



Title **Continuous Renal Replacement Therapy in Adult Patients with Acute Renal Failure: Systematic Review and Economic Evaluation**

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Aim

To conduct a systematic review of the efficacy and harm of continuous renal replacement therapy (CRRT) and intermittent hemodialysis (IHD); and to conduct an economic evaluation and budget impact analysis comparing these strategies in critically ill adult patients with acute renal failure (ARF).

Conclusions and results

Compared to IHD, observed differences in clinical outcomes after CRRT (dialysis dependence at study end, number of hospitalization days) were not statistically significant, but had wide confidence intervals, suggesting that meaningful clinical differences could exist. Available evidence suggests similar rates of mortality between modalities. Given current CRRT usage rates of 26% to 68%, selectively funding IHD when either technology is appropriate would save 2.1 million to 6.1 million Canadian dollars (CAD) in acute care costs. If no improvements in clinical outcomes are obtained with CRRT, its use leads to equal QALYs and an additional cost of 3679 CAD compared with IHD. If IHD leads to reduced mortality, it produces 0.07 QALYs and additional costs of 8541 CAD per patient largely due to the additional downstream costs of more long-term dialysis.

Recommendations

Not applicable.

Methods

We conducted a systematic review of the clinical literature, selecting for review 13 RCTs and large ($n \geq 100$) controlled trials comparing CRRT with IHD. We also identified 3 trials comparing the submodalities of IHD and 10 trials comparing the submodalities of CRRT. A cost-utility analysis was conducted from the perspective of a Canadian third-party payer. A Markov model followed a theoretical cohort of Canadian patients for a lifetime.

Further research/reviews required

The cost effectiveness of CRRT should be revisited if future studies suggest that it leads to better clinical outcomes, especially a reduced risk of dialysis dependence among survivors.