Australia & New Zealand Dialysis & Transplant Registry

Chapter 6

Home Dialysis

Contents:

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Introduction

At the end of 2013 29% of Australian and 51% of New Zealand dialysis patients were dialysing at home. This chapter reports the incidence, prevalence and outcomes of home dialysis, defined simply as the combination of peritoneal dialysis (PD) and home haemodialysis (HHD). Most of the content is new compared with previous Reports, and we expect that the content will evolve with time and with feedback from the nephrology community.

New Patients

In this section "incident home dialysis patients" are defined as those who commenced home dialysis for the first time (ie having never received home dialysis before), including those who had previously received facility haemodialysis or a kidney transplant.

Table 6.1 presents the number of incident patients (per million population) over time. There has been a slow increase in the number of patients commencing home dialysis over the last 20 years, predominantly driven by population growth.

Figure 6.1 shows the age distribution of incident home dialysis patients in 2013. The majority of incident home dialysis patients commence peritoneal dialysis, and the majority are aged 45-74. Figure 6.2 presents the same data per million population.

Table 6.1

Number of Incident Home Dialysis Patients (pmp) 1994-2013

Year	Australia	New Zealand
1994	811 (46)	250 (69)
1995	866 (48)	243 (66)
1996	829 (45)	252 (68)
1997	810 (44)	274 (72)
1998	869 (47)	302 (79)
1999	906 (48)	306 (80)
2000	934 (49)	305 (79)
2001	975 (51)	326 (84)
2002	915 (47)	347 (88)
2003	943 (48)	317 (79)
2004	888 (45)	332 (81)
2005	974 (48)	318 (77)
2006	1183 (58)	351 (84)
2007	1076 (52)	289 (68)
2008	1161 (55)	333 (78)
2009	1067 (49)	365 (85)
2010	920 (42)	366 (84)
2011	989 (44)	312 (71)
2012	1210 (53)	342 (78)
2013	1146 (50)	370 (83)

Figure 6.1.1

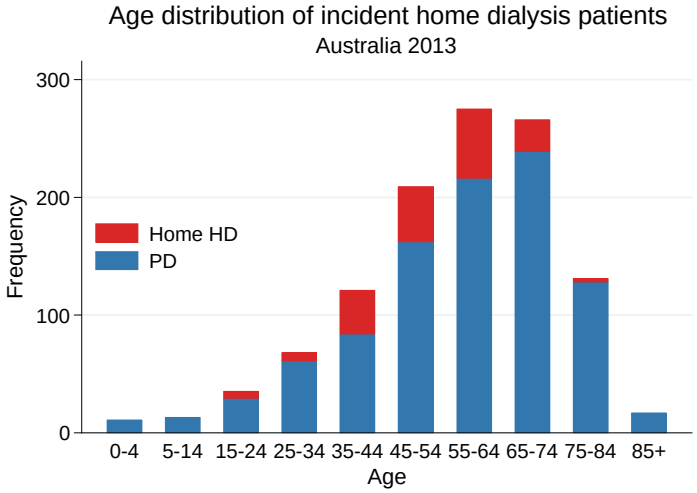


Figure 6.1.2

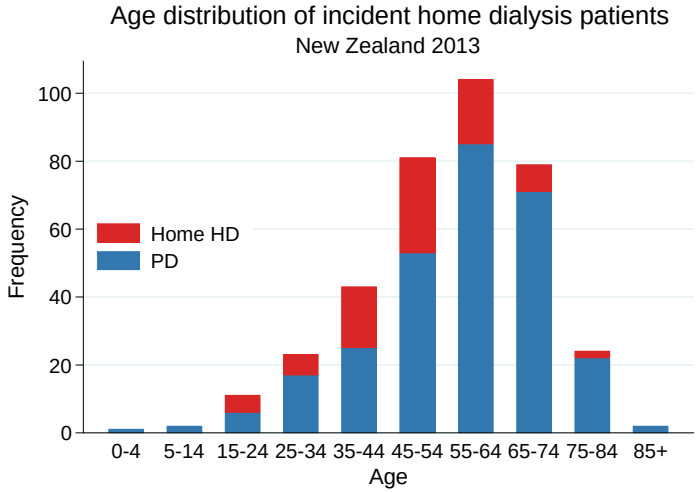


Figure 6.2.1

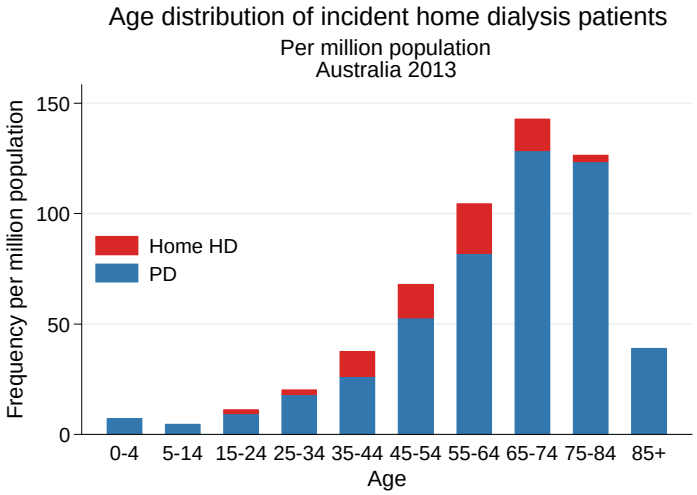
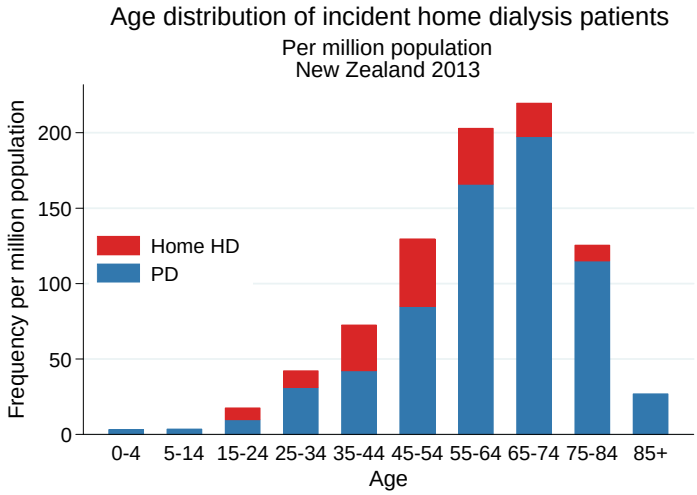


Figure 6.2.2



The primary renal disease of incident home dialysis patients is shown in table 6.2. The distribution of these diseases is similar to the broader incident renal replacement therapy population (see chapter 1).

Table 6.2

Primary Renal Disease (%) of Incident Home Dialysis Patients 2013

Primary Renal Disease	Australia	New Zealand
GN	274 (24)	92 (25)
Analgesic	16 (1)	2 (1)
Polycystic	74 (6)	22 (6)
Reflux	25 (2)	13 (4)
Hypertension	158 (14)	28 (8)
Diabetes	372 (32)	169 (46)
Other	142 (12)	36 (10)
Uncertain	68 (6)	7 (2)
Not reported	17 (1)	1 (<1)
Total	**1146**	**370**

Figure 6.3 presents the cumulative incidence of patients commencing home dialysis over 2004-13. The data are censored at transplantation, and death is handled as a competing risk. PD uptake is rapid, both as the first dialysis modality and within 6 months of starting dialysis, whereas HHD uptake is more gradual. Both modalities are taken up more rapidly in New Zealand than in Australia. Uptake also varies by state (figure 6.4), age (figure 6.5) and sex (figure 6.6).

Figure 6.3

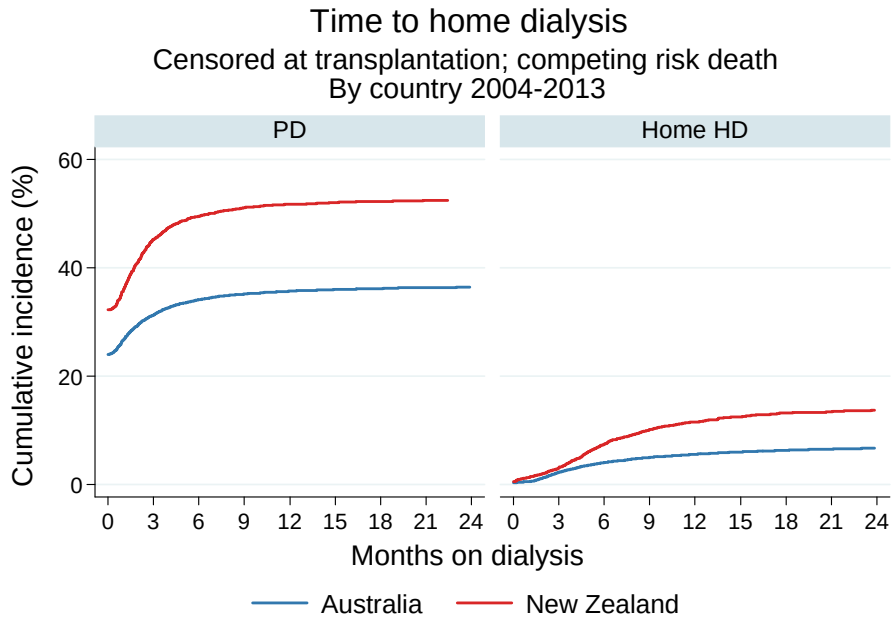


Figure 6.4

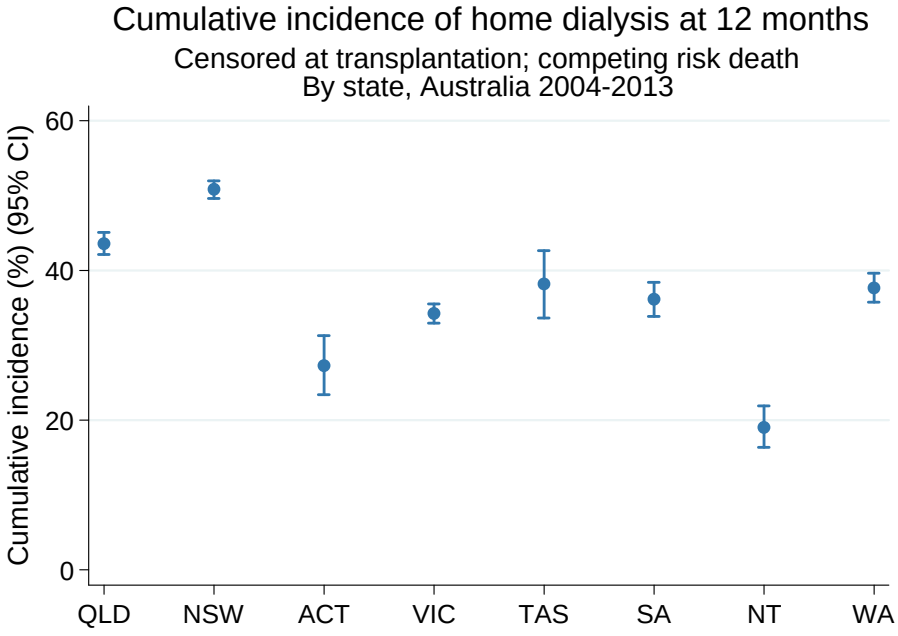


Figure 6.5.1

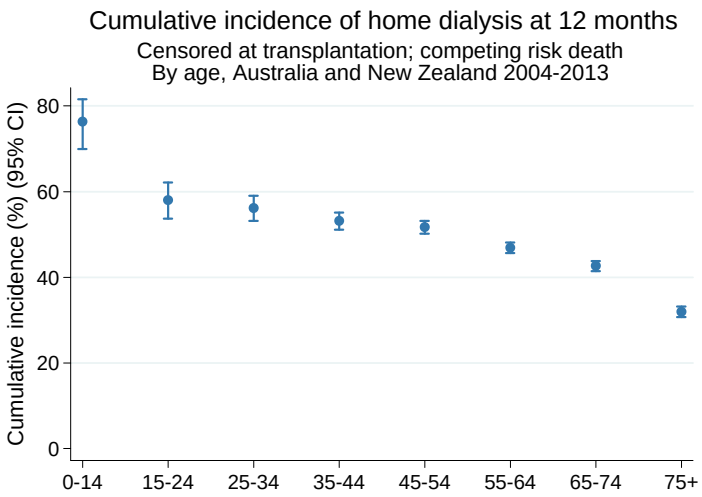


Figure 6.5.2

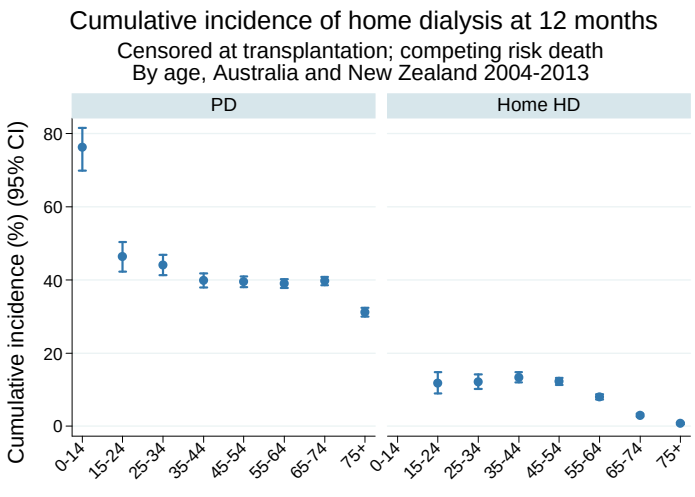
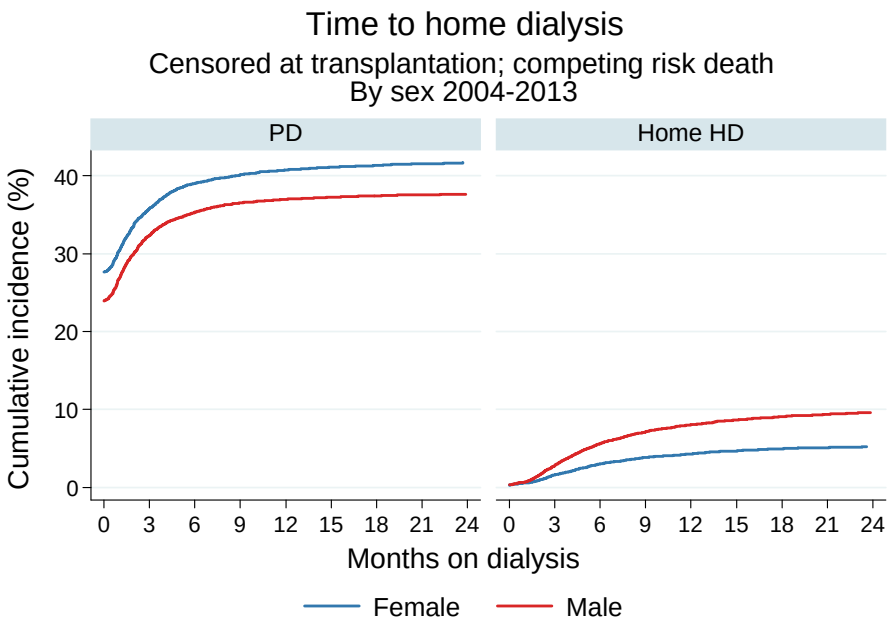


Figure 6.6



Prevalent Patients

Figure 6.7 shows the number of patients dialysing in Australia and New Zealand at the end of 1994-2013. Although numbers of home dialysis patients are growing, this growth is substantially outpaced by the growth in the numbers of facility haemodialysis patients.

Figure 6.8 presents the age distribution of prevalent home dialysis patients, and figure 6.9 shows prevalence per million population. Figure 6.10 shows the geographical distribution of home dialysis patients in Australia at the end of 2013; mapping data are courtesy of the Australian Bureau of Statistics.

Figure 6.7

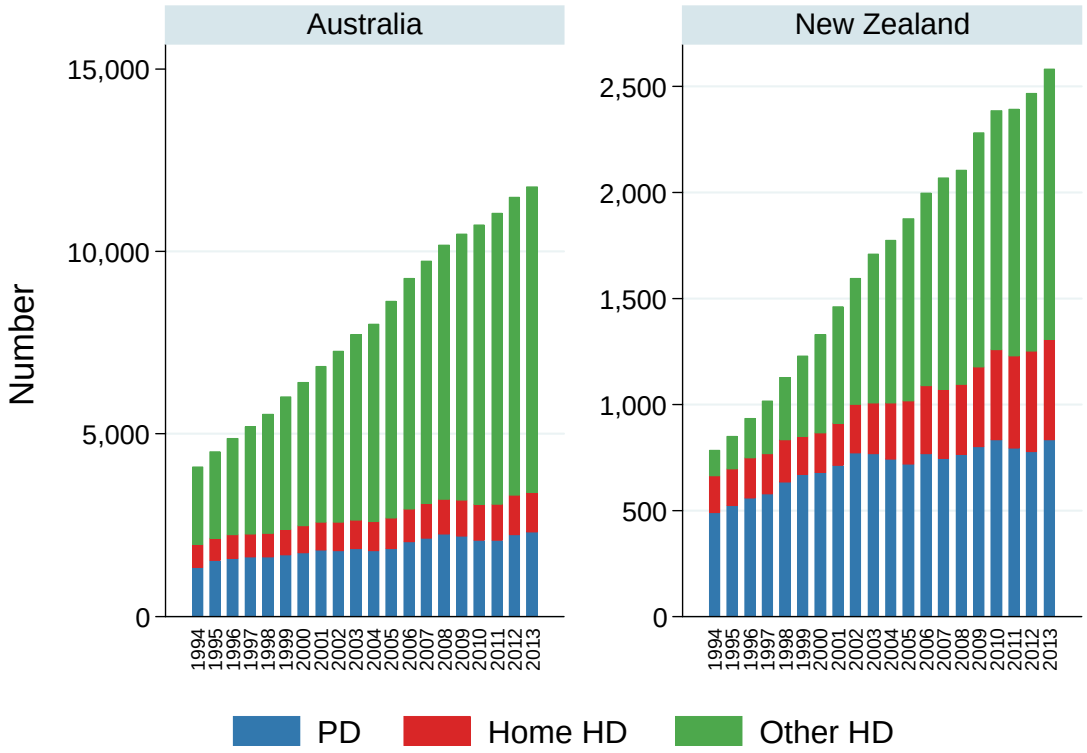


Figure 6.8.1

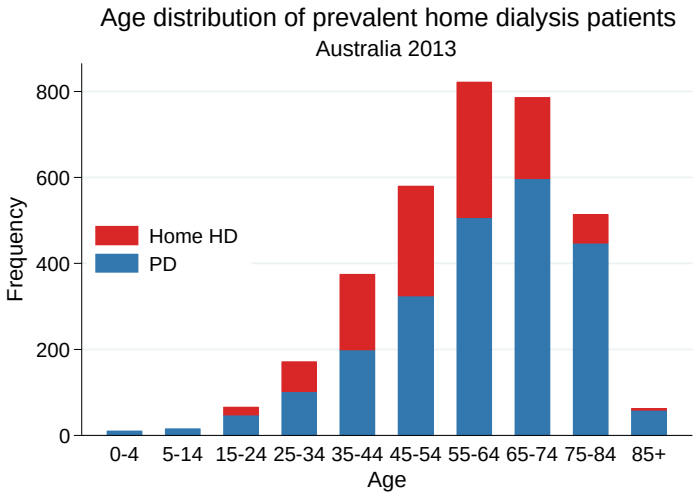
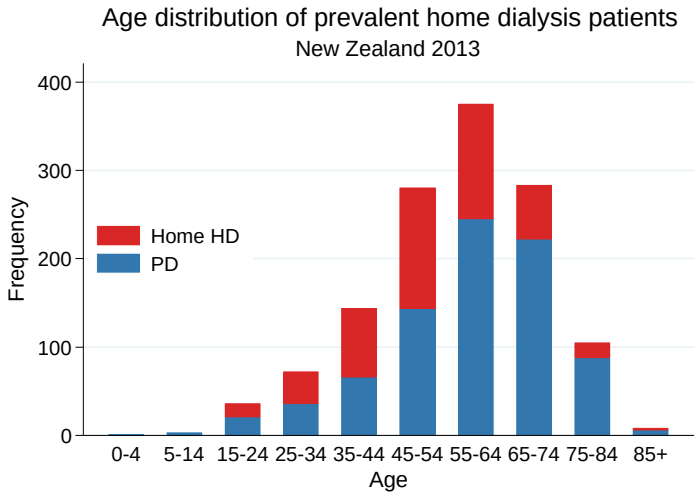


Figure 6.8.2



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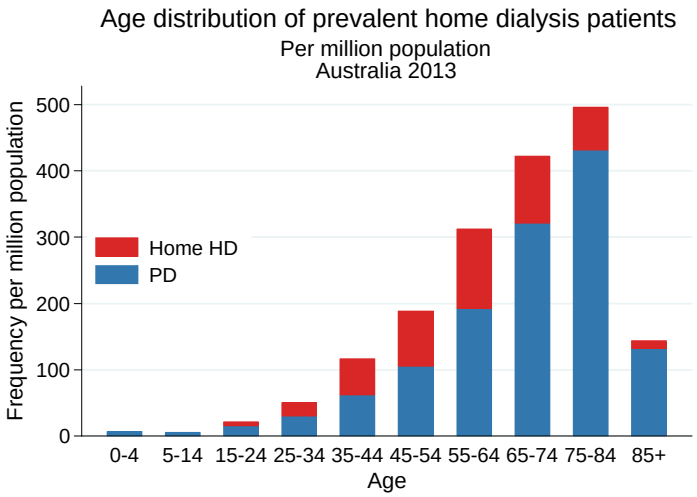


Figure 6.9.2

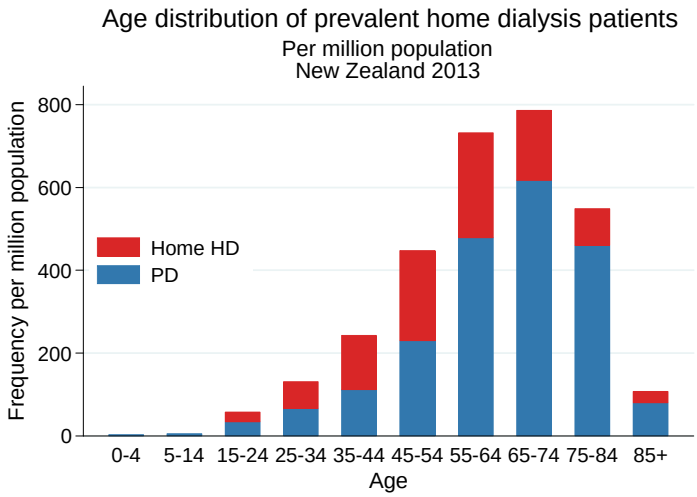
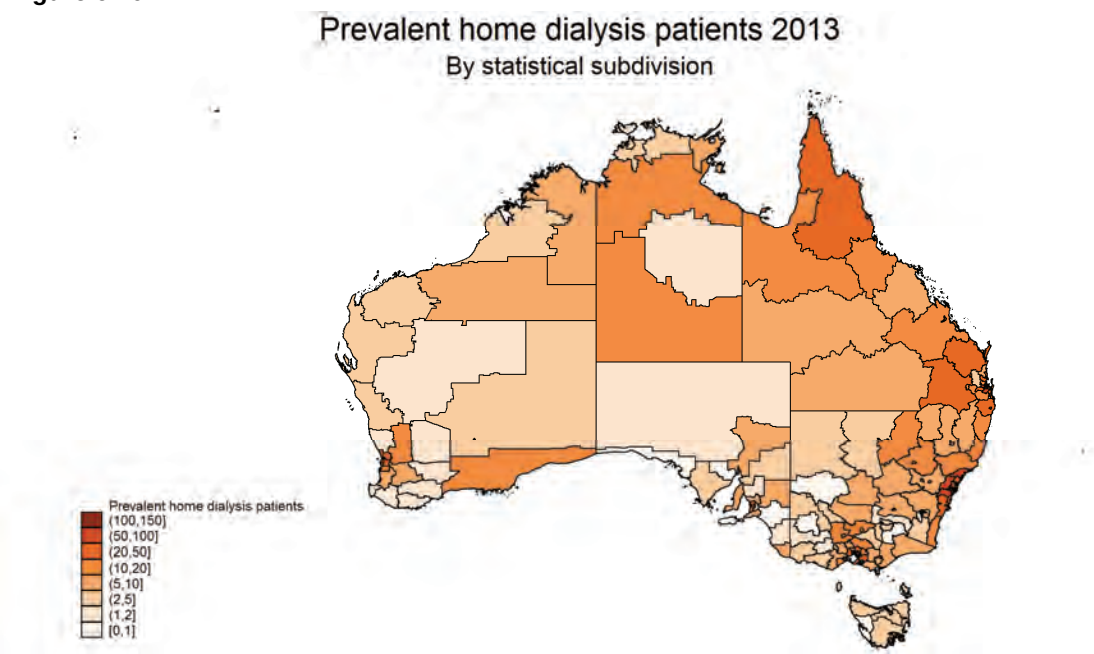


Figure 6.10



Figures 6.11-6.12 show trends in the numbers of home dialysis patients by year and state (figure 6.11) and age (figure 6.12). The total number of home dialysis patients in each state at the end of 2013 is shown in table 6.3. These numbers should be interpreted in the broader context of the overall growth in dialysis prevalence (see figure 6.7 and chapter 2).

Figure 6.11

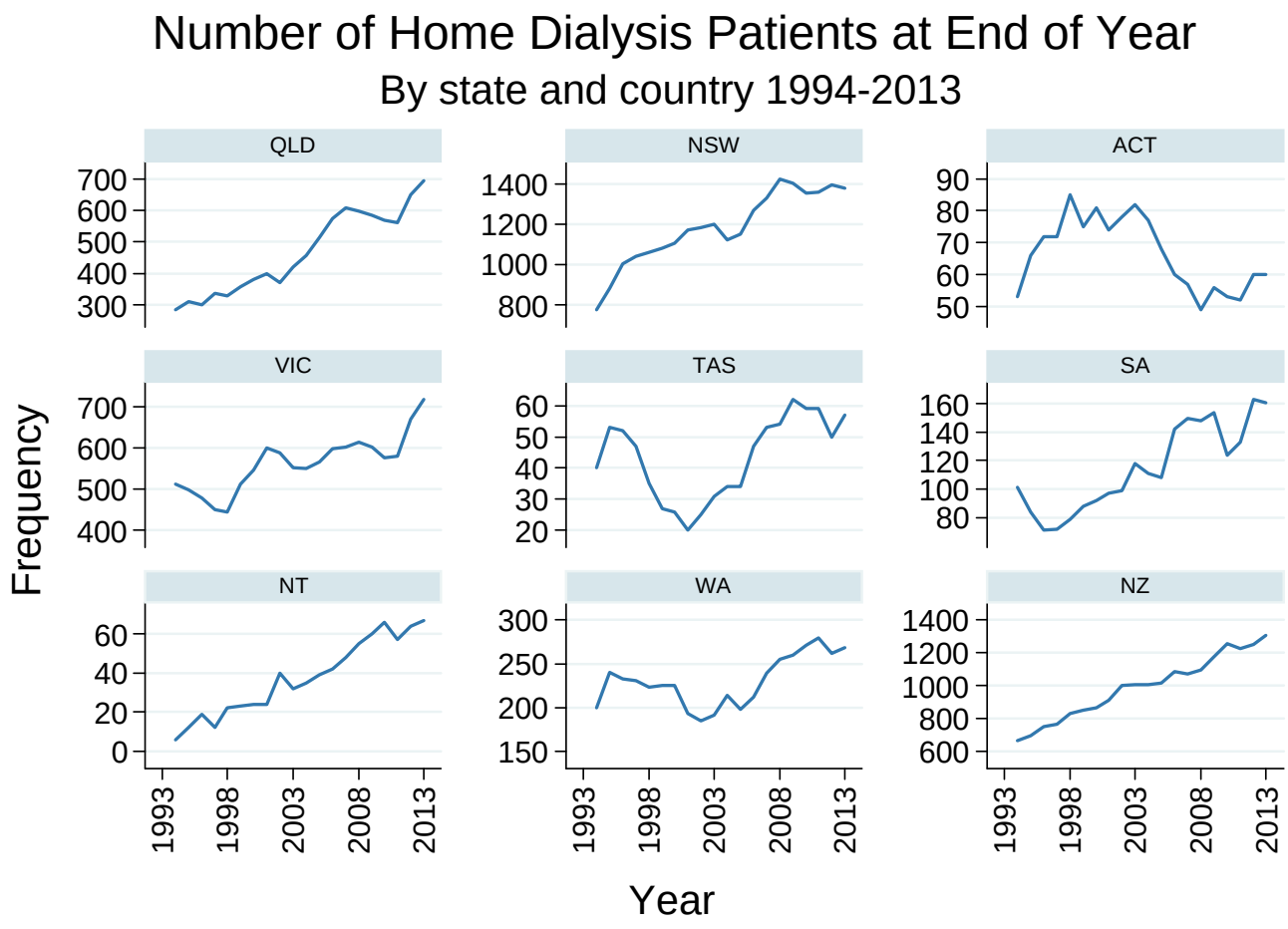


Figure 6.12.1

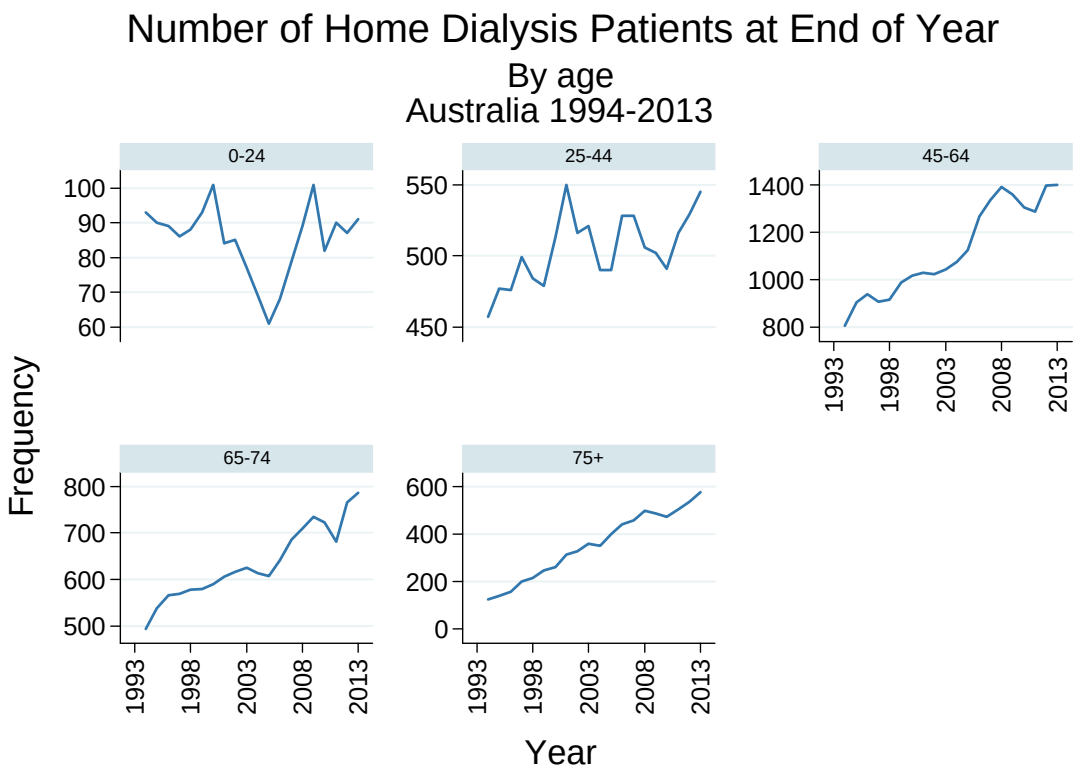


Figure 6.12.2

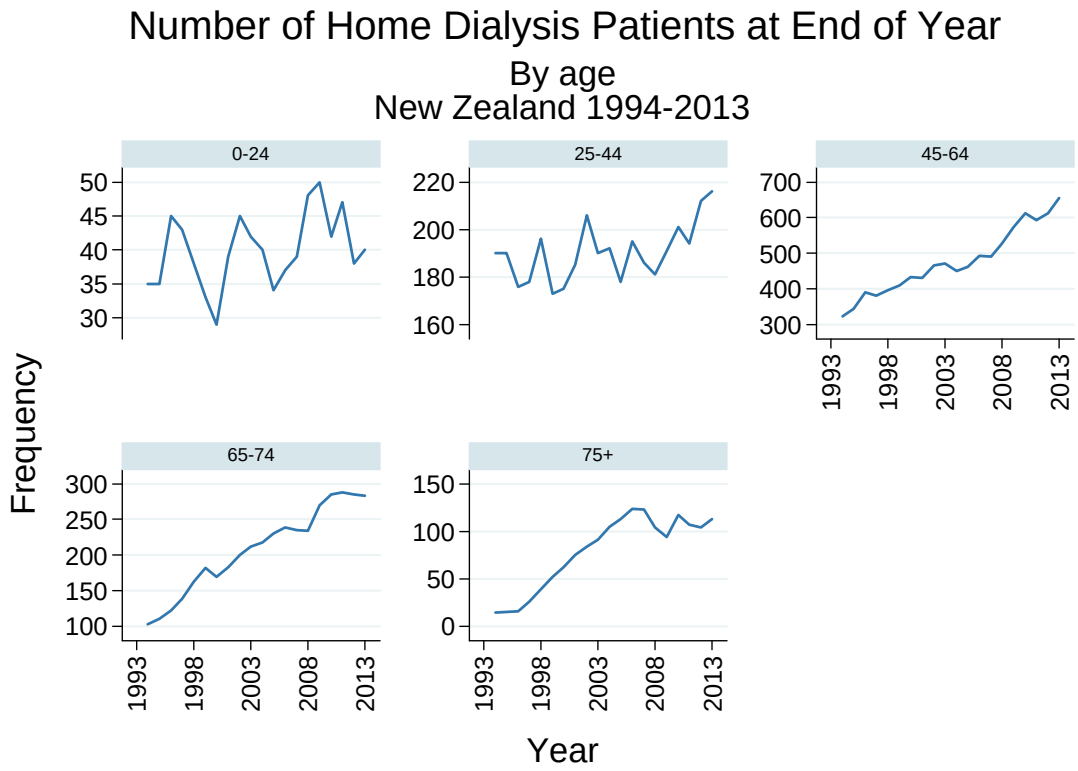


Table 6.3

Home Dialysis Patient Numbers by State 2013

State	PD	Home HD	Other HD	Total
QLD	430	263	1507	2200
NSW/ACT	939	498	2615	4052
VIC	518	200	2174	2892
TAS	40	17	159	216
SA	133	28	592	753
NT	33	34	454	521
WA	213	55	872	1140
NZ	832	475	1277	2584
Total	**3138**	**1570**	**9650**	**14358**

The use of home dialysis varies substantially between treating hospitals. Of patients receiving maintenance dialysis at the end of 2013, the proportion who were dialysing at home varied from 0-100% in Australia and 29-89% in New Zealand (figure 6.13).

Figure 6.13.1

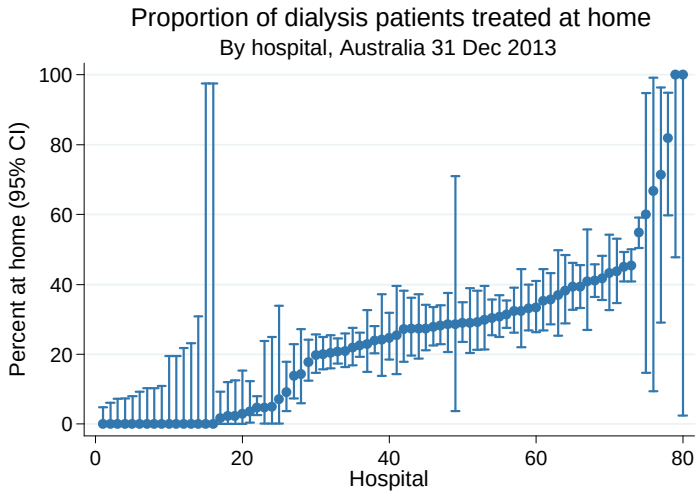
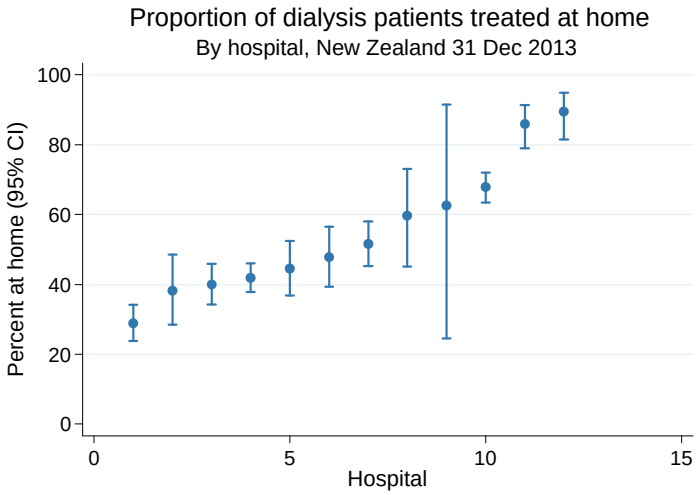


Figure 6.13.2



Outcomes of incident home dialysis patients

The outcomes of incident home dialysis patients are shown in table 6.4. In patients who commenced home dialysis for the first time during 2002-2013, the most common reasons for completion of home dialysis were transfer to facility haemodialysis and death.

Table 6.4

Outcome of incident home dialysis patients 2002-2013

Outcome	Australia	New Zealand
Transferred to facility haemodialysis	4566 (37%)	1220 (30%)
Died	2692 (22%)	1214 (30%)
Transplanted	2248 (18%)	523 (13%)
Lost to follow-up	18 (<1%)	8 (<1%)
Recovered native kidney function	196 (2%)	53 (1%)
Remained on home dialysis 31 Dec 2013	2752 (22%)	1024 (25%)
Total	**12472 (100%)**	**4,042 (100%)**

Patient and Technique Survival

The following pages present three outcomes of patients who commenced home dialysis for the first time over 2002-2013: (1) patient survival, censored at transplantation but not at dialysis modality change; (2) technique survival, censored at transplantation, and with technique failure defined as a change to facility haemodialysis for ≥30 days or death; and (3) death-censored technique survival, censored at transplantation and death, and with technique failure defined as a change to facility haemodialysis for ≥30 days. Home dialysis technique survival can be interpreted as how long patients who have commenced home dialysis are able to keep dialysing at home.

Each outcome is presented stratified by era (figures 6.14-6.16 and tables 6.5-6.7) and by age group (figures 6.17-6.19 and tables 6.8-6.10). Recent eras have seen an improvement in patient survival, and a minor improvement in technique (but not death-censored technique) survival. Age is strongly associated with patient and technique survival, but not death -censored technique survival, indicating that the association with technique survival is due to differences in patient survival rather than differences in the rate of transfer to facility haemodialysis.

Figure 6.14.1

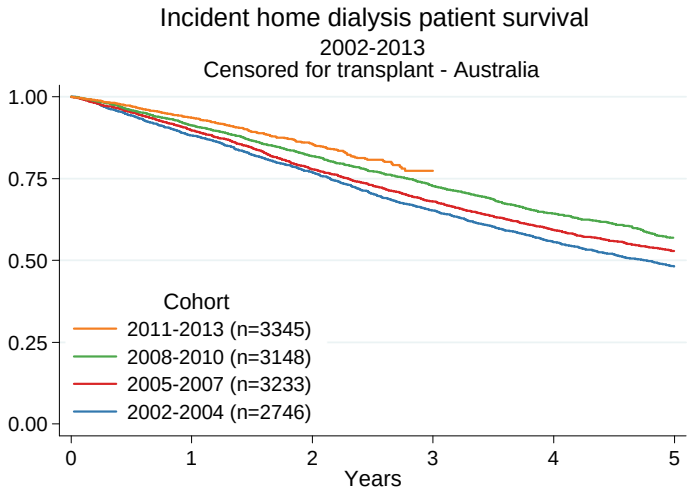


Figure 6.14.2

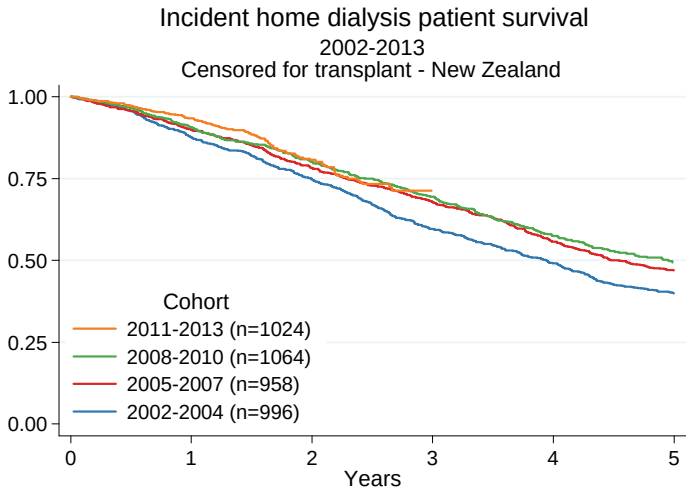


Table 6.5

Incident Home Dialysis Patient Survival by Era 2002-2013 (%, 95% CI)

Country	Era	6 months	1 year	3 years	5 years
Australia	2002-2004 (n=2746)	94 (93, 95)	88 (87, 89)	65 (63, 67)	48 (46, 50)
	2005-2007 (n=3233)	95 (94, 96)	90 (89, 91)	68 (66, 70)	53 (51, 55)
	2008-2010 (n=3148)	96 (95, 97)	91 (90, 92)	73 (71, 74)	57 (55, 59)
	2011-2013 (n=3345)	97 (96, 98)	94 (93, 95)	-	-
New Zealand	2002-2004 (n=996)	96 (94, 97)	88 (85, 90)	60 (56, 63)	40 (37, 43)
	2005-2007 (n=958)	96 (94, 97)	90 (88, 92)	68 (65, 71)	47 (44, 50)
	2008-2010 (n=1064)	97 (95, 98)	91 (89, 92)	69 (66, 72)	49 (45, 53)
	2011-2013 (n=1024)	97 (96, 98)	93 (91, 95)	-	-

Figure 6.15.1

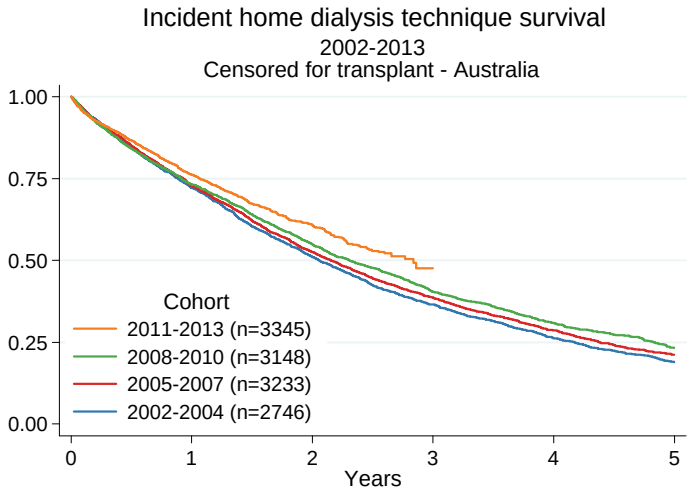


Figure 6.15.2

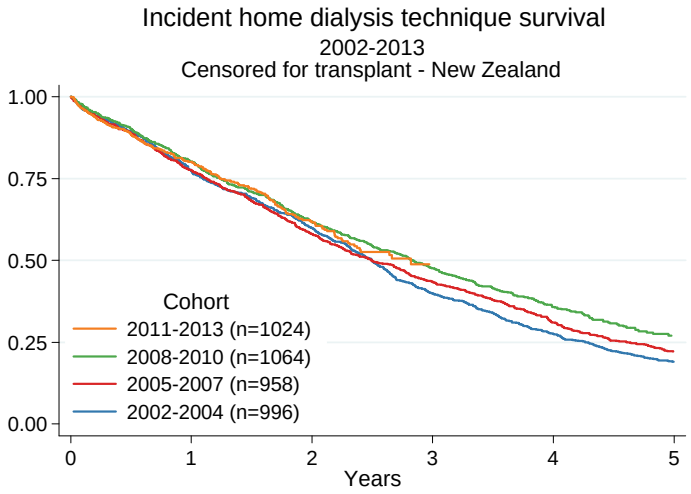


Table 6.6

Incident Home Dialysis Technique Survival by Era 2002-2013 (%, 95% CI)

Country	Era	6 months	1 year	3 years	5 years
Australia	2002-2004 (n=2746)	85 (83, 86)	72 (70, 74)	37 (35, 39)	19 (17, 21)
	2005-2007 (n=3233)	85 (84, 86)	73 (71, 74)	39 (37, 40)	21 (20, 23)
	2008-2010 (n=3148)	84 (83, 85)	73 (72, 75)	40 (39, 42)	23 (21, 25)
	2011-2013 (n=3345)	87 (85, 88)	76 (74, 78)	-	-
New Zealand	2002-2004 (n=996)	89 (87, 91)	77 (75, 80)	40 (37, 43)	19 (16, 22)
	2005-2007 (n=958)	89 (87, 91)	77 (75, 80)	43 (40, 47)	22 (19, 25)
	2008-2010 (n=1064)	90 (88, 92)	80 (78, 82)	48 (44, 51)	27 (23, 31)
	2011-2013 (n=1024)	88 (86, 90)	80 (77, 83)	-	-

Figure 6.16.1

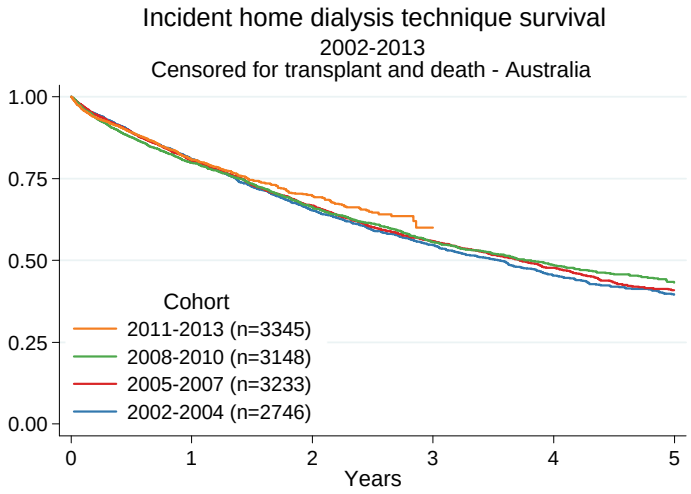


Figure 6.16.2

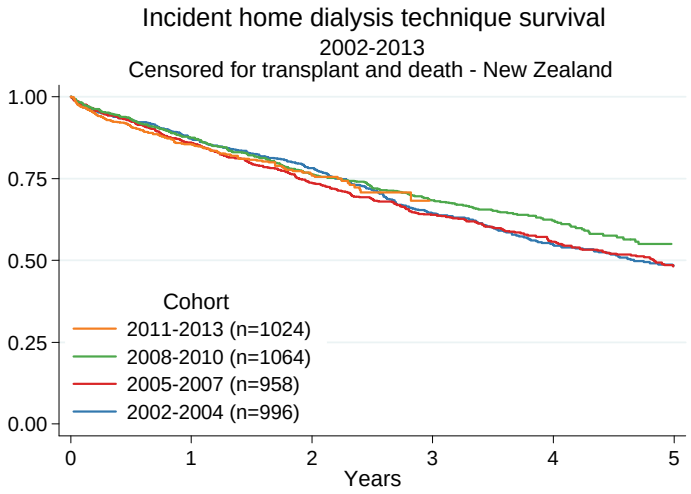


Table 6.7

Incident Home Dialysis Death-Censored Technique Survival by Era 2002-2013 (%, 95% CI)

Country	Era	6 months	1 year	3 years	5 years
Australia	2002-2004 (n=2746)	89 (88, 90)	81 (79, 82)	55 (52, 57)	40 (37, 42)
	2005-2007 (n=3233)	89 (88, 90)	80 (79, 82)	56 (54, 58)	41 (38, 43)
	2008-2010 (n=3148)	88 (86, 89)	80 (78, 81)	56 (54, 58)	43 (40, 46)
	2011-2013 (n=3345)	89 (88, 90)	81 (79, 82)	-	-
New Zealand	2002-2004 (n=996)	93 (91, 94)	87 (85, 89)	64 (61, 68)	48 (44, 53)
	2005-2007 (n=958)	93 (91, 94)	86 (83, 88)	64 (60, 67)	48 (44, 52)
	2008-2010 (n=1064)	93 (91, 95)	88 (85, 89)	68 (65, 71)	55 (50, 60)
	2011-2013 (n=1024)	91 (89, 93)	86 (83, 88)	-	-

Figure 6.17.1

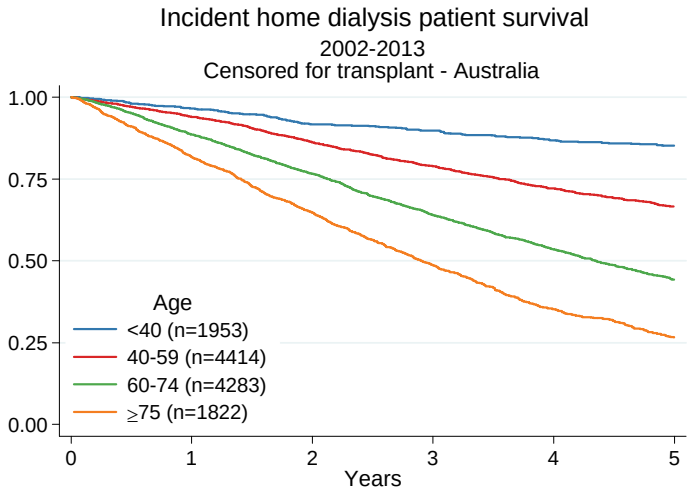


Figure 6.17.2

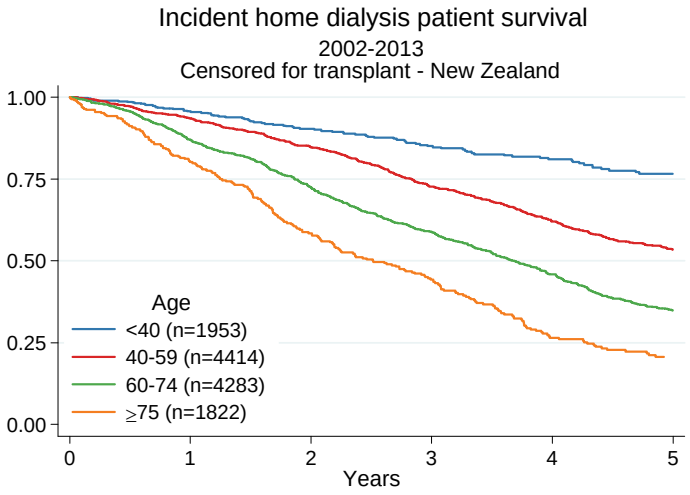
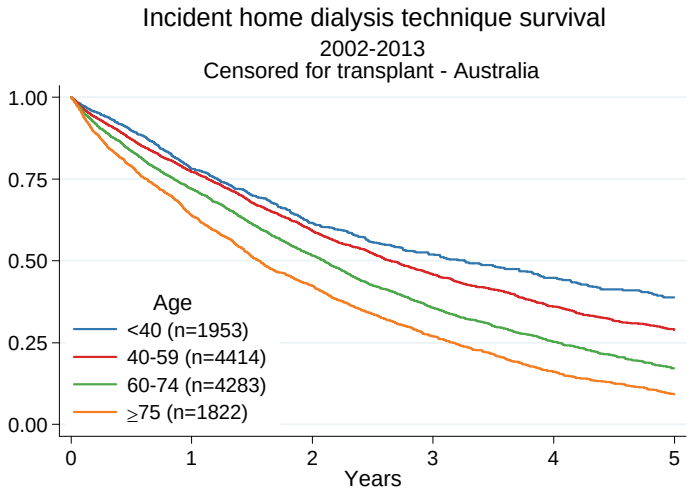


Table 6.8

Incident Home Dialysis Patient Survival by Age 2002-2013 (%, 95% CI)

Country	Age	6 months	1 year	3 years	5 years
Australia	<40 (n=1953)	98 (97, 99)	97 (96, 97)	90 (88, 91)	85 (83, 87)
	40-59 (n=4414)	97 (96, 98)	94 (93, 95)	79 (77, 80)	67 (65, 68)
	60-74 (n=4283)	95 (94, 96)	89 (88, 90)	64 (62, 66)	44 (42, 46)
	≥75 (n=1822)	91 (90, 92)	82 (80, 83)	49 (46, 51)	27 (24, 29)
New Zealand	<40 (n=578)	99 (97, 99)	96 (94, 97)	85 (81, 88)	77 (72, 81)
	40-59 (n=1652)	97 (96, 98)	94 (92, 95)	73 (70, 75)	53 (50, 57)
	60-74 (n=1478)	96 (94, 97)	87 (85, 89)	59 (56, 62)	35 (32, 38)
	≥75 (n=334)	91 (87, 94)	80 (75, 84)	44 (39, 50)	21 (16, 26)

Figure 6.18.1



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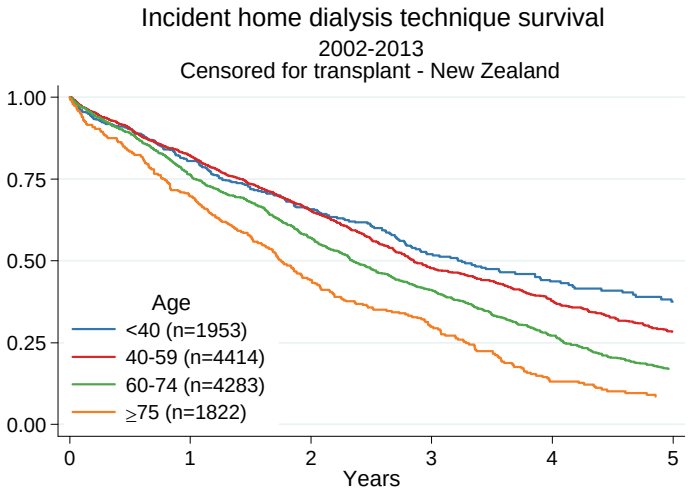
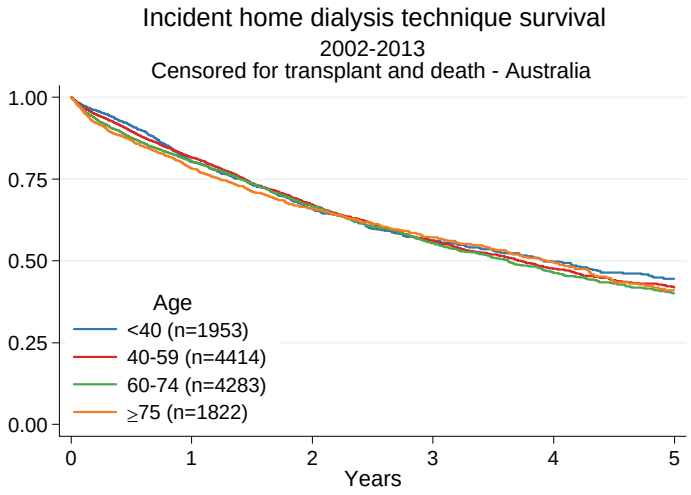


Table 6.9

Incident Home Dialysis Technique Survival by Age 2002-2013 (%, 95% CI)

Country	Age	6 months	1 year	3 years	5 years
Australia	<40 (n=1953)	90 (88, 91)	78 (76, 80)	52 (49, 55)	39 (35, 43)
	40-59 (n=4414)	87 (86, 88)	77 (76, 78)	46 (44, 48)	29 (27, 31)
	60-74 (n=4283)	84 (82, 85)	72 (70, 73)	36 (34, 37)	17 (16, 19)
	≥75 (n=1822)	79 (77, 81)	64 (62, 66)	27 (25, 29)	9 (8, 11)
New Zealand	<40 (n=578)	90 (87, 92)	81 (77, 84)	52 (47, 57)	37 (32, 43)
	40-59 (n=1652)	90 (89, 92)	82 (80, 84)	48 (45, 51)	28 (25, 31)
	60-74 (n=1478)	89 (87, 91)	76 (74, 78)	41 (38, 44)	17 (15, 20)
	≥75 (n=334)	83 (79, 87)	70 (64, 74)	30 (25, 35)	9 (5, 13)

Figure 6.19.1



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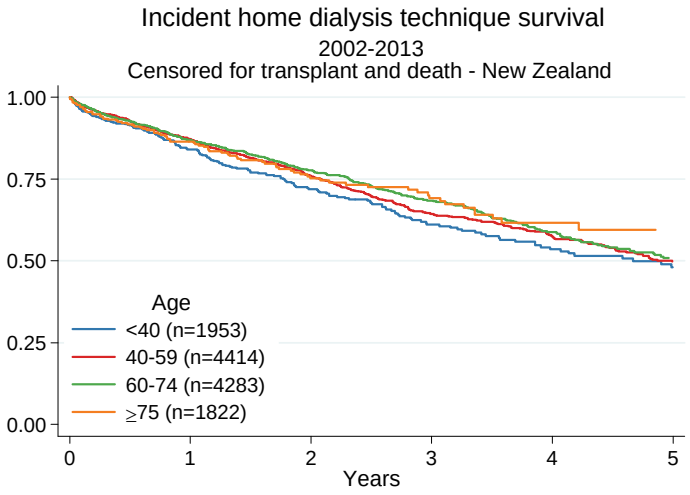

Table 6.10

Incident Home Dialysis Death-Censored Technique Survival by Age 2002-2013 (%, 95% CI)

Country	Age	6 months	1 year	3 years	5 years
Australia	<40 (n=1953)	91 (90, 92)	80 (78, 82)	56 (53, 59)	45 (41, 48)
	40-59 (n=4414)	90 (89, 90)	82 (80, 83)	56 (54, 58)	42 (40, 44)
	60-74 (n=4283)	88 (87, 89)	80 (79, 82)	55 (53, 57)	40 (38, 43)
	≥75 (n=1822)	87 (85, 88)	78 (76, 80)	57 (54, 60)	41 (37, 45)
New Zealand	<40 (n=578)	91 (89, 93)	84 (81, 87)	61 (56, 66)	48 (41, 54)
	40-59 (n=1652)	93 (91, 94)	87 (85, 89)	64 (61, 67)	50 (46, 54)
	60-74 (n=1478)	93 (91, 94)	87 (85, 89)	68 (65, 71)	51 (46, 55)
	≥75 (n=334)	92 (88, 94)	86 (82, 90)	69 (62, 75)	59 (50, 68)

Deaths on Home Dialysis

Table 6.11 shows the causes of death in patients who died while receiving home dialysis, or within 30 days of transferring from home dialysis to facility haemodialysis, during 2002-2013. Deaths from cardiovascular disease were the most common in both HHD and PD. Compared with PD patients, HHD patients were more likely to die from cardiovascular disease, but less likely to die from infection or dialysis withdrawal.

Table 6.11

Cause of death in home dialysis patients 2002 - 2013

Cause of death	PD	Home HD
Cardiovascular	1858 (35%)	371 (47%)
Withdrawal	1218 (23%)	116 (15%)
Cancer	237 (5%)	60 (8%)
Infection	764 (15%)	79 (10%)
Other	1167 (22%)	161 (20%)
Total	5244 (100%)	787 (100%)
Total	**12472 (100%)**	**4042 (100%)**

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