

# Economic Evaluation of Palliative Management versus Peritoneal Dialysis and Hemodialysis for End-Stage Renal Disease: Evidence for Coverage Decisions in Thailand

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## ABSTRACT

**Objective:** To examine the value for money of including peritoneal dialysis (PD) or hemodialysis (HD) into the universal health insurance scheme of Thailand.

**Methods:** A probabilistic Markov model applied to end-stage renal disease (ESRD) patients aged 20 to 70 years was developed to examine the incremental cost-effectiveness ratio (ICER) of palliative care versus 1) providing PD as an initial treatment followed by HD if complications/switching occur; and 2) providing HD followed by PD if complications/switching occur. Input parameters were extracted from a national cohort, the Thailand Renal Replacement Therapy Registry, and systematic reviews, where possible. The study explored the effects of uncertainty around input parameters, presented as cost-effectiveness acceptability frontier, as well as the value of obtaining further information on chosen parameters, i.e., partial expected value of perfect information.

**Results:** Using a societal perspective, the average ICER of initial treatment with PD and the average ICER of initial

treatment with HD were 672,000 and 806,000 Baht per quality-adjusted life-year (QALY) gained (52,000 and 63,000 purchasing power parity [PPP] US\$/QALY) compared with palliative care. Providing treatments for younger ESRD patients resulted in a significant improvement of survival and gain of QALYs compared with the older aged group. The cost-effectiveness and cost-utility ratios of both options for the older age group were relatively similar.

**Conclusions:** The results suggest that offering PD as initial treatment was a better choice than offering HD, but it would only be considered a cost-effective strategy if the social willingness-to-pay threshold was at or higher than 700,000 Baht per QALY (54,000 PPP US\$/QALY) for the age 20 group and 750,000 Baht per QALY (58,000 PPP US\$/QALY) for age 70 years.

**Keywords:** dialysis, economic evaluation, renal failure, Thailand, value of information.

## Introduction

The treatment of end-stage-renal disease (ESRD) is recognized as a major economic and political challenge in health care [1]. Renal replacement therapy is essential to many patients suffering from ESRD. It is, however, one of the most expensive health technologies [2]. Unsurprisingly, policy analysis and economic evaluation of ESRD treatment is among the first interventions to have been assessed, and evaluations have been performed regularly in many settings worldwide [3–15].

There are three major treatment modalities for patients with ESRD: peritoneal dialysis (PD), hemodialysis (HD), and kidney transplantation. A number of previous studies confirmed that kidney transplantation was the most cost-effective strategy and considered the

preferable choice [3–8]. In many settings, however, including Thailand, the number of kidney donors is insufficient to meet demand. There are around 200 donated kidneys available each year compared with the current incidence of 10,000 ESRD patients per year [16,17].

Thailand has been providing universal health-care coverage through a tax-based universal health insurance scheme (UC) since 2001 [18]. The scheme protects a population of 45 million who are not eligible for Civil Servant Medical Benefit Scheme (CSMBS) or Social Security Scheme (SSS). Although all treatment modalities for ESRD are currently covered by CSMBS and SSS, none of them is included in the UC benefit package [19]. To date, there is strong pressure from various stakeholders to provide universal access to PD and HD for UC beneficiaries [20].

This study is one of a series of studies supported by the National Health Security Office (NHSO) to provide scientific evidence for policymakers to make decisions on whether to provide dialysis treatments for

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