CHAPTER 13

AUSTRALIA

PREDICTORS OF PLACE OF DIALYSIS AFTER ONE YEAR OF TREATMENT

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The aim of this study was to examine predictors of locations of dialysis in Australia.

The cohort included people who began dialysis treatment between the 1st of April 1991 (the time from which co-morbidities were collected) to the 31st of March 2003 inclusive. Patients under the age of 15 were excluded. A total of 14,178 patients from Australia at first treatment were included in this study.

Multinomial logistic regression was used to perform a number of univariate analyses. The dependent variable was the place at which a patient was dialysing at one year after start of dialysis, and was categorised as either being on 'home peritoneal dialysis' or 'home haemodialysis'. The third possibility was that the patient is 'not dialysing at home'; this was the base outcome. One year was chosen rather than the three month modality as 21% of patients 'Not dialysing at home' changed place of modality and would have been incorrectly classified if the three month modality were used (fig 13.1).

The patient-level independent variables analysed were gender, age at initial treatment, ethicity, centre size, co-morbid conditions at entry, diseases at entry and location (metropolitan or rural) (fig 13.4). Coding of location was determined by using postcodes at entry. Each postcode was linked to a statistical-sub-division (SSD). A number of postcodes crossed SSD boundaries so in these instances the areas were manually coded as rural and metropolitan.

Each of these factors were significant predictors of outcome. Two multivariate models of the predictors were then constructed. The first model only included patient specific factors, together with centre size. The second included the geographical location.

Figure 13.1

Patients Maintaining or Changing Modality From 3 months to 1 year

		Place of Dialysis at 1 Year			Total
		Not at Home	Home PD	Home HD	
Place of Dialysis at 3 Months	Not at Home	6773 (82%)	629 (8%)	833 (10%)	**8235**
	Home PD	675 (13%)	4728 (87%)	20 (0%)	**5423**
	Home HD	19 (4%)	6 (1%)	495 (95%)	**520**
	Total	**7467 (53%)**	**5363 (38%)**	**1348 (9%)**	**14,178**

Figure 13.2

Descriptive Statistics of Independent Variables

Variable	Category	Place of Dialysis at 1 year		
		Not at Home	Home PD	Home HD
Gender	Female	50%	44%	7%
	Male	55%	33%	12%
Initial Age	15-24 years	53%	33%	15%
	25-34 years	52%	31%	17%
	35-44 years	49%	33%	18%
	45-54 years	49%	36%	15%
	55-64 years	50%	41%	9%
	65-74 years	55%	42%	3%
	> 75 years	63%	36%	1%
Ethnicity	Non-indigenous	52%	38%	10%
	Aboriginal/Torres St.Isl.	63%	33%	4%
	Maori/Pacific Islander	48%	45%	7%
Centre Size	<249 patients	61%	32%	8%
	250-539 patients	55%	38%	7%
	539-614 patients	50%	39%	12%
	>615 patients	41%	45%	13%
Body Mass Index	0-19	50%	42%	7%
	20-24	51%	39%	10%
	25-29	52%	37%	10%
	>30	59%	32%	9%
Diabetes	Non-diabetic	52%	36%	12%
	Type 1 - insulin dependent	48%	47%	5%
	Type 2 - insulin requiring	56%	40%	4%
Smoker	Non-smoker	50%	40%	10%
	Current smoker	57%	34%	8%
	Former smoker	54%	36%	9%
Hypertension	No	55%	36%	10%
	Yes	52%	38%	9%
Chronic Lung Disease	No	52%	38%	10%
	Yes	56%	39%	6%
Coronary Artery Disease	No	52%	36%	12%
	Yes	54%	41%	5%
Peripheral Vascular Disease	No	53%	36%	11%
	Yes	53%	43%	4%
Cerebrovascular Disease	No	53%	37%	10%
	Yes	53%	43%	4%
Late Referral	No	52%	38%	10%
	Yes	60%	34%	6%
Location	Queensland - Rural	53%	45%	2%
	Queensland - Metropolitan	58%	39%	3%
	NSW - Rural	30%	49%	21%
	NSW - Metropolitan	43%	40%	17%
	ACT - Rural	29%	62%	9%
	ACT - Metropolitan	57%	40%	3%
	Victoria - Rural	58%	33%	9%
	Victoria - Metropolitan	61%	31%	8%
	Tasmania - Rural	59%	39%	2%
	Tasmania - Metropolitan	63%	36%	1%
	South Australia - Rural	48%	37%	15%
	South Australia - Metropolitan	80%	19%	1%
	Northern Territory - Rural	88%	12%	0%
	Northern Territory - Metropolitan	84%	16%	0%
	Western Australia - Rural	42%	54%	4%
	Western Australia - Metropolitan	58%	40%	2%

Figure 13.3

Multivariate model constructed using multinomial logistic regression. The reference group was the most common category within each variable. Chronic lung disease and cerebrovascular disease were not significant predictors of outcome and were dropped from the model.

Predictors	Reference Group	Home Peritoneal Dialysis			Home Haemodialysis		
		Odd Ratio	(95% CI)	Sig.	Odd Ratio	(95% CI)	Sig.
Female	Male	1.44	(1.33, 1.56)	<0.01	0.61	(0.53, 0.71)	<0.01
15-24 years	65-74 years	0.93	(0.73, 1.19)	0.57	3.95	(2.70, 5.79)	<0.01
25-34 years		0.82	(0.69, 0.98)	0.03	5.33	(3.98, 7.12)	<0.01
35-44 years		0.98	(0.85, 1.14)	0.83	7.01	(5.40, 9.10)	<0.01
45-54 years		1.02	(0.90, 1.15)	0.76	5.78	(4.54, 7.36)	<0.01
55-64 years		1.10	(0.99, 1.22)	0.09	3.30	(2.59, 4.20)	<0.01
> 75 years		0.77	(0.67, 0.87)	<0.01	0.23	(0.13, 0.42)	<0.01
Aboriginal/Torres St.Isl.	Non-indigenous	0.77	(0.66, 0.89)	<0.01	0.29	(0.20, 0.41)	<0.01
Maori/Pacific Islander		1.29	(0.95, 1.75)	0.11	0.62	(0.34, 1.14)	0.13
Centre Size: <249	Centre Size: 250-538	0.78	(0.70, 0.86)	<0.01	0.98	(0.81, 1.18)	0.85
Centre Size: 539-614		1.15	(1.03, 1.28)	0.01	1.62	(1.35, 1.94)	<0.01
Centre Size: > 615		1.67	(1.50, 1.86)	<0.01	2.55	(2.13, 3.05)	<0.01
Body Mass Index: 0-19	Body Mass Index: 20-24	1.12	(0.98, 1.27)	0.09	0.85	(0.67, 1.08)	0.19
Body Mass Index: 25-29		0.91	(0.83, 0.99)	0.03	1.09	(0.94, 1.28)	0.26
Body Mass Index: >30		0.63	(0.56, 0.71)	<0.01	0.91	(0.75, 1.10)	0.33
Type 1 - insulin dependent	Non-diabetic	1.32	(1.09, 1.60)	<0.01	0.32	(0.22, 0.48)	<0.01
Type 2 - insulin requiring		1.05	(0.95, 1.15)	0.36	0.42	(0.33, 0.52)	<0.01
Current smoker	Non-smoker	0.77	(0.68, 0.87)	<0.01	0.63	(0.51, 0.78)	<0.01
Former smoker		0.92	(0.84, 0.99)	0.04	1.13	(0.97, 1.31)	0.11
Hypertension	No Hypertension	1.25	(1.12, 1.40)	<0.01	1.19	(0.99, 1.44)	0.06
Coronary Artery Disease	No Coronary Artery Disease	1.03	(0.94, 1.13)	0.57	0.73	(0.60, 0.88)	<0.01
Peripheral Vascular Disease	No Peripheral Vascular Disease	1.16	(1.05, 1.28)	<0.01	0.81	(0.64, 1.02)	0.07
Late Referral	Referred on time	0.81	(0.74, 0.89)	<0.01	0.60	(0.50, 0.72)	<0.01

* Outcome "not at home" is the comparison Group

Figure 13.4

Multivariate model controlled for the factors in Figure 13.3 constructed using multinomial logistic regression. The odds ratio for each location is relative to the national average for each outcome.

Predictors	Home Peritoneal Dialysis			Home Haemodialysis		
	Odd Ratio	(95% CI)	Sig.	Odd Ratio	(95% CI)	Sig.
Queensland - Rural	1.74	(1.34, 2.25)	<0.001	0.23	(0.13, 0.38)	<0.001
Queensland-Metropolitan	1.08	(0.85, 1.37)	0.554	0.23	(0.15, 0.35)	<0.001
New South Wales - Rural	2.43	(1.86, 3.16)	<0.001	3.12	(2.20, 4.42)	<0.001
New South Wales - Metropolitan	1.25	(1.00, 1.57)	0.053	1.57	(1.16, 2.12)	0.003
ACT - Rural	2.83	(1.76, 4.55)	<0.001	1.59	(0.73, 3.46)	0.241
ACT - Metropolitan	0.83	(0.56, 1.22)	0.335	0.19	(0.07, 0.46)	0.000
Victoria - Rural	0.69	(0.53, 0.90)	0.007	0.50	(0.34, 0.75)	0.001
Victoria - Metropolitan	0.61	(0.49, 0.77)	<0.001	0.40	(0.29, 0.55)	<0.001
Tasmania - Rural	1.48	(0.93, 2.34)	0.097	0.16	(0.04, 0.70)	0.015
Tasmania - Metropolitan	1.45	(0.97, 2.17)	0.072	0.05	(0.01, 0.37)	0.003
South Australia - Rural	1.07	(0.74, 1.54)	0.721	1.40	(0.84, 2.33)	0.200
South Australia - Metropolitan	0.30	(0.22, 0.41)	<0.001	0.07	(0.03, 0.15)	<0.001
Northern Territory - Rural	0.45	(0.26, 0.76)	0.003	-	-	-
Northern Territory - Metropolitan	0.55	(0.35, 0.87)	0.011	0.05	(0.01, 0.36)	0.003
Western Australia - Rural	1.92	(1.41, 2.61)	<0.001	0.30	(0.16, 0.55)	<0.001
Western Australia - Metropolitan	0.85	(0.66, 1.09)	0.198	0.09	(0.05, 0.15)	<0.001

* Outcome "not at home" is the comparison Group