

Budget Impact Analysis of Early Rescue Surfactant Therapy for Preterm Infants with Respiratory Distress Syndrome (RDS) in China

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OBJECTIVE

Continuous positive airway pressure (CPAP) is the common management of respiratory distress syndrome (RDS) in China. Clinical studies have shown that early rescue surfactant therapy in RDS patients reduces the need for mechanical ventilation and shortens the length of stays in hospital. It also decreases the incidence of complications, such as bronchopulmonary dysplasia, severe intraventricular haemorrhage and air leak syndromes. This study aims to estimate the budget impact of early rescue surfactant therapy in Chinese preterm infants.

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METHODS

- ❖ **Model:** A decision tree model was developed to estimate the resource consumption and total budget of **early rescue surfactant therapy** compared to the **CPAP alone strategy**.
- ❖ **Data:** Clinical and resource utilization data are derived from clinical studies^{1,2}, while unit cost data are obtained from surveys of Chinese neonatal experts.
- ❖ **Gestational Ages:** The average birth weight and proportion of different gestational ages (GA) are derived from survey data in China.^{3,4}
- ❖ **Surfactant therapy:** Surfactant (poractant alfa with the initial dose of 200mg/kg) was delivered with the technique of Intubation-Surfactant-Extubation (InSurE) or Less Invasive Surfactant Administration (LISA).
- ❖ **Population:** Infants (GA<32 weeks) are included in the study.

Figure 1. Scenario 1: CPAP (≤28 weeks GA)¹⁻⁴

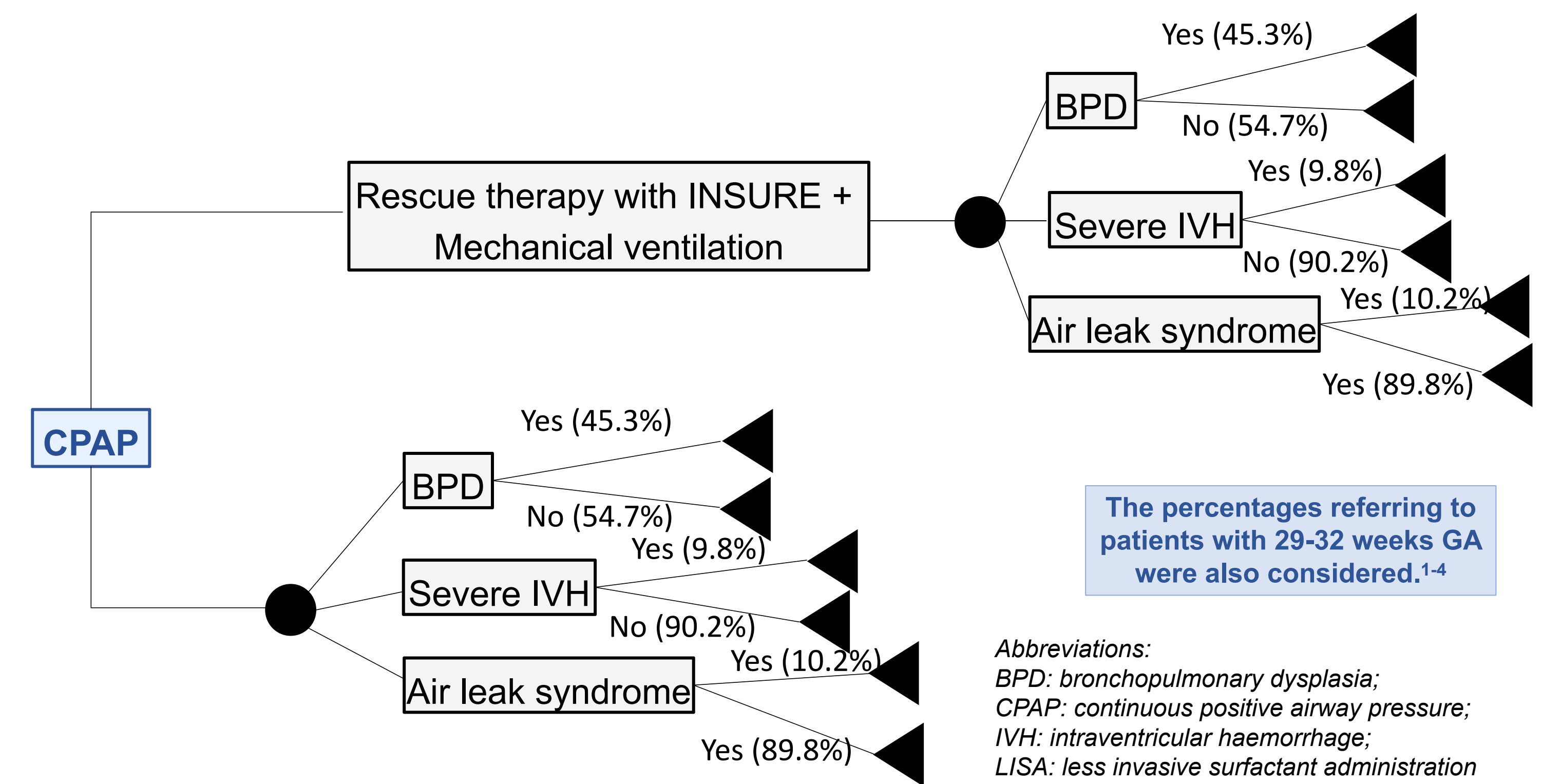
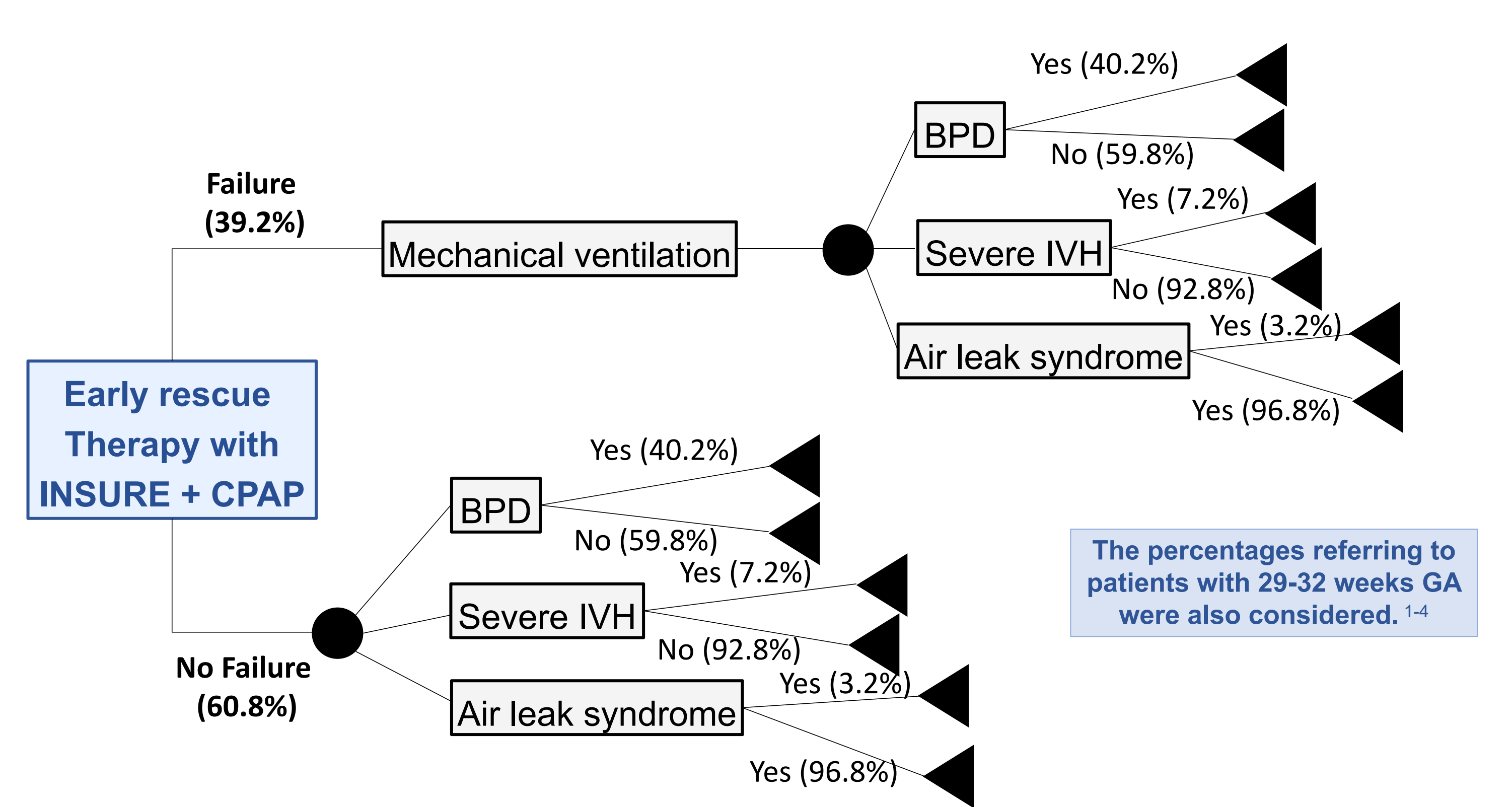


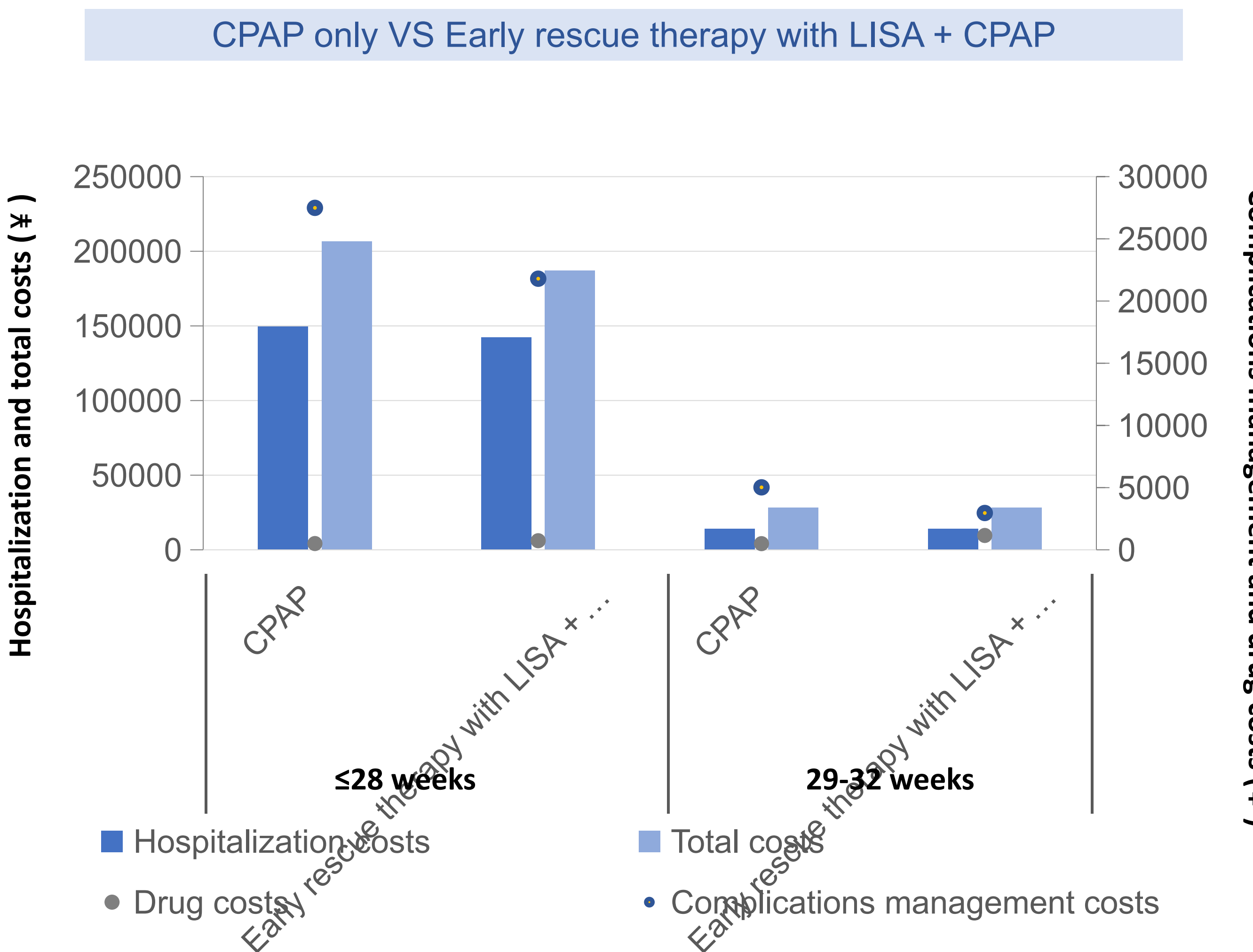
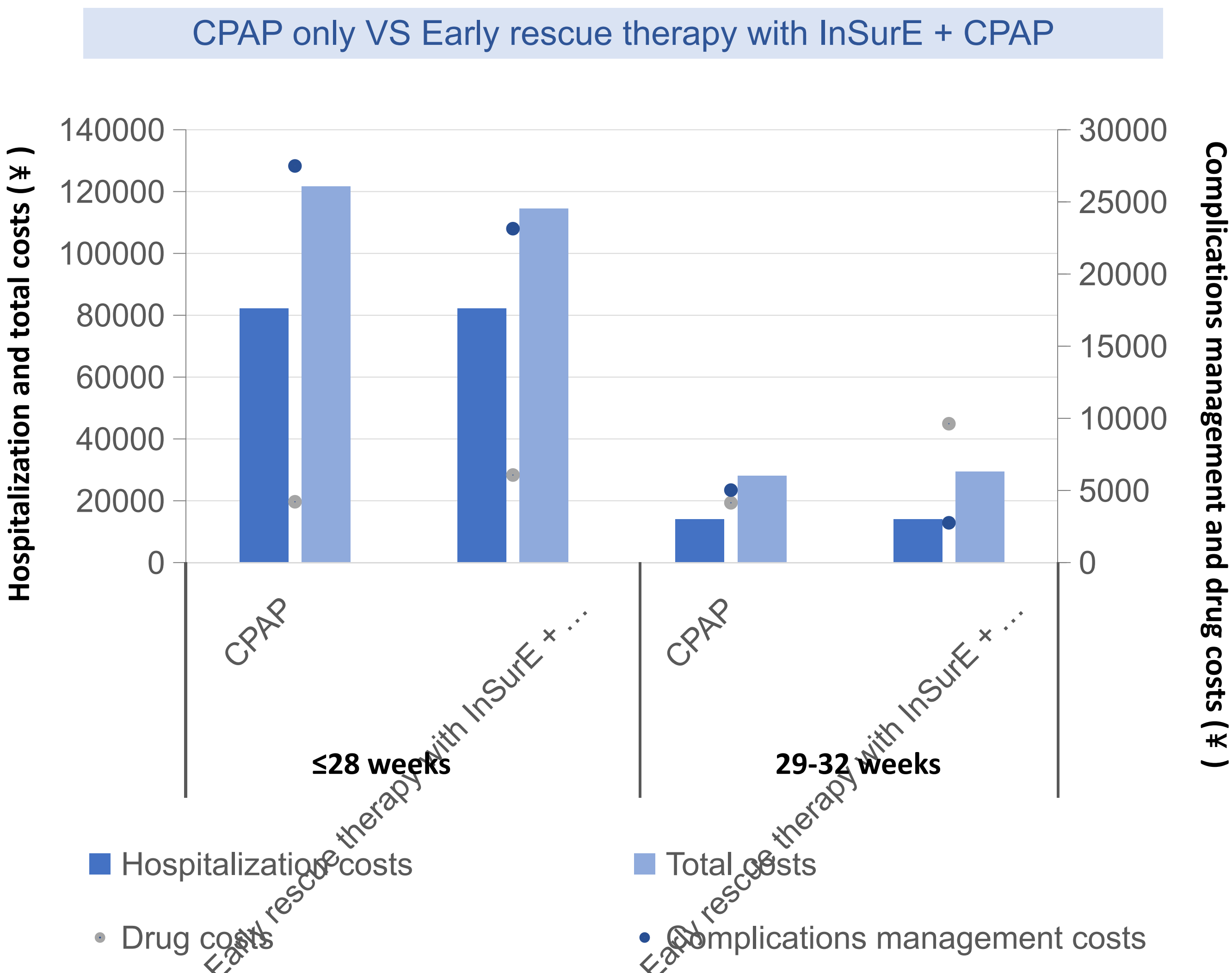
Figure 2. Scenario 2: Early rescue therapy with LISA + CPAP (≤28 weeks GA)¹⁻⁴



RESULTS

- ❖ For each GA group, the overall budget impact was estimated based on difference surfactant delivery technique.
- ❖ When using **InSurE technique**, early rescue surfactant therapy will result in a cost saving of -7,289 CNY per patient in GA≤28w group, while increase the budget at 1,408 CNY per patient in group of 29w<GA<32w. **The weighted average total budget impact is -1,389 CNY per patient.**
- ❖ When using **LISA technique**, the total budget impact is -19,547 CNY per patient in GA≤28w group and 275 CNY in 29w<GA<32w group. **The weighted average total budget impact is -6,098 CNY per patient.**

Figure 3. Annual costs of RDS management.



CONCLUSIONS

Compared to CPAP alone strategy, the early rescue surfactant therapy will reduce the incidence of complications, meanwhile generate cost saving in Chinese preterm infants.

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