

Is there an adaptive advantage?

A simulation study for adaptive Health Technology Assessment

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Adaptive HTA performance will depend on low variability of ICER across full HTA studies and low budget impact of technology.

- Method to adjust price to local context has potential to reduce ICER variability.
- This study provides quantitative evidence supporting aHTA as a complement to a country’s toolkit for prioritising technologies for full HTA.

ADAPTIVE HTA

Adaptive HTA (aHTA) is the systematic approach to selecting and conducting the optimal HTA analysis for each technology. It produces efficient assessment of cost-effectiveness by adjusting for analytical time, data, and capacity required, and leverages information from other settings where possible.

It offers a context-sensitive and efficient alternative to full HTAs and is particularly valuable for small countries and in resource-limited settings.

There is an increasing interest in aHTA but few explored the impact of uncertainties brought by aHTA.

OBJECTIVE

We developed a simulation spreadsheet that leverages data from existing full HTA studies.

This study evaluated how uncertainty inherent in aHTA influences decision-making and identified key factors that contributed to high levels of uncertainty.

METHODOLOGY

Step 1 Generate aHTA ICER using a distribution modeled from full HTAs.

1. Identify candidate technologies with existing systematic reviews of full HTAs. There should also be a full HTA study from a reference country, in our case Thailand, to represent a true ICER.
2. Adjust ICERs of full HTAs to derive an aHTA ICER. We used two methods:
  - > USD-adjusted aHTA ICER: To align monetary value of studies, convert all values to USD, then adjust to current year using US Consumer Price Index.
  - > Price-adjusted aHTA ICER: Adjust the ICER to the local context through the price of the technology.

$$ICER_a = ICER_o \times \frac{P_a}{P_o}$$

where ICER<sub>a</sub> is the ICER adjusted to reference country, ICER<sub>o</sub> and P<sub>o</sub> denote the ICER and price of the technology in the country of origin of the full HTA respectively; P<sub>a</sub> is the price in the country to which we are moving the ICER.

Step 2 Evaluate accuracy and monetary impact of reimbursement decisions based on aHTA using a willingness-to-pay (WTP) threshold rule.

1. Derive net monetary losses from aHTA if a wrong decision is made.
- $$Net\ monetary\ loss_{WA} = [\Delta Cost - (\Delta QALY * WTP)] * Disease\ burden$$
$$Net\ monetary\ loss_{WR} = [(QALY * WTP) - Cost] * Disease\ burden$$

Thailand’s WTP: ~3,250 USD

WA = wrongly accept, WR = wrongly reject, Cost and QALY are from the TRUE ICER values

RESULTS

TECHNOLOGIES EXAMINED

Studies that had a similar population, intervention, comparator and output (PICO) framework were pooled together to ensure comparability.

Technology	Thai ICER (in USD)	ICER adjustments	Mean ICER (in USD)
Infliximab for Crohn’s disease	76,163	USD-adjusted	240,106
		Price-adjusted	170,802
Oxaliplatin containing regimen for colorectal cancer	10,056	USD-adjusted	23,661
		Price-adjusted	16,595
Endovascular Thrombectomy (EVT) for stroke	3,280	USD-adjusted	4,911
		Price-adjusted	860
Pneumococcal Conjugate Vaccine	2,968	USD-adjusted	7,420
		Price-adjusted	3,869
Dapagliflozin for stroke	2,431	USD-adjusted	23,236
		Price-adjusted	11,109
Sofosbuvir containing regimen for HCV	-6,013	USD-adjusted	26,912
		Price-adjusted	849
Peritoneal dialysis versus Hemodialysis	-84,693	USD-adjusted	-298,263
		Price-adjusted	-261,662

