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**KIDNEY
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The Impact of Increased Power Costs on Home Haemodialysis South Australia

1. Purpose

The purpose of this discussion paper is to illustrate the potential impact of increased power costs on the number of people choosing to undertake or remain using home haemodialysis within South Australia (SA).

2. Background

Increases in the cost of electricity continue to contribute to the situation where home haemodialysis patients face significant out-of-pocket costs of up to approximately \$1,000 per annum (refer attached analysis – Appendix B). Figure 1 illustrates the number (expressed as a %) of South Australian dialysis patients by mode of dialysis between 2004 and 2012 (Source – ANZDATA).

Points worth noting from Figures 1 includes:

- The total number of dialysis patients in SA increased 5.5% from 695 in 2004 to **733** in 2012.
- The percentage of people dialysing at home increased from 21% to 22% of the total population between 2004 and 2012.
- The total number of home dialysis (haemodialysis and peritoneal dialysis) patients rose from 111 in 2004 to 163 in 2012.
- During this period home haemodialysis patients increased from 14 to 22.

South Australia has a low rate of home haemodialysis (the lowest in Australia) and shows a very marginal increase not synonymous with the growth of total dialysis patients during the same timeframe. An important step to improve the uptake of patients choosing to dialyse at home would be to alleviate some of the significant out of pocket electricity costs they are currently facing. South Australia has experienced one of the highest rises of electricity costs in the nation through the same period which has accentuated the additional cost burden on home dialysis patients¹.

¹ Australian Bureau of Statistics, Report 4670.0 - Household Energy Consumption Survey, Australia, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4670.02012?OpenDocument>

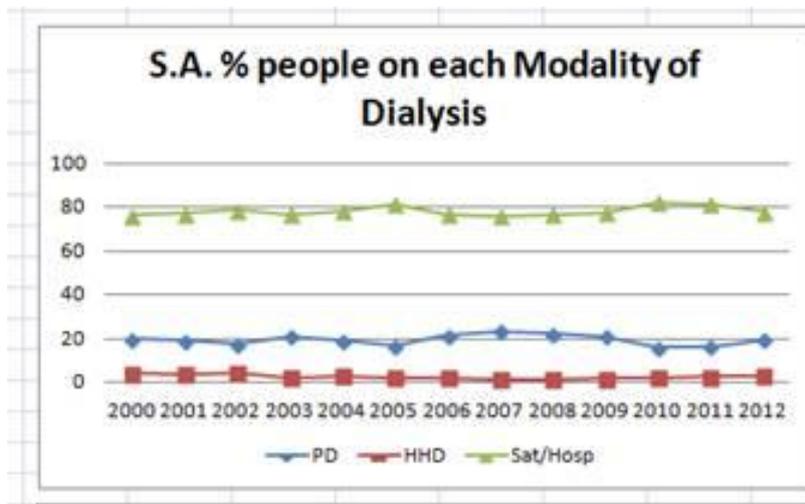


Figure 1 – Percentage of SA patients undergoing dialysis by mode

As at December 2012, there were 22 home haemodialysis patients in South Australia (ANZDATA). It can be calculated that the 22 patients who have chosen home haemodialysis instead of satellite dialysis currently reduce health budget costs by nearly \$355,916 annually in South Australia (based on a \$16,178 cost difference in modalities explained below).

Using the annual costs of **\$65,315 for satellite haemodialysis patients** and **\$49,137 for home haemodialysis patients** (KHA 2010 prices), the likely costs to the SA Health budget as a result of either existing home patients switching to satellite dialysis or potential new home patients choosing satellite dialysis because of the power costs associated with home dialysis can also be calculated.

This is a conservative calculation as the annual cost of **hospital haemodialysis is \$79,072** and while some hospital haemodialysis supports acute patients, it also provides dialysis to patients who would be suitable for satellite or potentially home haemodialysis.

Since 2004, an additional 38 people or 5.5 % are now undertaking dialysis. The 2012 numbers show a total of 733 patients on dialysis with 570 of those on satellite or hospital dialysis. South Australia has the lowest rate of home haemodialysis in the county at 3% of total dialysis patients compared to the national figure of 9%. The highest percentage of all states and territories is in NSW, with 12%. If the South Australian government had home dialysis rates consistent with the national rate, it would save **\$1,317,140** per annum. If the NSW rate was achieved, the savings could be calculated at **\$1,975,710** per annum.

3. Discussion

It is well recognised that home haemodialysis provides the best outcomes for appropriate patients and is also the most cost effective.

For a patient to take up home haemodialysis there are many considerations, including personal competence, availability of a carer, convenience, set up costs and running cost for power and water. These factors need to be weighed up against transport time and transport costs to available satellite or hospital centres, where utility costs and incidentals are all covered, food provided and professional medical staff are available.

The SA Clinical Network identified KPIs for home dialysis stating:

Apart from transplantation, home based dialysis is the recommended choice by nephrologists for patients with End Stage Kidney Failure and it is preferred by funding bodies as the most cost effective form of dialysis. Home dialysis treatments can provide significant social and lifestyle benefits. Home haemodialysis enables patients to have longer and more frequent dialysis treatments. Emerging observation data indicates this gives significant survival advantage.²³

In 2011 Kidney Health Australia published its “*Report on Consumer Perspectives on Dialysis – First National Census.*” Analysis of the data from South Australia about the willingness of those not currently dialysing at home to change to home dialysis was surveyed and the results are shown in Figure 4. There are a considerable number of respondents who indicated their willingness to consider home dialysis if expenses were reimbursed.

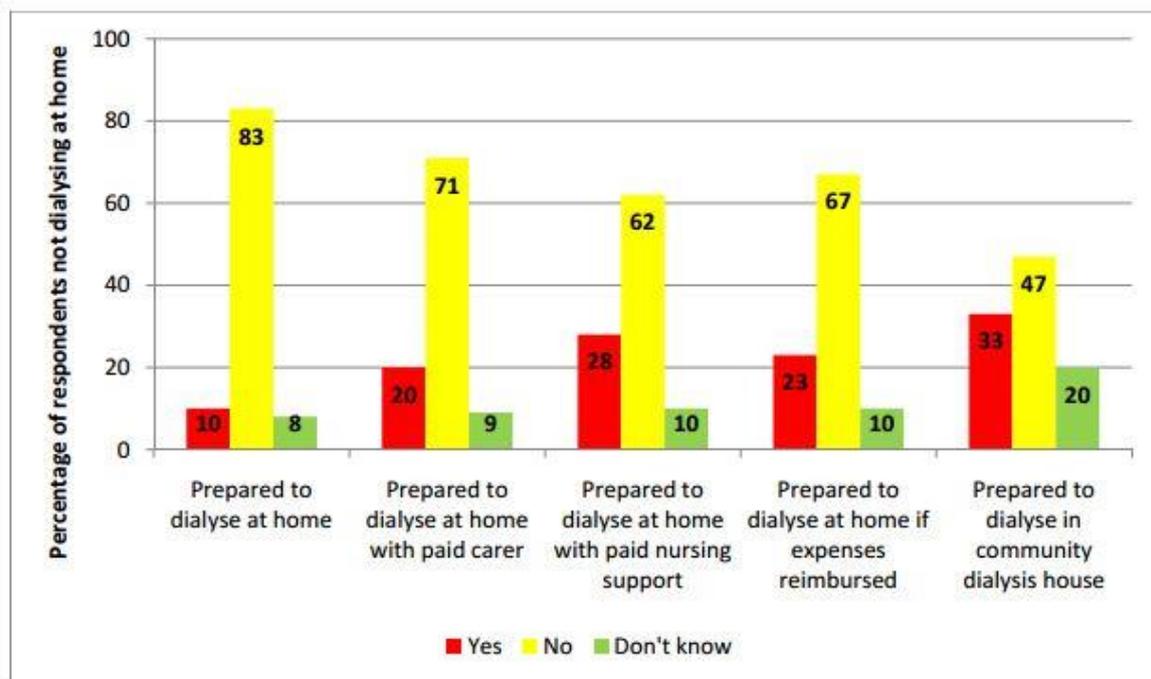


Figure 2 – Willingness of SA patients to dialyse at home.

³ <http://www.sahealth.sa.gov.au/wps/wcm/connect/9010bd80453022288e54de005ba75f87/SA-Renal-KPI%27s-Feb-2014-final.pdf?MOD=AJPERES&CACHEID=9010bd80453022288e54de005ba75f87>

The SA State Health Plan (*Our Health: South Australia's Strategic Plan*) promoted strategic directions to assist with the development of service plans. Notably, the document mentions:

- Chronic disease reduces our quality of life and makes up more than 70% of diseases;
- Increase, by five percentage points, the proportion of people living with a chronic disease whose self-assessed health status is good or better.

Despite each home haemodialysis patient reducing the cost to the SA Health budget \$16,000 up to \$30,000 annually by their choice of modality, they are currently bearing considerable out-of-pocket costs as a result of increased power costs compared to satellite or hospital patients. This is an inequitable situation and is certainly not a smart choice regarding costs and benefits. It is also clearly creating an increasing demand for satellite dialysis infrastructure.

This lack of equity for home haemodialysis patients is also contrary to the stated aim in the SA State Health Plan of promoting equity of access to health services:

“SA Health strives to protect and enhance the health and wellbeing of people by working cooperatively with other agencies and the community to develop healthy environments and support behaviours that protect and promote good health, reduce health risk factors, and enhance health outcomes and **reduce health inequalities**”⁴

As a corollary to the argument that the cost of providing dialysis would rise as a result of patients rejecting the option of home haemodialysis because of the costs involved, if more patients were to choose home haemodialysis as a result of removal of financial barriers, the dialysis associated costs would fall.

It should be noted that there has been an increase in the number of people on home haemodialysis in South Australia. Although not yet published, as of 1 October 2014, this number has risen to 33. This is a 50% increase on the 2012 numbers. While this increase is encouraging it does not detract from the problems identified in this paper. With suitable compensation for the increased cost of power it is believed that the number of people on home haemodialysis would further increase toward the national norm.

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http://www.sahealth.sa.gov.au/wps/wcm/connect/a1b9198042602f06b8debeb44d317729/Strategic_Plan_Revised2_2013.pdf?MOD=AJPERES&CACHEID=a1b9198042602f06b8debeb44d317729

4. Comparison between satellite and home haemodialysis

A summary of the issues facing a person who is currently eligible for home dialysis, but is also considering satellite or hospital dialysis, is presented in the following Table.

Issue	Satellite / Hospital Dialysis	Home Haemodialysis
Set up costs	Nil	Includes chair, storage for consumables, plumbing and electrical alterations. May cost up to \$3,000
Training requirements	None	Patient and carer training required, which can necessitate travel and accommodation for the duration of training
Running costs	Nil	Electricity up to about \$1,000 per annum. Water up to about \$250 per annum
Ongoing Transport costs	Variable cost and time. May require assistance with transport.	Nil
Convenience	Has to fit in with the satellite centre's schedule. May require assistance with transport.	Can dialyse on days / times that suits the patient. May require carer assistance.
Medical outcome	Good	Better

It is obvious that, if financial constraints are paramount, then the choice of modality is weighted heavily against home haemodialysis in the current climate.

5. Conclusions

Current subsidies for power usage for home dialysis patients are inadequate and inequitable and are leading to a growing number of current home dialysis patients being unable to sustain home haemodialysis and a reduction in the number of patients electing this modality.

This is contrary to the aims of the SA Clinical Network Strategy and the principles stated in the SA State Health Plan.

Unaddressed, this situation is clearly leading to increased costs in the Health budget and a greater demand for hospital and satellite dialysis services.

6. Recommendations

For several years now, Victoria has had in place a successful arrangement which offers:

- A \$1,990 per patient per annum payment for home haemodialysis (CPI indexed).
- A \$755 per patient per annum payment for home peritoneal dialysis (CPI indexed).
- A 17.5% discount on annual energy bills for concession card holders.
- Concession card holders may also be eligible to receive a rebate of up to \$277 per year.

- Life Support machine concession – the discount is equal to the cost of 1,880 kilowatts per year.
- Water – special dispensation rebate on water bills equal to the cost of 168 kiloliters of water per year.

We would strongly advocate that the Victorian model be considered, or at very minimum, the rates under the current arrangement be commensurate with the Victorian rates as listed above. Kidney Health Australia willingly offers to assist collaboratively in providing further analysis to demonstrate the potential savings such an incentivising model would ultimately deliver.

Reference

Kidney Health Australia, 2010, *The Economic Impact of End-Stage Kidney Disease in Australia: Projections to 2020*, p. 27.

Analysis Explanation:

Calculation of the potential financial impact that low rates in home haemodialysis has had over the last two years on the health system

<i>Patient modality</i>	Hospital Haemodialysis	Satellite Haemodialysis	Home PD	Home Haemodialysis	Total
Ave Annual Cost of treatment ⁵	\$79,072	\$65,315	\$53,112	\$49,137	
2010 Actual Patients	87	465	95	15	674
Cost of Actual 2010 Treatment	\$6,879,264	\$30,371,475	\$5,045,640	\$737,055	\$43,033,434
2012 Actual Patients	95	475	141	22	733 (8% on 2010)
Cost of Actual 2012 Treatment	\$7,522,840	\$31,024,625	\$7,488,792	\$1,081,014	\$47,117,271
Calculation of potential 2014 patient numbers (based on 8% increase proportionately)	103	513	152	24	792
Cost of treatment calculation	\$8,144,416	\$33,506,595	\$8,073,024	\$1,179,288	\$50,903,323
Difference between 2012 Actual and potential cost to the health system if modalities rates stay the same					\$3,786,052
It is suggested that action on the impact of increasing electricity costs for home patients would have reduced this imbalance and resulting financial impact.					

⁵ Kidney Health Australia, 2010, *The Economic Impact of End-Stage Kidney Disease in Australia: Projections to 2020*,

Appendix B:
Home Dialysis Power Usage Analysis
for South Australia

1. Purpose

This analysis seeks to quantify current electricity usage by home haemodialysis patients at the present time with present rates. Even though a conservative approach has been applied to this new analysis (rates of electricity have been selected based only on a two person household) it still demonstrates considerable out of pocket costs.

2. Input Data for Power Costs

For the purpose of this exercise, residential power costs on the following distribution grids have been used:

- AGL Australia
- Energy Australia
- Origin Energy

3. Current Home Dialysis Practice

Although home dialysis practices vary somewhat the current recommended practice is for 5 hours dialysis every second day. Allowing for 1 hour for setup and cleanup that totals 1,095 running hours per annum (6 x 365/2).

Due to the improved health outcomes, a number of dialysis patients are opting for nocturnal dialysis every second day which entails minimum 8 hours dialysis. Again, allowing 1 hour for setup and cleanup that totals 1642 running hours per annum (9 x 365/2).

4. Dialysis Machine Power Usage

Dialysis power usage averages approximately 2,000 watts/hour for the dialysis machine and 400 watts/hour for the reverse osmosis (RO) unit (data supplied by Sydney Dialysis Centre), totalling 2400 watts/hour.

5. Dialysis Machine Power Costs

Table 1 illustrates usage calculated for a power meters in South Australia. It clearly demonstrates that there is still considerable burden to patients choosing to dialyse at home and that all the arguments of the original analysis are sustained.

Table 1 – Cost for Dialysis in South Australia

	AGL		Energy Australia		Origin	
	6 hour dialysis	9 hour nocturnal dialysis	6 hour dialysis	9 hour nocturnal dialysis	6 hour dialysis	9 hour nocturnal dialysis
Hours per annum	1,095	1,642	1,095	1,642	1,095	1,642
Power cost/kWh	0.33528	0.33528	0.39380	0.39380	0.37180	0.37180
Power usage kW/hr	2.40	2.40	2.40	2.40	2.40	2.40
Annual power usage kWh	2,628	3,941	2,628	3,941	2,628	3,941
Annual power cost	\$881.12	\$1321.33	\$1034.90	\$1551.97	\$977.09	\$1465.26
Annual dialysis rebate	\$165	\$165	\$165	\$165	\$165	\$165
Net annual cost to user	\$716.12	\$1156.33	\$869.90	\$1386.97	\$812.09	\$1300.26

6. Conclusion

From the data presented above, the impact of increasing electricity prices continues to inflict a considerable burden on patients who have chosen to undertake home haemodialysis. The cost burden exceeds \$1,000 per annum for those patients undertaking nocturnal dialysis using a conventional power meter in regional and rural areas, and it should be considered that that scenario has an assumption that town water is available and that additional electricity isn't being used towards running water pumps on tanks.

Similarly, throughout this analysis, consideration has only been for the delivery of the dialysis, not for the typical scenario that a dialysis patient will likely also be consuming additional power through secondary requirements such as personal heating or cooling and the use of television during the dialysis time.