

The budget impact of restoring the 30% home dialysis rate in the Netherlands

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Poster No. FP710

Background

- The Dutch Renal Registry (Renine) shows that between 2000 to 2003 more than 30% of all Dutch dialysis patients were treated at home.¹
- However, in 2014 this number has declined to 16,5% (see Figure 1).^{1,2}
- Currently most end-stage renal disease (ESRD) patients are treated with conventional in-centre haemodialysis (ICHD), i.e. three 4 hour treatment sessions per week at the dialysis centre.¹ As Figure 1 shows, this rate is growing.
- Nevertheless, studies indicate that home-based dialysis and high dose haemodialysis may provide better clinical benefits at a reasonable cost or even be cost saving.^{3,4,5}
- High dose haemodialysis therapy is defined as no two consecutive days without dialysis and a weekly Kt/V of at least 3.0.
- Health care payers have indicated that home dialysis should be stimulated due to these benefits, provided that the costs are acceptable.⁶

Objective

This study analyses the financial impact on the Dutch healthcare budget from a payer perspective of restoring the home dialysis rate to 30% versus the current distribution of dialysis modalities.

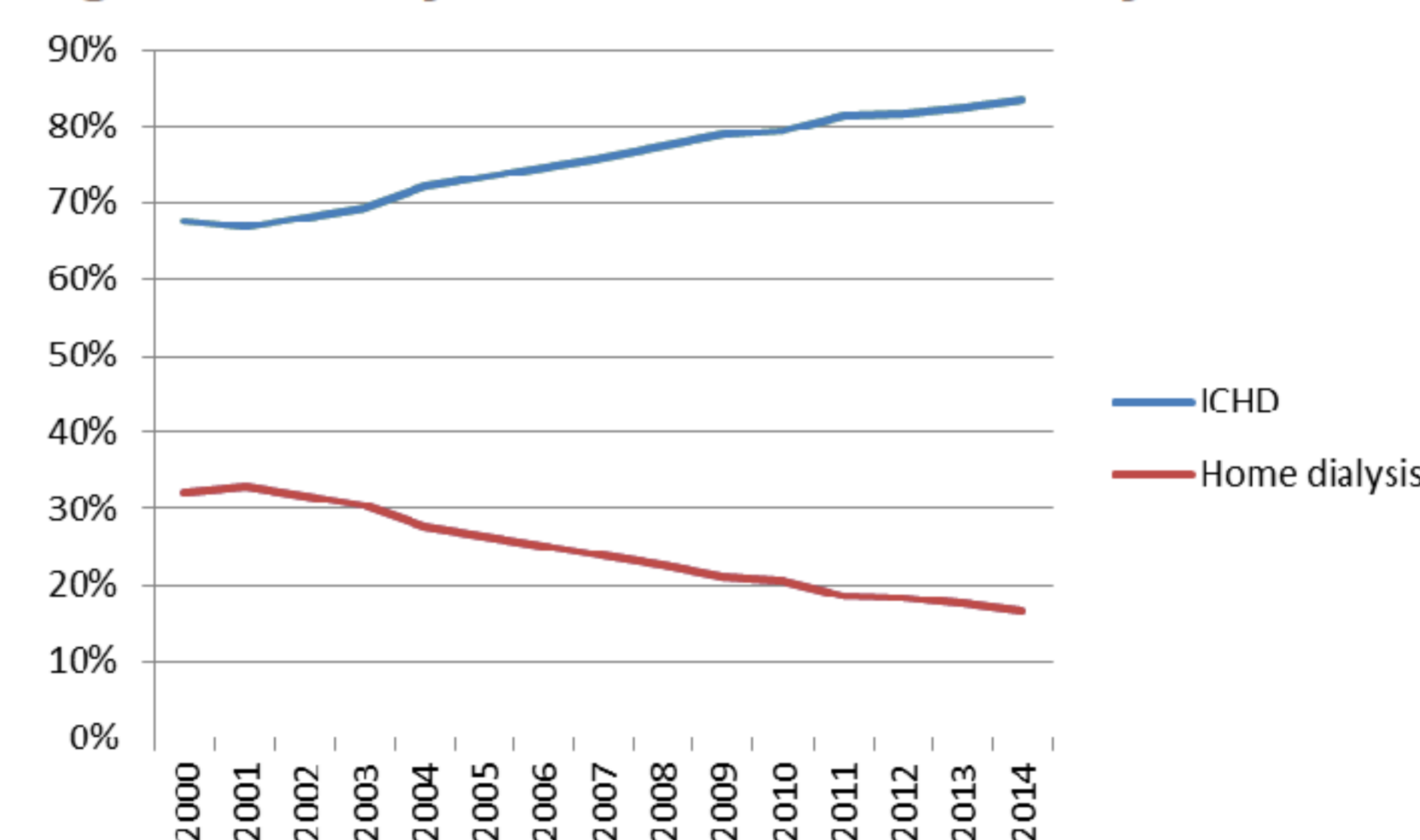
Methods

- A Markov model using Excel® 2010 was developed adopting 28-day cycles.
- The main analysis uses the health care payer perspective and runs for 5 years.
- The model accounted for patient's modality transitions during renal replacement therapy, including transplantation and death.
- Data for transplantation rates were retrieved from Renine and the risk for graft failure for both living and deceased donors was derived from the Dutch Transplantation Foundation (Transplantatiestichting).⁷
- The Renine database provided data on Dutch dialysis population prevalence, incidence, modality and transition.¹
- The base case scenario reflected the current distribution of the different ESRD treatment modalities.¹ (see Table 1)
- The scenario of 30% home dialysis was based on the assumption that conventional HD treatment is sufficient for the majority of patients but more patients are treated at home instead. Additionally, due to the improved clinical benefits, more patients will be treated with high dose HD at home. Finally, a slight increase in PD is calculated. (see Table 1)
- Model inputs also included hospitalization rates, health-related utilities (EQ-5D), and survival.⁸⁻¹⁷ (see Table 2)
- Costs of dialysis were derived from reimbursement tariffs. The weekly tariff of dialysis was provided by one of the largest health care insurance companies in the Netherlands.¹⁸

Results

- This analysis shows that restoring the home dialysis rate to 30% will result in lower dialysis costs compared to the current modality distribution and slightly improve the overall health outcome.
- With a prevalent population of 6408 ESRD patients at the baseline and an incident population of approximately 2000 ESRD patients per each additional year requiring dialysis, 58 life years may be saved.
- A total of €11.2 million (0.47% reduction) could be cumulatively saved over a 5 year period. (see Figure 2)
- Most of the cost savings are due to lower transportation costs (€18.1m; 11.90% reduction), lower medication costs (€284k; 0.50% reduction) and lower complication costs (€90k; 0.52% reduction). (see Table 3)

Figure 1: Dialysis modalities over the years¹



Discussion

This analysis has several limitations:

- The model is constructed from the Dutch payer perspective and included only healthcare costs.
- Quality of life benefits associated with high dose home HD vs conventional ICHD were obtained from a small clinical trial.

Conclusion

Despite these limitations, the results provide valuable information for decision makers. Based on dialysis costs as listed by one of the largest Dutch health care insurance companies restoring the home dialysis rate to 30% in the Netherlands not only improved the health outcome of the patient but will also result in cost savings.

Figure 2: Budget Impact of 30% home dialysis

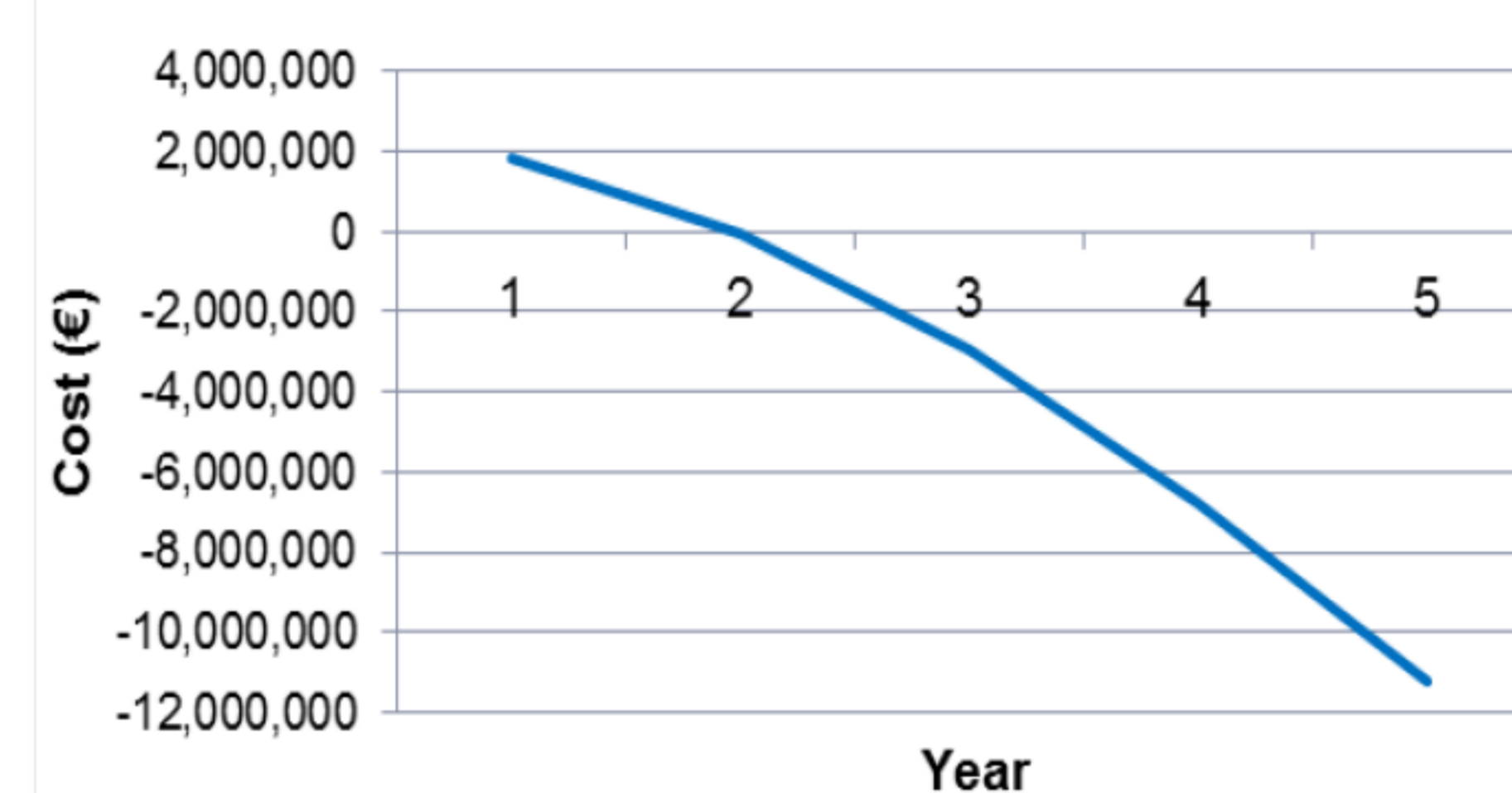


Table 3: Relative Budget Impact of 30% home dialysis per cost element

Cost element	Cost difference of 30% home dialysis
Treatment initiation costs	€7,438,090
Treatment costs	- €157,025
Medication costs	- €284,410
Complication costs	- €90,376
Transportation costs	- €18,131,926
TOTAL COSTS	- €11,225,648

Table 1: Modality distributions per scenario

Modality	Current distribution ¹ (Base Case)	30% home dialysis (Scenario)
Conventional ICHD	79.3%	68%
Nocturnal ICHD	4.2%	2%
Peritoneal Dialysis	13%	15%
Conventional HD at home	2.5%	10%
High dose HD at home	1%	5%

Table 2: Key model parameters

Parameter	Value
Hospitalisation probabilities	
• Conventional ICHD	7.05% ⁸
• High dose ICHD	6.49% ⁸
• Conventional HD at home	5.35% ⁹
• High dose HD at home	7.09% ⁹
• PD	6.69% ¹⁰
Health-related utility	
• Conventional ICHD	0.56 ¹²
• High dose ICHD*	0.61 ^{11,12}
• Conventional HD at home**	0.69 ^{12,13}
• High dose HD at home***	0.75 ¹¹⁻¹³
• PD	0.58 ¹²
• (Post-)Transplant	0.81 ¹²
Survival	
• High dose HD mortality HR vs conventional HD	0.76 ¹⁴⁻¹⁶
• PD vs HD at 5 years	1.11 ¹⁷
Transplant rate – all modalities	0.11¹

* High dose HD QoL benefit from Culleton (11) applied to the HD value from Liem (12)
 ** Ratio from De Wit (13) is applied to the ICHD value from Liem (12)
 *** High dose HD QoL benefit from Culleton (11) applied to the conventional home HD value

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