Cost-Effectiveness of Clinical Breast Examination as Screening Modality for Breast Cancer in Vietnam: A Markov Modelling

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Introduction

- Mammography is the primary screening tool for breast cancer (BC) in high-income countries, but it is not feasible for many low- and middle-income countries (LMICs), including Vietnam
- In **Vietnam**: **65%** of new BC cases **diagnosed at late stages** and there is **no national screening programme** in place

This study assessed the **cost-effectiveness** of a **clinical breast examination** (CBE) screening programme - an affordable alternative - compared to **no screening**

Methodology

- A multi-state **Markov model with ten health states** (4 are tunnnel stages) was developed to simulate BC progression over a lifetime (Figure 1) for a cohort of 100,000 healthy Vietnamese women starting at age 35
- **1-year cycle length** and a **1.5% annual discount rate** for costs and outcomes-both were primary data collected from patients
- Transition probabilities were the same for both scenarios 'no screening' and 'CBE', except for transitions from the well state to stage I-IV, reflecting **CBE's down-staging effect**
- Outcomes were measured in quality-adjusted life years (QALYs)
- The base-case analysis reported the incremental cost-effectiveness ratio (ICER) per QALY gained from the patient perspective

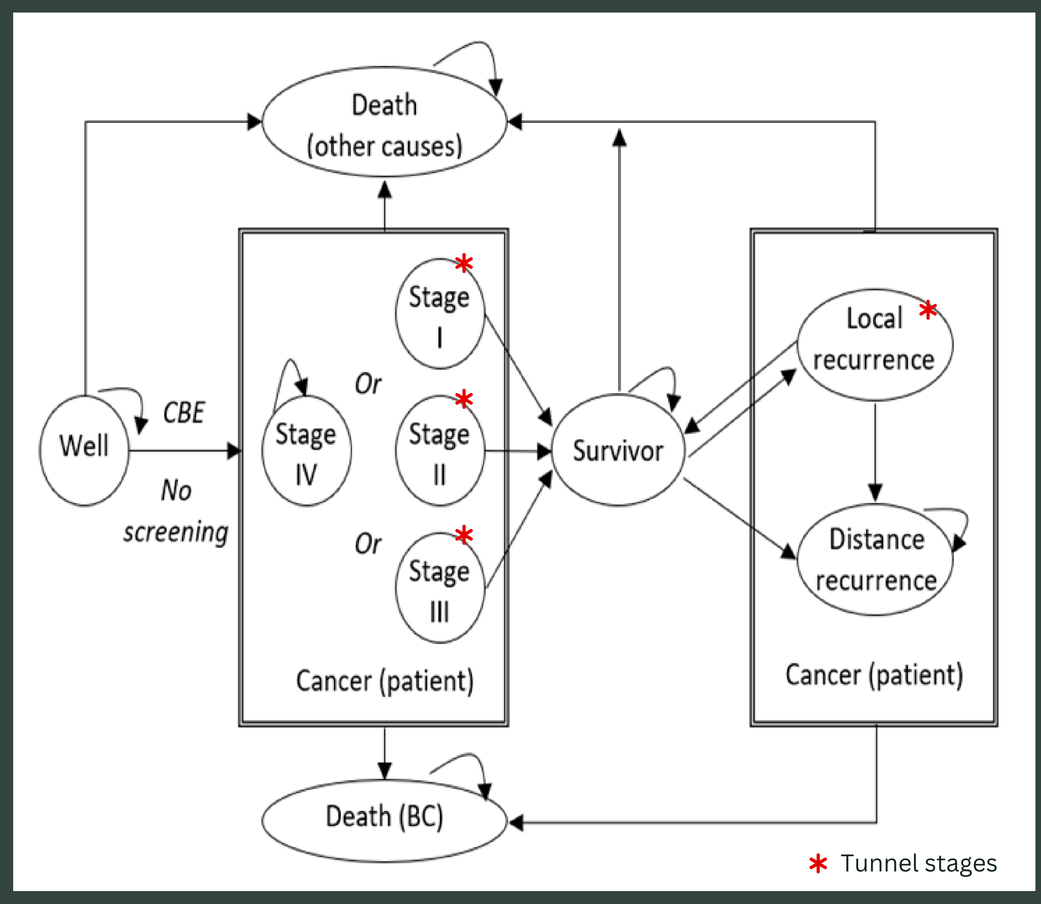


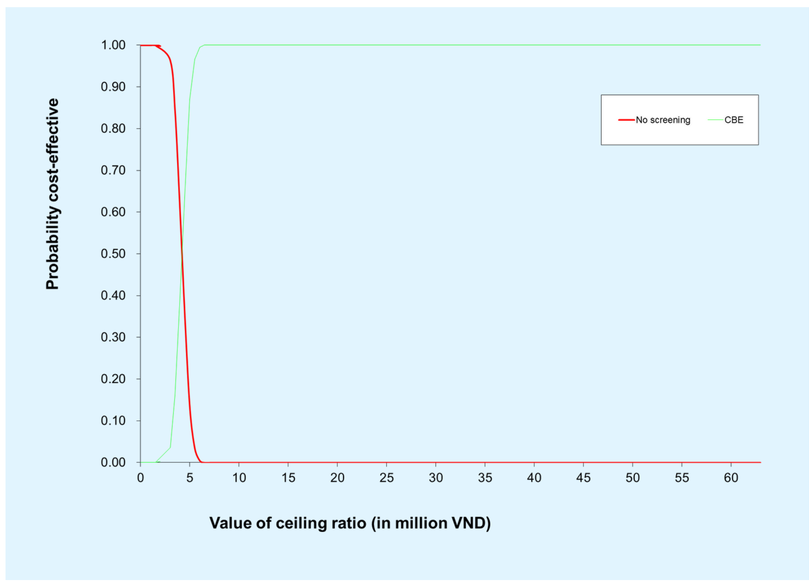
Figure 1. Model of BC progression from diagnosis, to and after treatment

Table 1: BC incidence and stage distribution in two scenarios of no-screening and CBE as screening modality

	No-screening scenario	Screening scenario (CBE)
Age-specific incidence (per 100,000 women)[a]		
35-39	31.6	
40-49	63.1	
50-59	101.2	
60+	129.6	
Stage distribution[b]		
Stage I	10.9	29.0
Stage II	24.9	41.9
Stage III	47.5	21.5
Stage IV	16.7	7.5

BC: Breast cancer | CBE: Clinical breast examination
[a] Age-specific incidence was obtained from GLOBOCAN 2020 data for Vietnam
[b] Stage distribution for no-screening scenario was obtained from a Vietnam study on BC situation during 2001-2007 period
Stage distribution for screening scenario with CBE was obtained from a report of Vietnamese pilot screening study in 8 provinces during 2008-2010 period

Figure 2: CEA curve



Results

- Compared to no screening, the CBE screening programme yielded an ICER of **5.98 million VND** (~$232) per QALY gained, which is well below **Vietnam's GDP per capita (63.2 million VND**, ~$2,449)
- Monte Carlo simulation in PSA confirmed the robustness of the finding, with all 1000 iterations falling below the highly cost-effective threshold

Conclusion

CBE-based BC screening in Vietnam is **highly cost-effective** and **nearly dominant** compared to no screening

Given its affordability and feasibility, CBE should be considered a **best-choice intervention for Vietnam and similar LMICs**