



**Title** Erythropoiesis-Stimulating Agents for Anemia of Chronic Kidney Disease: Systematic Review and Economic Evaluation

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## Aim

To assess the clinical efficacy, harms, and economic implications of using erythropoiesis-stimulating agents (ESA) in adult patients with anemia of chronic kidney disease (CKD).

## Conclusions and results

ESA resulted in lower observed cardiovascular mortality, but all cause mortality was not affected. The impact on health-related quality of life was modest. Low Hb target strategies (90 to 105 g/L) represented the least costly and second most effective option. Intermediate Hb target strategies (110g/L) produced the most quality-adjusted life-years (QALYs) at an additional cost per patient lifetime (21 000 Canadian dollars (CAD) to CAD 27 000 per patient lifetime compared with the low Hb target in nondialysis dependent and dialysis-dependent adults CKD). For dialysis-dependent patients, the estimated cost of treating anemia to an intermediate Hb target is CAD 9394 per patient per year on dialysis. If subcutaneous (SC) epoetin is used instead of intravenous (IV), or if darbepoetin is used via either route, costs could be reduced to CAD 6577 per patient per year. Altering the Hb target to a low strategy would result in cost savings of CAD 35 million to CAD 49 million per year compared with the intermediate target.

## Recommendations

Not applicable.

## Methods

A systematic review identified randomized controlled trials (RCTs) that included anemic adults with CKD receiving epoetin (alpha or beta), darbepoetin, or “management without ESA” (no ESA) and compared clinical outcomes and harms on the basis of Hb targets and method of delivery. A cost-utility analysis was conducted from the perspective of the Canadian public healthcare system and a lifetime time horizon. The budget impact to the provincial healthcare system was estimated if patients were treated to an intermediate Hb target and if

the SC rather than the IV route for administration of ESA was used.

## Further research/reviews required

Analysis was limited by a lack of data on utilities and the reporting of QoL outcomes. Future investigators should include appropriate QoL assessments in their study protocols and make efforts to report all the data.