



Cost-Effectiveness Analysis of Risk Scoring Model in Population-Based Oral Cancer Screening Program of Taiwan

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OBJECTIVES

- Late diagnoses and low survival rates of oral cancer (OC) are still public health concerns although oral mucosa examination (OME) is reimbursed in Taiwan
- We aimed to estimate the lifetime cost-effectiveness of risk scoring model (RSM), a novel prediction strategy, in the OC screening program of Taiwan

METHODS

- We focused on high-risk subjects for OC, defined as Taiwanese aged over 30 years with smoking or betel nut chewing habits
- Three alternative strategies were compared with the non-screening strategy from payer's and societal perspectives, including 1) OME only; 2) RSM followed by OME; 3) RSM and OME simultaneously

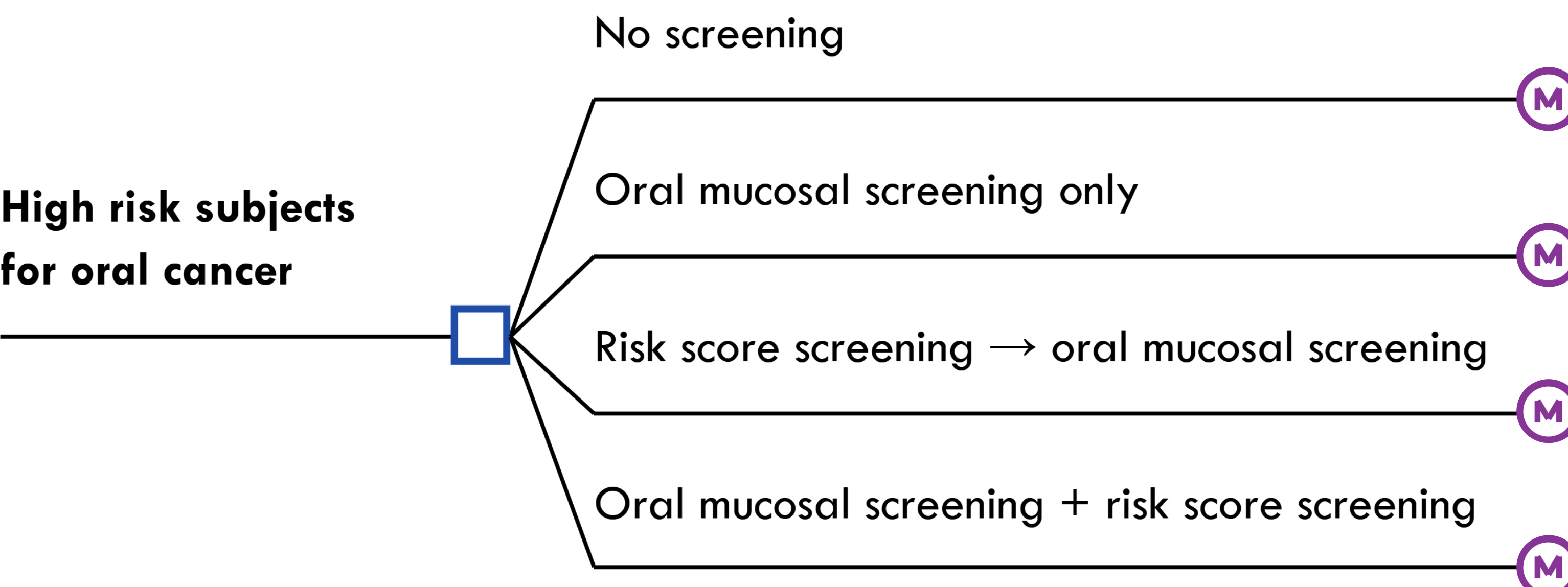


Figure 1. Decision tree for screening strategy

- Microsimulation models were conducted, and disease progressions of OC in 100,000 subjects with various sex, age and oral-habit conditions were simulated (**Figure 2**)
- A one-year cycle length with an annual discount rate of 3% was applied
- Costs were presented in 2020 New Taiwan dollar (NT\$)
- Primary outcome: lifetime incremental cost-effectiveness ratio (ICER)

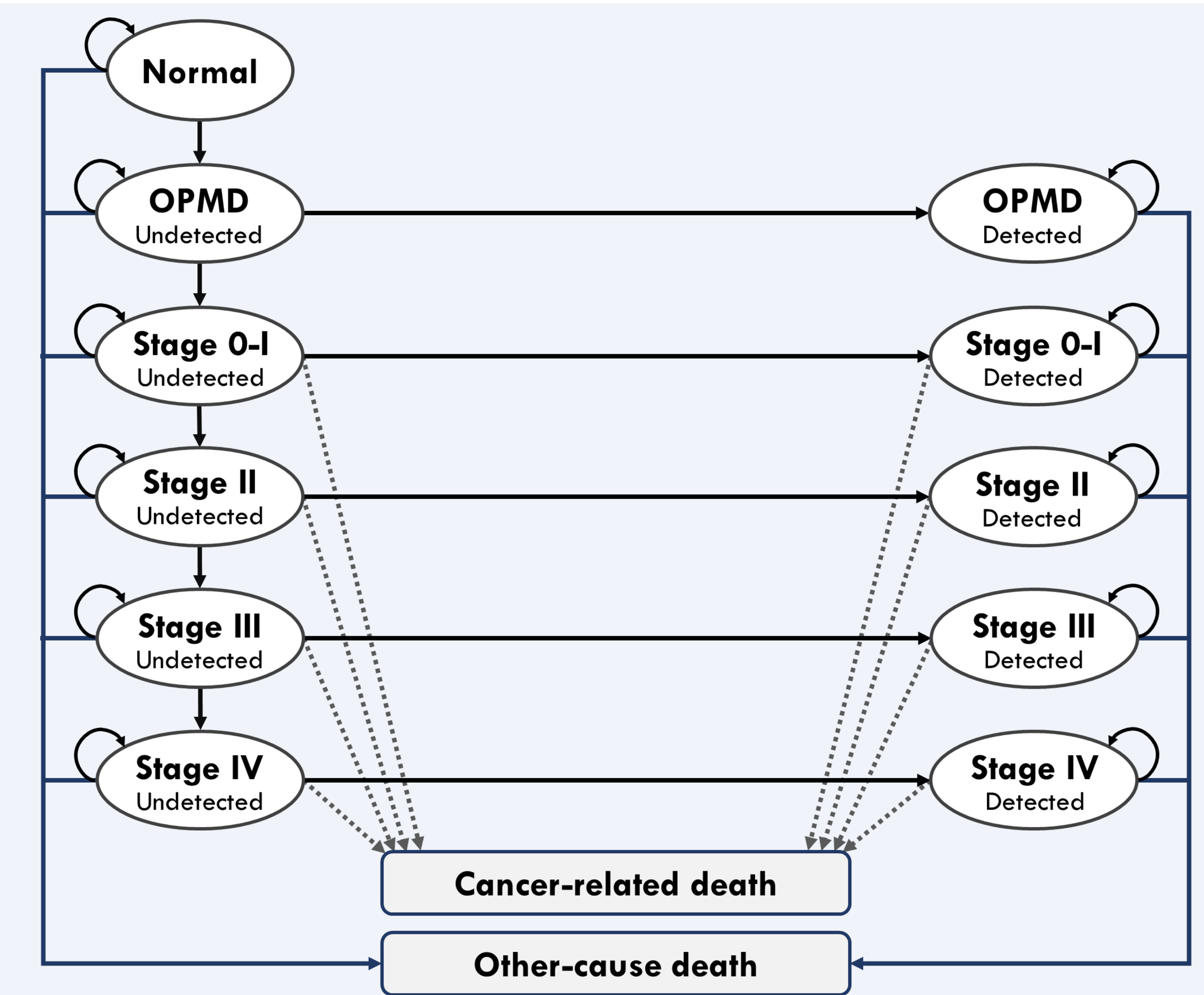


Figure 2. Simulation model of oral cancer progression (OPMD: oral potentially malignant disorders)

RESULTS

- The ICERs of each screening strategy ranged from -NT\$256,212 to -NT\$268,535/QALY in the payer's perspective
- From the societal perspective, the ICERs ranged between -NT\$291,506 and -NT\$302,929/QALY
- Performing RSM and OME simultaneously showed lower incremental costs and higher incremental QALYs, demonstrating the highest probability of being cost-effective in the cost-effectiveness acceptability curve. It brought the most cost-effectiveness due to the increase in screening sensitivity from 77.1% to 96.6%

CONCLUSIONS

- All the screening strategies were cost-saving compared to the non-screening group, especially performing RSM and OME simultaneously
- Public policy may consider cooperating RSM with current OC screening program to improve screening efficiency and achieve early detection of cancer