

Cost-Effectiveness Analysis of Intravascular Ultrasound in Percutaneous Coronary Intervention

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Background

- Intravascular Ultrasound (IVUS) has been recommended for its confirmed clinical benefits from RCTs and META analysis.
- The economic value of intravascular ultrasound (IVUS) guided percutaneous coronary intervention (PCI) over angiography-guided PCI has not been discussed in China.

Objective

- To evaluate the cost-effectiveness and budget impact of using intravascular ultrasound (IVUS) in the treatment of coronary artery disease (CAD) with percutaneous coronary intervention (PCI).

Methods

- A Markov model was developed to simulate the full life cycle of CAD patients.
- The economic impact of IVUS-guided vs. angiography-guided PCI was analyzed from the healthcare payer perspective.

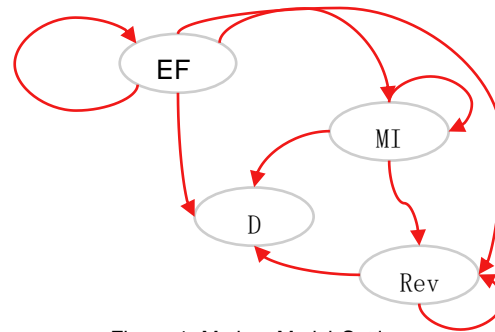


Figure 1 Markov Model Setting

EF: Event Free
MI: Myocardial infarction
D: Death
Rev: revascularization

Results

- In the base-case scenario (benefits of IVUS lasts beyond the first year after PCI), the incremental cost-effectiveness ratio (ICER) is a negative one, which means IVUS is the dominant one.
- If the benefit of IVUS is limited in the first year after PCI, the ICER is 133,001 Yuan/QALY (less than 2 times of GDP per capita), which means IVUS is still a cost-effective approach.

Table 1 Results of Markov Simulation

Benefits of IVUS lasts beyond the first year after PCI		
	IVUS	angiography
Cost (YUAN)	297,222	312,106
QALY	8.906	8.822
ICER (YUAN/QALY)	-176,678	—
Benefits of IVUS is limited in the first year after PCI		
	IVUS	angiography
Cost (YUAN)	316,912	312,106
QALY	8.858	8.822
ICER (YUAN/QALY)	133,001	—

Results Cont'd

- From payer's budget perspective, the reimbursement of 1 case PCI guided with IVUS instead of angiography, will increase the budget by ¥9200. However, IVUS could better reduce the rate of MI and revascularization, therefore it can result in total budget savings each year thereafter. From the twelfth year, the budget savings will exceed the increased budget at baseline.

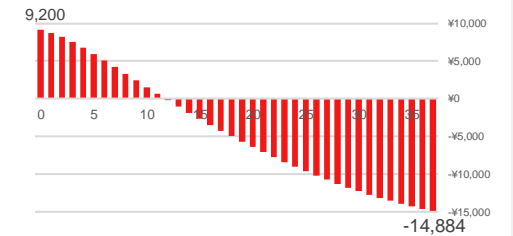


Figure 2 Budget Impact Analysis

Conclusion

- Comparing to angiography, IVUS is a cost-effective approach and induce saving budget to payer.