

Cost-Effectiveness of Mobile Intermittent Pneumatic Compression Devices (IPCD) Compared to Traditional IPCD for Early Postoperative Total Knee Replacement: The Hospital’s Perspective.

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Abstract

Objectives: Traditional intermittent pneumatic compression device (IPCD) has been known to prevent venous thromboembolism (VTE) after total knee replacement (TKR). Mobile IPCD may be equally effective with the benefit of allowing patients to walk and perform daily tasks more easily than traditional IPCD. However, the economic evidence is scarce. Therefore, this study aimed to compare mobile to traditional IPCD in preventing VTE within three months after TKR from a hospital's perspective.

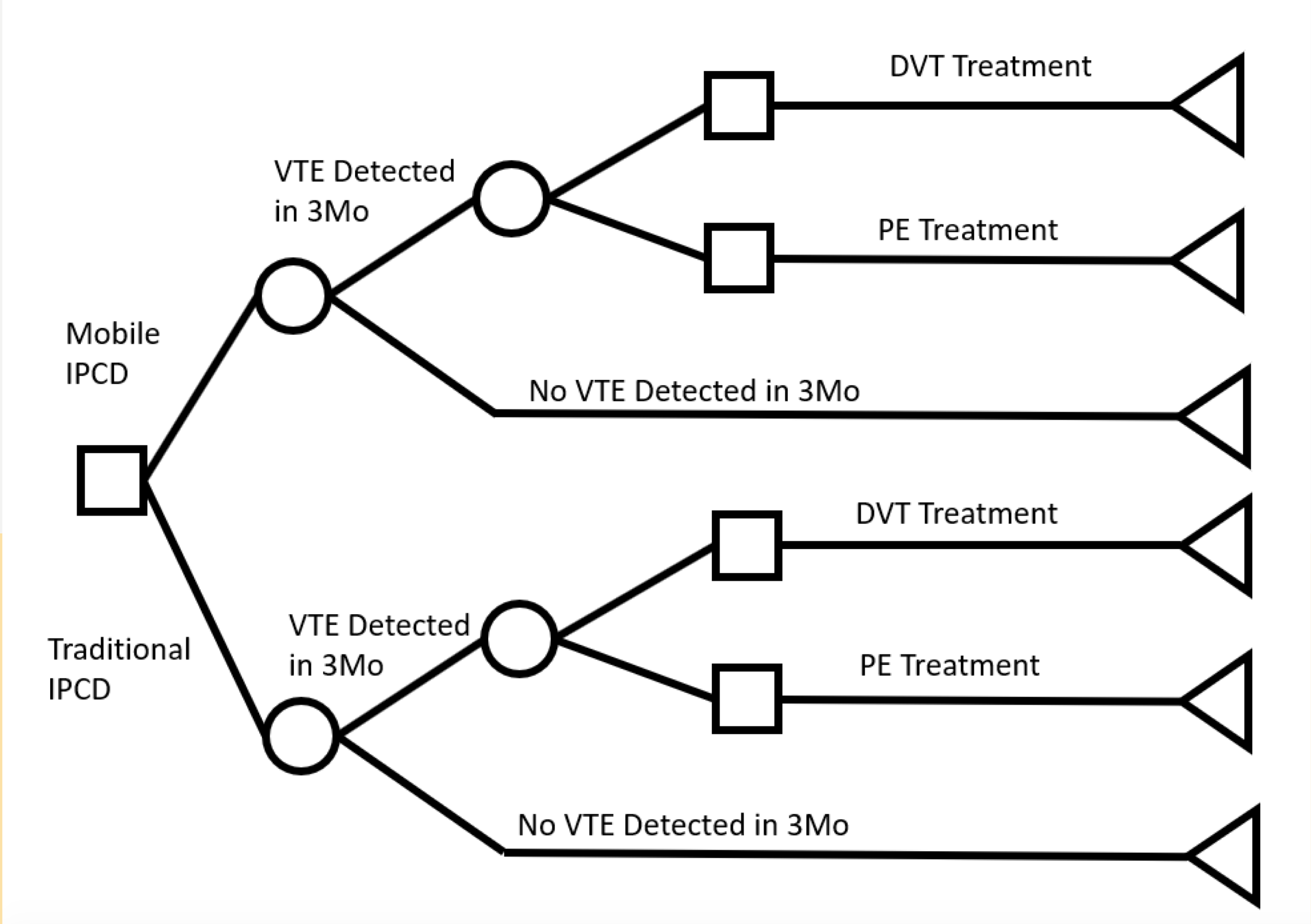
Methods: The base case study was a cost-effectiveness analysis (CEA) using VTE rate and the Barthel index score as the outcomes. The evaluation included one-way deterministic and probabilistic sensitivity analyses. A three-month time horizon was modeled for VTEs after TKA because it is the duration during which VTE usually develops. The model's cost inputs came from hospital reimbursement data, which included VTE therapy. The mobile IPCD rental cost per day, which is cheaper than buying one, originated from an actual clinical environment. This study used data from Siriraj Hospital, Thailand. Effectiveness evaluation was based on 4,066 Siriraj Hospital TKR patients during 2017 and 2021. A cost-utility analysis (CUA) will also be performed utilizing the Thai EQ5D questionnaire's quality-adjusted life years (QALY).

Results: Based on the CEA, mobile IPCD is more cost-effective than traditional IPCD from the hospital's standpoint, with reduced cost, superior Barthel index, and similar rate of VTE. Probabilistic sensitivity analyses showed a 50% likelihood of cost-effectiveness for mobile IPCD at the Thai willingness to pay threshold of 160,000 Baht per QALY (\$1.00 US = 21 Baht, 2021) and a 72% likelihood at the weighted Barthel index when considering the same threshold value. The CUA analyses are ongoing.

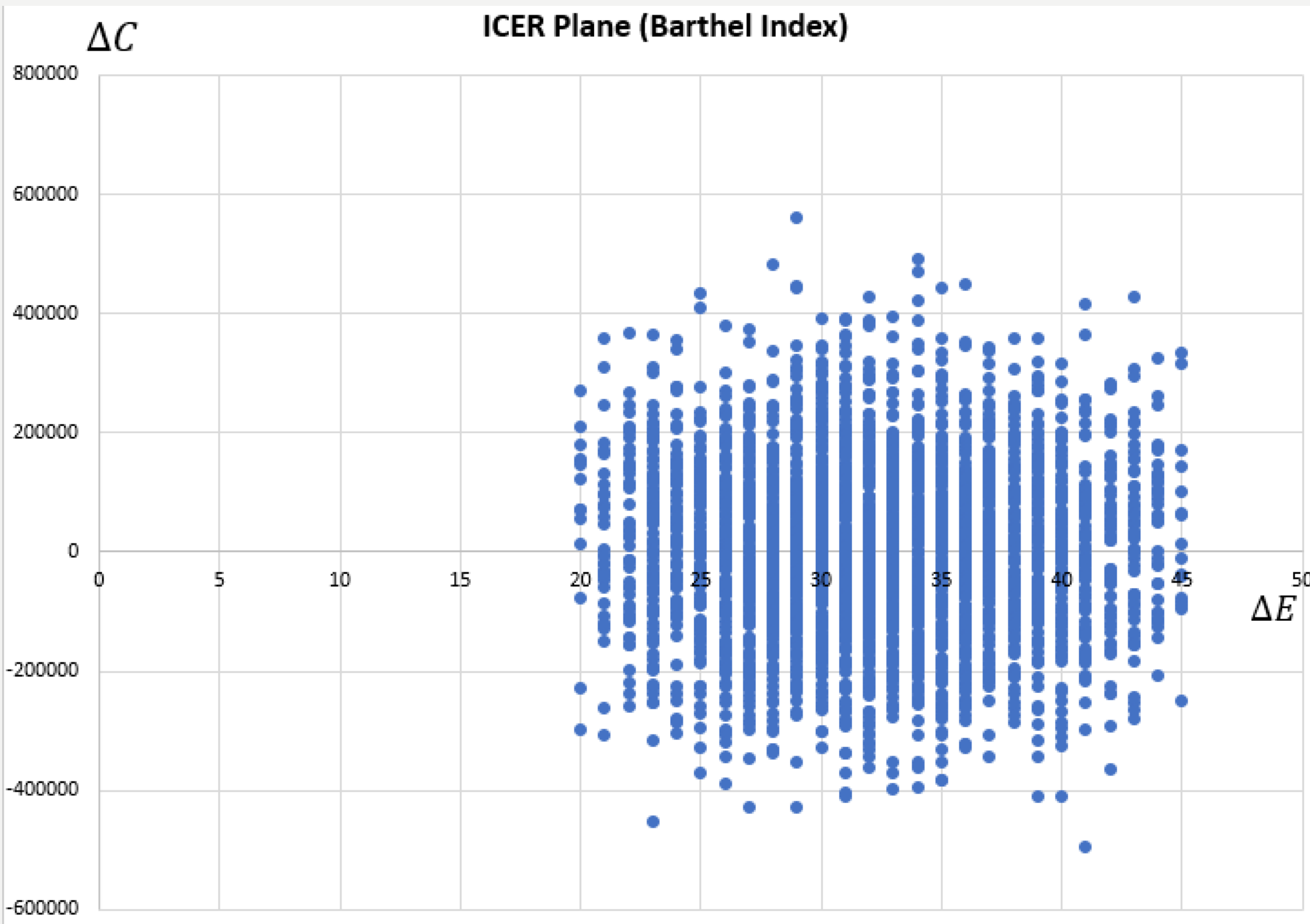
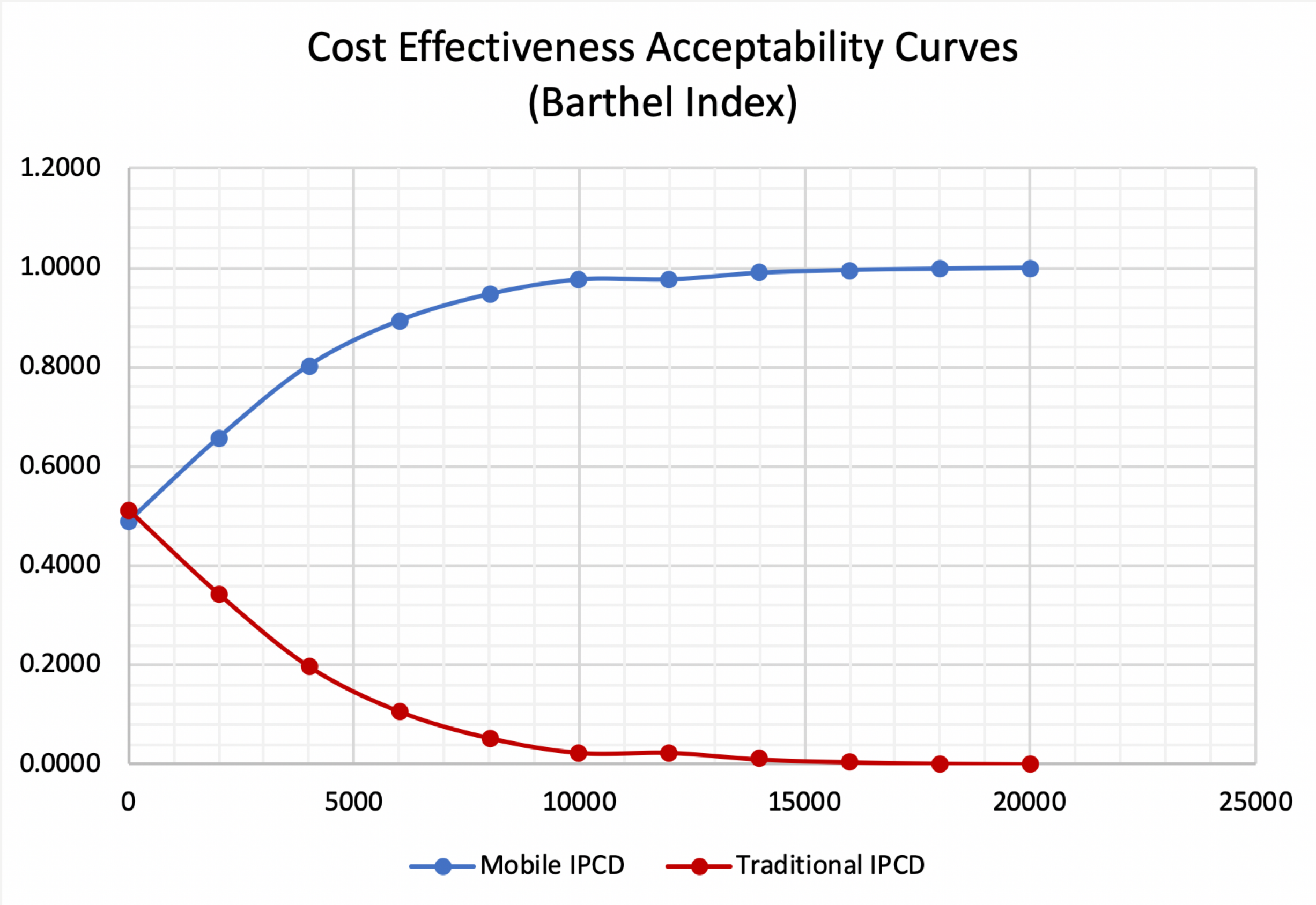
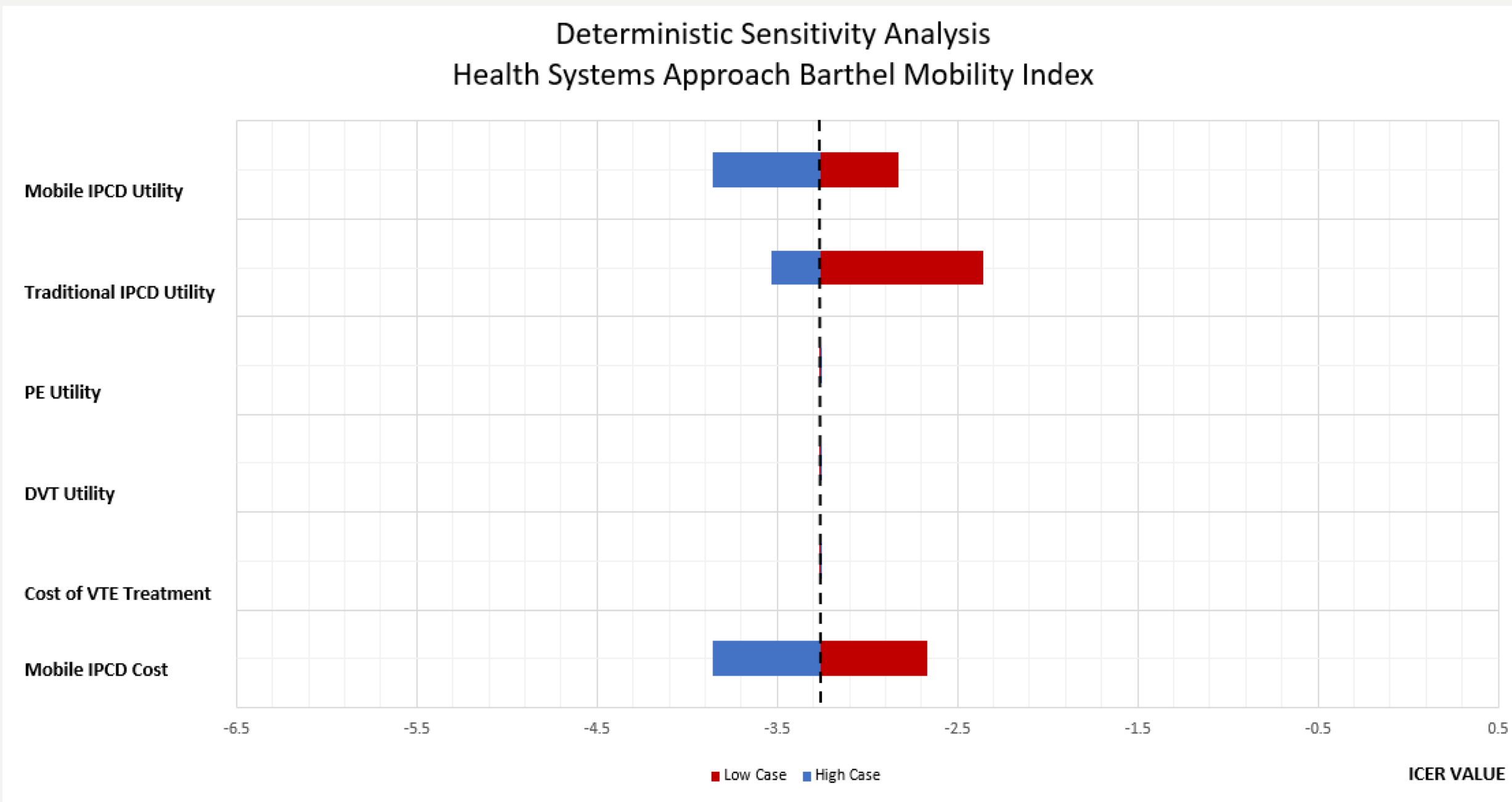
Introduction

The mobile IPCD is now one of the main VTE preventative treatments for postoperative TKR patients, but it is more expensive than the regular IPCD. This new IPCD may cost patients out-of-pocket, unlike the traditional IPCD, which most health insurance policies cover. However, no economic studies have directly compared the two therapies for this patient population. Therefore, we wanted to undertake an economic evaluation based on a hospital's and patients' perspective comparing the mobile with the traditional IPCD in avoiding VTE within three months after TKR to advise health service planners of the best IPCD for Thailand.

Model structure



Results



Conclusions

The results of this study project reveal that mobile IPCD is a more cost-effective option to conventional IPCD when seen from the standpoint of the hospital. This conclusion can be drawn from the fact that mobile IPCD was compared to conventional IPCD in Thailand.