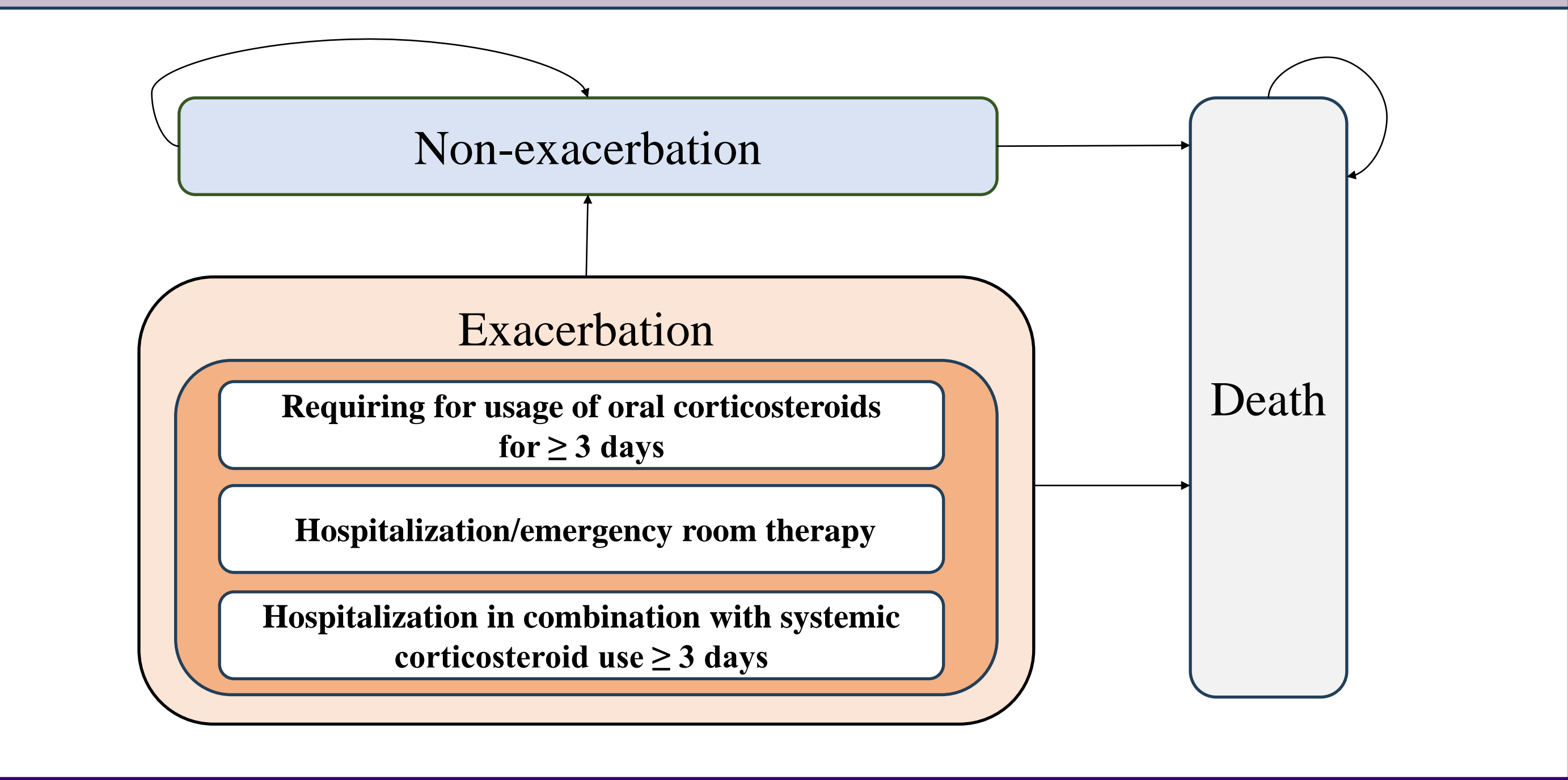
➤ To evaluate the cost-effectiveness of budesonide/formoterol combination therapy plus as need compared with salmeterol/fluticasone plus salbutamol as reliever therapy for asthma patients ≥12 years from the societal perspective.

## Methods

### Model Structure

- ◆ A Markov model was developed with three health states(i.e. non-exacerbation, exacerbation, and death) with a lifetime horizon (Figure 1).
- ◆ The exacerbation state was defined as asthma deterioration requiring for usage of oral corticosteroids for ≥ 3 days; or hospitalization/emergency room therapy; or hospitalization in combination with systemic corticosteroid use ≥ 3 days.

Figure 1 | Model structure



### Model parameters

- ◆ The exacerbation rates were obtained from a prospective cohort study conducted among Chinese asthma patients.
- ◆ Healthcare resources utilization data were collected from the authoritative diagnosis and treatment guideline and had been validated by experienced clinical experts.
- ◆ Asthma-related mortality, cost inputs and utility values were derived from public database and the literature.

### Key Assumptions in the model

- ◆ Patients need to be followed up every 3 months in a non-exacerbated state of asthma.
- ◆ Patients with acute exacerbations who require hospitalization do not need to be admitted to an intensive care unit.
- ◆ The patient's condition stabilizes with age, and the frequency of acute episodes per year remains constant.

## Results

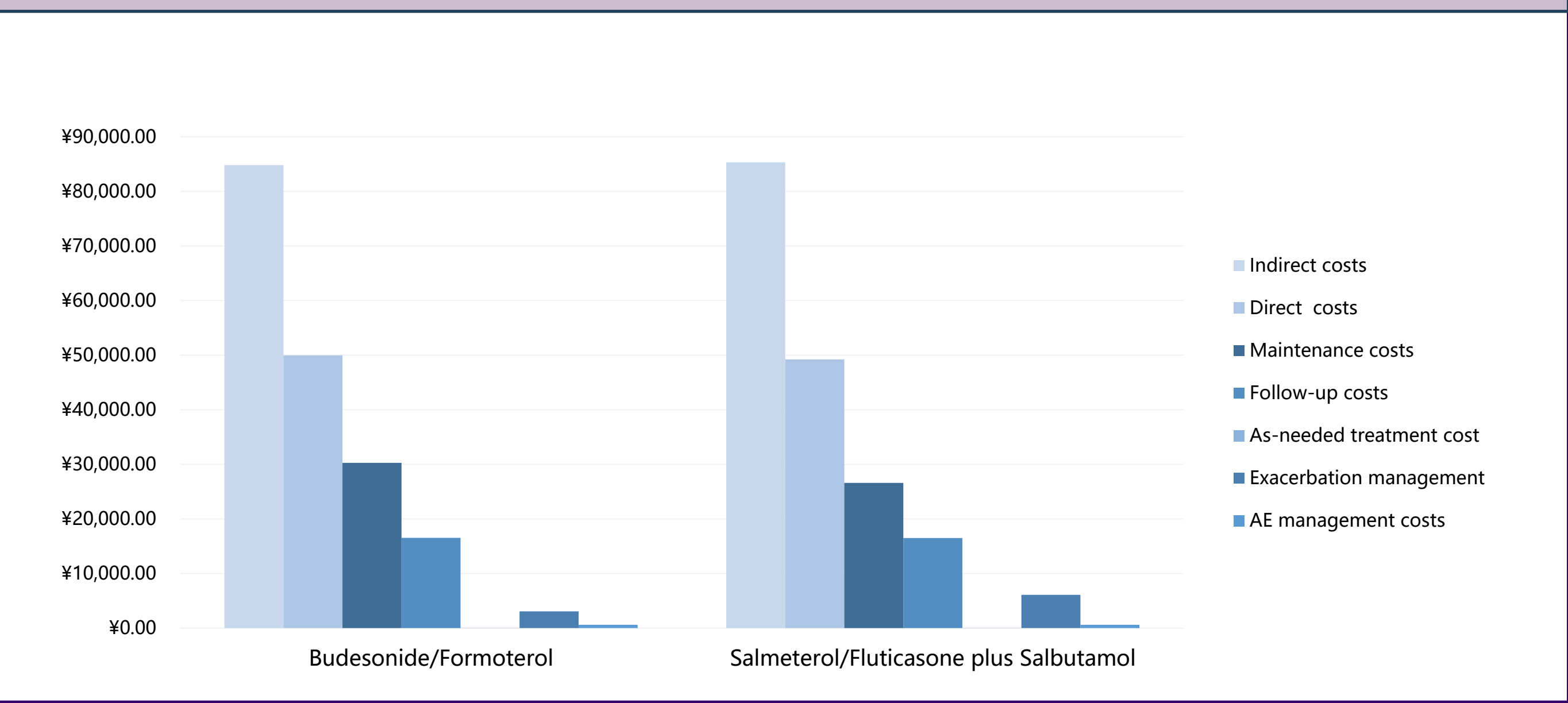
### Base Case result

- ◆ Compared with salmeterol/fluticasone plus salbutamol, budesonide/formoterol led to fewer exacerbation events (9.64 vs 11.26), with an additional ¥742.49 total cost, less ¥3027.52 cost of exacerbation management, quality-adjusted life years (QALY) gains of 0.0073 over a lifetime horizon. (Table 1 & Figure 2)
- ◆ The base case incremental cost-effective ratio (ICER) was ¥33,616.68 per QALY gained.

Table 1 | The cost, effectiveness and incremental cost-effectiveness ratios (ICERs)

	Budesonide/Formoterol	Salmeterol/Fluticasone plus salbutamol
Total Costs	¥134,815.34	¥134,569.50
Exacerbation events	9.6368	11.2956
LY Gains	19.0459	19.0459
QALYs Gains	14.8379	14.8305
ICER	¥33,616.68	

Figure 2 | Cost Components

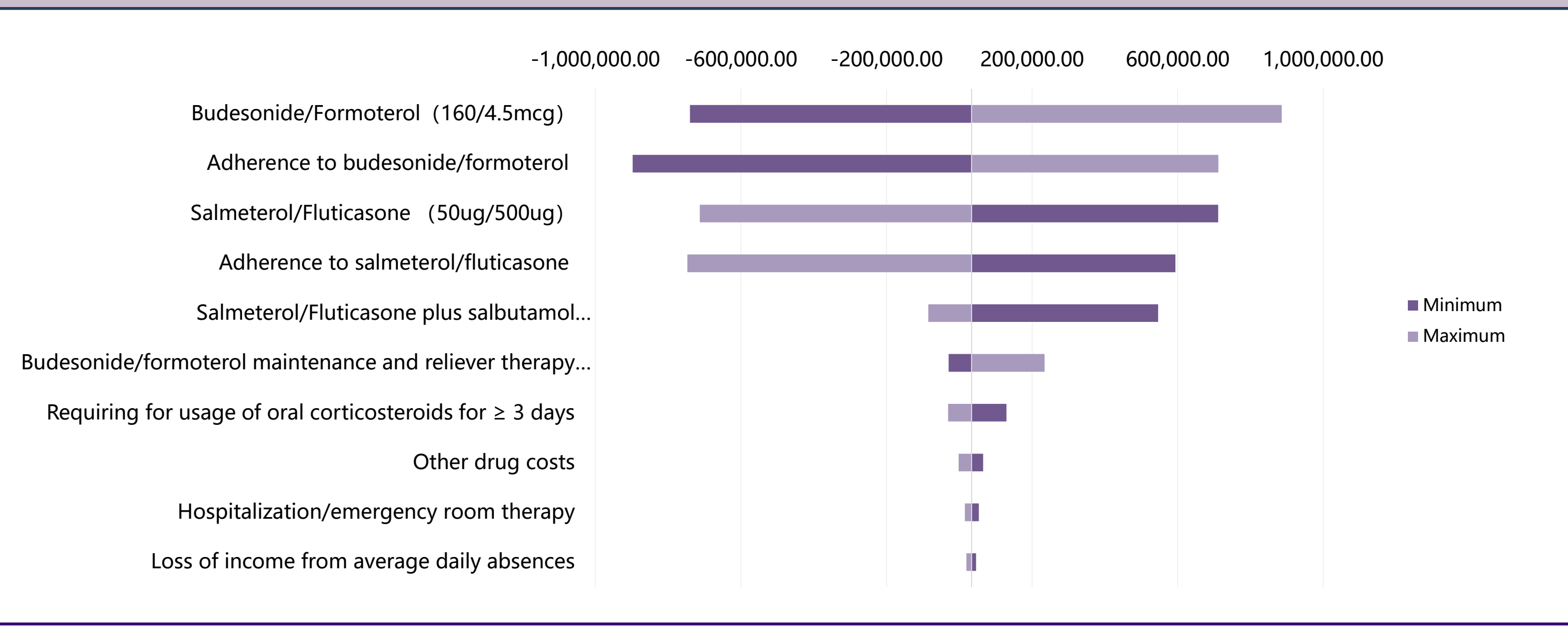


### Sensitivity Analysis

#### One-way Sensitivity Analysis

- ◆ Key drivers were the price of budesonide/formoterol and salmeterol/fluticasone, treatment adherence, and exacerbation rates. (Figure 3)

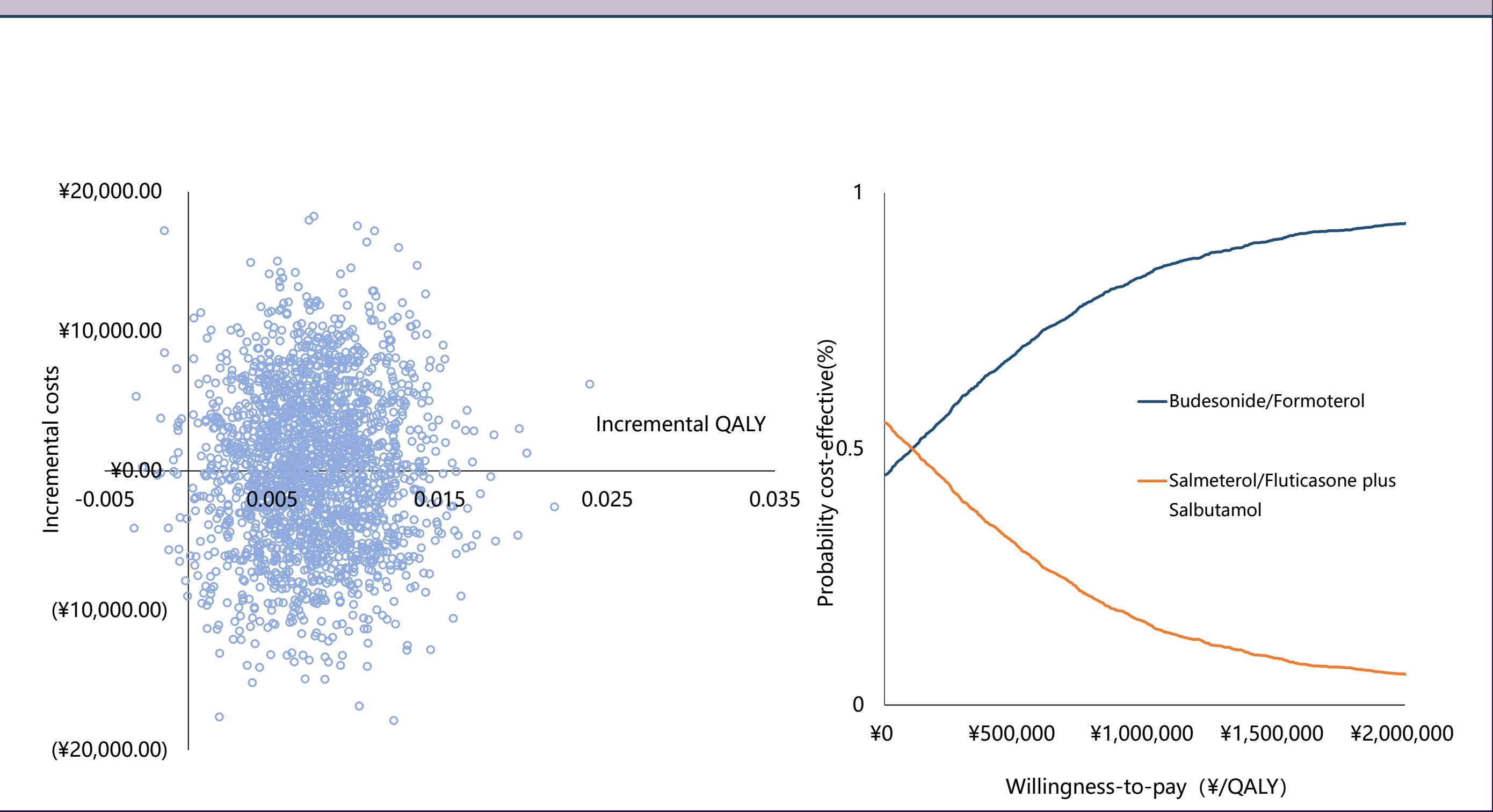
Figure 3 | The tornado graphs



### Probabilistic Sensitivity Analysis

- ◆ At a willingness-to-pay of ¥85,698/QALY (1 times of GDP-per-capita in China), the probability of budesonide/formoterol maintenance and reliever therapy being cost-effectiveness versus salmeterol/fluticasone plus as-needed salbutamol was 48.95%. (Figure 4)

Figure 4 | Cost effectiveness plane & Cost-effectiveness acceptability curve



## Conclusion

➤ Overall, from the societal perspective, budesonide/formoterol is likely to be a cost-effectiveness option compared with salmeterol/fluticasone plus as-needed salbutamol for Chinese asthma patients ≥12 years.

## References

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