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Received for publication: 23.12.08
Accepted in revised form: 6.1.09

Nephrol Dial Transplant (2009) 24: 1077–1078
doi: 10.1093/ndt/gfn680
Advance Access publication 4 December 2008

Intensifying dialysis: how far should we go and at what cost?

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Keywords: centre-based dialysis; cost-effectiveness

In a recent issue of JASN, Lee and colleagues [1] presented the results of a simulation model estimating the cost-effectiveness of different modalities of centre-based dialysis, increasing frequency and/or duration.

Their simulation shows that this intensified approach, even with—according to the authors—rather conservative assumptions about its benefit is associated with poor cost-effectiveness. None of the simulations resulted in a cost per quality adjusted life year (QALY) below $75 000. Generally, the societal threshold for the willingness to pay for gaining 1 QALY is around $50 000 as the authors confirm.

In other words, the extra money spent on the increased frequency and/or increased duration does not result in a proportionally acceptable health benefit. Spending this money elsewhere (for instance on better prevention of nephropathy, or on alternative non-centre-based types of dialysis) would bring much more benefit to society.

One could moreover argue that the assumptions are not that conservative at all: the rare evidence existing about this intensified approach was not able to show any difference in frequency or duration of hospitalizations or in complications. Yet, a 32% reduction in mortality and a gain of 2 QALYs for the 'best' scenario (six times per week, 4.5 h per session) was assumed, which seems rather optimistic. Also, it is not clear where the data to calculate the QALY weights were obtained from and whether the increased frequency and duration were associated with a (negative) impact on quality of life.

But regardless of these comments, there is clearly no economic case for intensified dialysis, based on the current assumptions. A possibility is to make efforts to reduce the cost per session. For instance, the cost of five times per week at 2.5 h per session should decrease by 43% in order to obtain a break-even compared to thrice a week in Lee *et al*. [1]. But even if that would be possible by increasing the efficiency dramatically and decreasing the cost of staff and material, this would also have an effect on the base case (three times per week, 3.5 h per session), a decrease that should also be taken into account.

The authors developed a decisional framework in which several input data needed to be assumed and then were made subject to extensive sensitivity analysis. Despite some criticisms on the type of modelling that Lee *et al*. [1] performed, because it is not based on hard evidence, it should be encouraged, because it provides an excellent framework to test scenarios and answer to several 'what if' questions, thereby increasing our knowledge about the condition and its management [2].

Some would also argue that even if the cost-effectiveness is not very good, we are dealing here with people's lives. In other words: 'are we going to deny better care to these people for the reason of cost?' I would rather talk about value than about cost. The real question is what is the value of this intensified care? Is it value for money? After all, the goal of health care is to produce health [3], and in any production process, one needs to aim for being productive, i.e. to produce the most possible output (here health) with the invested money. When a given production process is not productive, then we must not undertake it, because we

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spend money that could have been better spent elsewhere. In other words, proceeding with such not cost-effective care means denying better health care to other patients and to society.

How would the results of this study look like in a European setting? First, in contrast to our general belief, cost of dialysis in Europe may not be much lower. For instance, Van Biesen *et al*. [4] documented for Belgium a cost for in-hospital dialysis per year of €53 000 versus €32 000 for peritoneal dialysis, while in Lee *et al*., the cost in the first year was $64 000. Dialysis as such is borderline cost-effective in Europe as shown by Salonen *et al*. [5], with a cost per QALY of ±€40 000. Hence, one could argue that the incremental cost-effectiveness of intensified dialysis (the extra cost divided by the extra QALYs versus the base case of three times per week) should remain below that value. Given the above, I doubt it.

Hence, if I were a payer (whether it would be an insurer or NHS responsible) I would not pay for this care, based on these results. I would invest much more in alternative non-in-centre based types of dialysis. I could of course request additional information and allow the use of intensified dialysis in a research setting, hence reimbursing it conditionally upon more evidence to be expected. This will likely reduce uncertainty, but this also costs money. A possible way out is to calculate the value of information beforehand. This method, based on modelling techniques, focuses on the value of obtaining further information that will reduce uncertainty [6]. If that value turns out to be lower than the cost of this further research, one may decide not to undertake this further research. Calculating this value of information may perhaps be a new challenge for Lee *et al*. [1].

Conflict of interest statement. None declared.

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Received for publication: 6.11.08
Accepted in revised form: 13.11.08

Nephrol Dial Transplant (2009) 24: 1078–1081
doi: 10.1093/ndt/gfn688
Advance Access publication 15 January 2009

FGF-23 in dialysis patients: ready for prime time?*

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Keywords: CKD; dialysis; ESRD; FGF-23; survival

Summary

The discovery that fibroblast growth factor 23 (FGF-23) intimately connects skeletal biology and systemic mineral balance is one of the major breakthroughs of the last decade in renal medicine. In a recent observational study by Gutiérrez *et al*. [2] high FGF-23 levels emerged as a much strong predictor of death and the predictive power of this peptide was maintained even when this relationship was analysed within serum phosphate levels quartiles. Because FGF-23 levels can be lowered by reducing phosphate intake, provided that the FGF-23-death link is causal, the perspective arises that patients with normal phosphate

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*Comment on 'FGF-23 and outcomes research—when physiology meets epidemiology' and 'Fibroblast growth factor 23 and mortality among patients undergoing hemodialysis', *New England Journal of Medicine*, August issue.