

- Title** Single use dialyser versus reuse dialyser
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Aim

1. To assess the safety, effectiveness, economic implications, organizational, legal or environmental impacts of single use dialyser compared with reuse dialyser for haemodialysis of patients with end stage renal disease (ESRD) through a systematic review of the literature.(Part A)
2. To assess the cost-effectiveness of single use dialyser compared with reuse dialyser for haemodialysis of patients with ESRD in Malaysian public hospitals by conducting local economic evaluation.(Part B)

Conclusions and results

There was fair level of evidence to suggest that single use dialyser is as effective as reuse dialyser in terms of mortality. However, dialyser reuse was associated with higher rates of hospitalisation. Reuse of dialyser has the potential to increase the risk of infections. Dialyser performance may be reduced with reuse. Separation practices and ban on reuse of dialyser lower the incidence of Hepatitis B or Hepatitis C infection among patients.

From the local economic evaluation, single use was found to be more expensive but more effective than reuse. However, the incremental cost-effectiveness ratio (ICER) was found to be above the threshold of cost-effectiveness (MYR 4983655). Threshold analysis showed that the breakeven point where both single use dialyser and reuse dialyser expected value are equal is MYR 1,418. Below this cost, the single use dialyser strategy would be favoured. It should be noted that the model has ignore possible effect of infectious disease contamination and associated building cost to accommodate high risk infected dialyser.

Recommendations

Single use dialyser should be used for those with infectious diseases such as Hepatitis B, Hepatitis C, Hepatitis B & C co-infection or HIV infection, subjected to the availability of resource and further economic evaluation. In line with the Ministry of Health guidance on Haemodialysis Quality and Standards and the Report of the Malaysian Dialysis & Transplant Registry where manual dialyser reprocessing system reported significantly higher risk

for HCV seroconversion. Hence, automated reprocessing system for reuse of dialyser is advocated.

Methods

Studies were identified by searching electronic databases. The following databases were searched through the Ovid interface: MEDLINE(R) In-process and other Non-Indexed Citations and Ovid MEDLINE(R), EBM Reviews-Cochrane Database of Systematic Reviews, EBM Reviews-Cochrane Central Register of Controlled Trials, EBM Reviews-Database of Abstracts of Review of Effects, EBM Reviews-Health Technology Assessment, EBM Reviews-NHS Economic Evaluation Database, EMBASE 1988 to 2013 Week 09. Parallel searches were run in PubMed. No limits were applied to the search. The last search was run on 14 February 2013. Additional articles were identified from reviewing the references of retrieved articles. Studies were selected based on inclusion and exclusion criteria. All relevant literature was appraised using the Critical Appraisal Skills Programme (CASP) tool. All full text articles were graded based on guidelines from the U.S./Canadian Preventive Services Task Force.

Local economic evaluation was designed from the provider (Ministry of Health) perspective based on haemodialysis unit in general public hospital. The evaluation was conducted using Markov cohort analysis where the average five years' costs and consequences (quality adjusted life years, QALY) for the patient who received either type of dialyzer were evaluated.

Further research/reviews required

Further local economic evaluation using more complex model and costing could be explored in future.

Written by

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