# Intensive and home hemodialysis : acute effects and long-term outcomes

As the objective of the analysis was to compare the cost-effectiveness of high dose HD (both in-centre and at home) with conventional in-centre HD, the key parameters of the analysis were quality of life and the survival rates of the studied treatments. The quality of life of a dialysis patient can be determined by health-profile measures which assess health status on a number of domains, such as physical, emotional, or social impairments[22]. They allow the quantification of utilities of dialysis patients on a scale from 0 to 1, in which 1 corresponds to a perfect health state of the patient. Benefits of high dose HD compared to conventional HD in terms of quality of life were derived from Culleton et al.[23]. Within economic evaluations, the health benefit of a therapy can be expressed in quality adjusted life years (QALYs). QALYs are determined by adjusting the life expectancy (survival) of the patient for the quality of life lived during those years. In this cost-effectiveness analysis, high dose HD therapy (5 sessions of 4 hours HD per week for in-centre high dose HD, and 5 sessions of 7 hours HD per week for high dose home HD) was compared with the current standard-of-care therapy, i.e. in-centre conventional HD (ICHD) (3 sessions of 4 hours HD per week). The differences in cost were weighed against the differences in health benefit ('effect'); this ratio is called the 'incremental cost-effectiveness ratio' (ICER).

$$\text{Incremental Cost-Effectiveness Ratio (ICER)} = \frac{\Delta\ \text{COST}}{\Delta\ \text{EFFECTIVENESS}} = \frac{\text{Total cost}_{\text{high dose HD}} - \text{Total cost}_{\text{conventional ICHD}}}{\text{QALY}_{\text{high dose HD}} - \text{QALY}_{\text{conventional ICHD}}}$$

In our model, costs included treatment initiation (dialysis access), treatment (weekly tariffs based on Achmea, including erythropoietin), medication (especially phosphate binders and antihypertensives), complications (hospitalizations), and transportation costs. The willingness to pay (WTP) in the Netherlands lies between €20.000 and €80.000 per QALY. In scenario 1 (100% of patients starting on in-centre conventional CHD versus 100% of patients starting on high dose in-centre HD), the ICER was €279.521 per QALY, which lies far above the WTP threshold of €80.000 per QALY. Although high dose HD results in a health benefit increase (+0,267 QALYs) in comparison with conventional in-centre HD, the additional cost (+€74.589) for treating the patient with this treatment in-centre is higher than the agreed maximum limit for a treatment. In scenario 2 (100% of patients starting on in-centre conventional HD versus 100% of patients starting on high dose home HD), the ICER was €16.331 per QALY, and thus lies below the WTP. High dose HD increased the health benefit of dialysis (+0,478 QALYs) for an acceptable cost (+€7.795) when the patients were treated at home in comparison with in-centre conventional HD. In scenario 3 (100% of patients starting on in-centre conventional HD versus 100% of patients starting on conventional home HD),

the ICER was dominant (-€87.613 per QALY), signifying that there is an additional health benefit (+0,242 QALYs) when treating patients conventionally at home instead of conventionally in-centre for less costs (-€21.205). In conclusion, also in the Netherlands, home HD is a cost-effective alternative to centre-based HD. These results support our strategy to increase the adoption of home dialysis in our patients with ESRD.

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