

# **CHAPTER 1**

## **STOCK AND FLOW**

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The number of new patients in Australia increased only 4% in 2006 after a 17% increase in 2005. While there is considerable variation in this rate of increase from year to year, over the longer term the rate of increase is steady. In New Zealand there was a 6% increase after a brief period of stability. Overall there is more variation in New Zealand numbers, consistent with a smaller population. Rates of prevalent patients and new patients are shown in Figures 1.1 - 1.3.

The relationship between the total new patients and fluctuations in the rate is shown in Figures 1.4 and 1.5.

The overall number of new transplants increased by 3% in Australia in 2006 and live donors continue to increase each year. The number from subsequent (second and later) transplants were the highest recorded since 1985. Further data about stock and flow is shown in Figures 1.6 - 1.14.

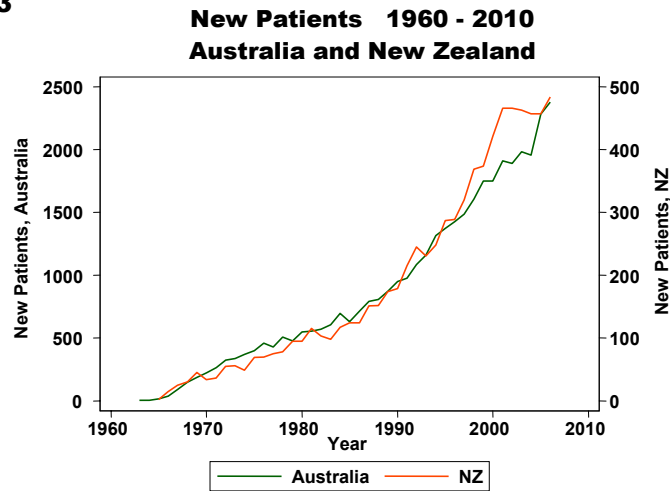
In New Zealand, although the live donors remained steady, the overall number increased 7% from the previous year.

<b>Figure 1.1</b>					
<b>Prevalent Patients 2002 - 2006</b>					
<b>(Number Per Million Population at 31st December)</b>					
	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
<b>Australia Total</b>	<b>13,016 (663)</b>	<b>13,691 (689)</b>	<b>14,259 (709)</b>	<b>15,136 (745)</b>	<b>16,027 (778)</b>
No. Functioning Transplants • #	5750 (293)	5967 (300)	6251 (311)	6516 (321)	6845 (332)
No. Dialysis Patients	7266 (370)	7724 (389)	8008 (398)	8620 (424)	9182 (446)
Proportion Home *	35%	34%	32%	31%	31%
Proportion Satellite HD	37%	39%	42%	42%	43%
Proportion CAPD/APD	25%	24%	22%	21%	22%
<b>New Zealand Total</b>	<b>2715 (689)</b>	<b>2883 (719)</b>	<b>2996 (738)</b>	<b>3110 (759)</b>	<b>3224 (779)</b>
No. Functioning Transplants • #	1116 (283)	1168 (291)	1220 (300)	1238 (302)	1253 (303)
No. Dialysis Patients	1599 (406)	1715 (428)	1776 (437)	1872 (457)	1971 (476)
Proportion Home *	62%	59%	57%	54%	54%
Proportion Satellite HD	14%	15%	16%	16%	17%
Proportion CAPD/APD	48%	45%	42%	38%	39%

• Country of Transplant      # Patients lost to follow up are not included  
\* Proportion of all patients dialysing currently receiving home-based treatment (either PD or HD)

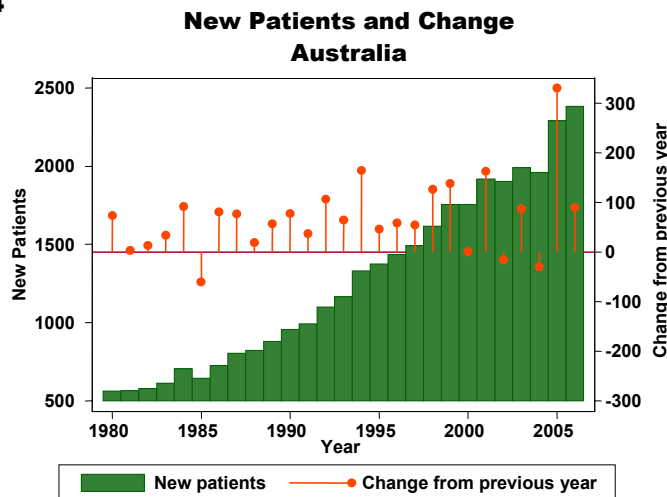
<b>Figure 1.2</b>					
<b>Patient Flow Summary 2002 - 2006</b>					
<b>(Number Per Million Population at 31st December)</b>					
<b>* Country of Transplant</b>					
	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
<b>Australia</b>					
Total New Patients	1892 (96)	1983 (100)	1955 (97)	2283 (112)	2378 (115)
Total New Transplants *	604 (31)	543 (27)	650 (32)	623 (31)	641 (31)
Living Donor Transplants	230	218	244	246	274
Subsequent Transplants	67	71	67	84	92
Total Deaths	1192	1264	1350	1358	1459
Dialysis Patients	1048	1120	1208	1202	1322
Transplant Patients	144	144	142	156	137
<b>New Zealand</b>					
Total New Patients	466 (118)	463 (115)	457 (113)	457 (112)	484 (117)
Total New Transplants *	117 (30)	111 (28)	105 (26)	93 (23)	90 (22)
Living Donor Transplants	48	44	48	46	49
Subsequent Transplants	14	17	7	6	10
Total Deaths	263	291	333	330	361
Dialysis Patients	232	264	306	298	330
Transplant Patients	31	27	27	32	31

**Figure 1.3**



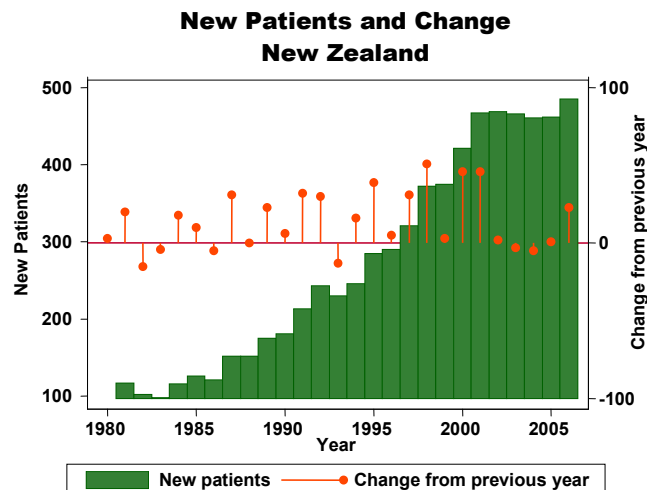
Numbers of new (incident) RRT patients in Australia are progressively increasing. The steady rates over 2002-2004 appear (in retrospect) to be part of random fluctuation.

**Figure 1.4**



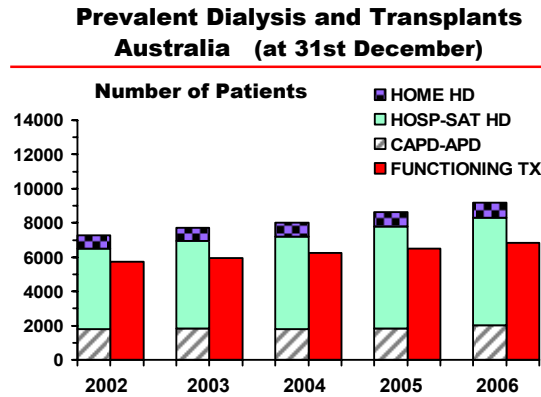
In contrast to Australia, the numbers of new patients in New Zealand have stabilised in recent years.

**Figure 1.5**

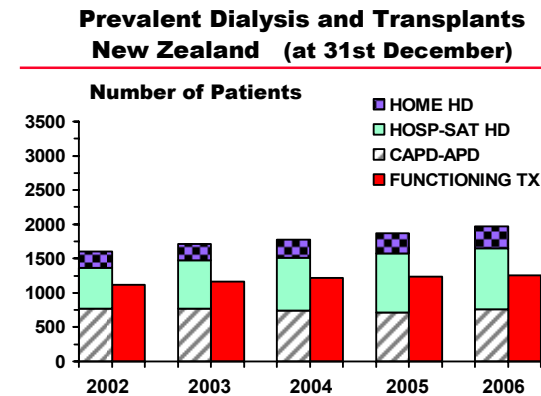




**Figure 1.6**



**Figure 1.7**



The incident rate among Australian Aboriginal, Maori and Pacific People is substantially higher than among non-indigenous people. This, together with lower rates of transplantation, leads to higher rates of prevalent dialysis patients (Figure 1.8).

<b>Figure 1.8</b>						
<b>Prevalence and Incidence by Indigenous Racial Origin, 2002 - 2006</b>						
<b>(Number Per Million Population Per Year for Patients)</b>						
<b>Aboriginal and Torres Strait Islanders Combined</b>						
Race		2002	2003	2004	2005	2006
<b>Australia</b>						
	New Patients	172 (395)	173 (390)	193 (427)	215 (467)	207 (441)
Aboriginal and Torres Strait Islanders	Dialysis	711 (1633)	769 (1733)	833 (1842)	917 (1991)	971 (2070)
	Functioning Transplants	120 (276)	119 (268)	125 (276)	134 (291)	147 (313)
	Transplant Operations	17 (39)	14 (32)	26 (58)	22 (48)	26 (55)
	Deaths	104 (239)	114 (257)	121 (268)	119 (258)	140 (298)
<b>New Zealand</b>						
	New Patients	149 (249)	148 (243)	141 (227)	137 (216)	163 (251)
Maori	Dialysis	534 (893)	588 (964)	599 (962)	638 (1005)	678 (1045)
	Functioning Transplants	105 (176)	112 (184)	116 (186)	110 (173)	110 (170)
	Transplant Operations	13 (22)	16 (26)	12 (19)	3 (5)	10 (15)
	Deaths	70 (117)	87 (143)	128 (206)	103 (162)	123 (190)
	New Patients	58 (208)	80 (290)	66 (233)	73 (252)	71 (239)
Pacific People	Dialysis	273 (1015)	309 (1120)	331 (1170)	351 (1211)	363 (1223)
	Functioning Transplants	56 (208)	63 (228)	70 (247)	72 (248)	77 (259)
	Transplant Operations	15 (56)	14 (51)	12 (42)	4 (14)	7 (24)
	Deaths	39 (145)	37 (134)	37 (131)	44 (152)	54 (182)

**Figure 1.9**

**National and State Stock and Flow 1-Jan-2006 to 31-Dec-2006**  
**( ) 31-Dec-2005 Figures**  
**# Patients Lost to Follow-up are not included**  
**\* Resident State**

State	New Patients	Transplant Operations *	Deaths		Dialysis Dependent	Functioning Transplants # *	Total
			Dialysis	Transplant			
Queensland	483 (462)	101 (99)	300 (224)	33 (27)	1690 (1602)	1355 (1307)	<b>3045 (2909)</b>
New South Wales	768 (720)	195 (212)	392 (381)	44 (52)	3010 (2756)	1983 (1901)	<b>4993 (4657)</b>
Aust. Capital Territory	53 (46)	-	22 (22)	2 (5)	205 (192)	191 (185)	<b>396 (377)</b>
Victoria	561 (525)	185 (162)	302 (286)	20 (29)	2334 (2185)	1687 (1585)	<b>4021 (3770)</b>
Tasmania	45 (37)	-	22 (25)	5 (4)	158 (155)	156 (145)	<b>314 (300)</b>
South Australia	182 (174)	96 (68)	83 (74)	26 (23)	599 (568)	743 (706)	<b>1342 (1274)</b>
Northern Territory	70 (83)	-	52 (42)	1 (3)	326 (314)	73 (71)	<b>399 (385)</b>
Western Australia	216 (236)	64 (82)	149 (148)	6 (13)	860 (848)	675 (634)	<b>1535 (1482)</b>
<b>Australia</b>	<b>2378 (2283)</b>	<b>641 (623)</b>	<b>1322 (1202)</b>	<b>137 (156)</b>	<b>9182 (8620)</b>	<b>6863 (6534)</b>	<b>16,045 (15,154)</b>
<b>New Zealand</b>	<b>484 (457)</b>	<b>90 (93)</b>	<b>330 (298)</b>	<b>31 (32)</b>	<b>1971 (1872)</b>	<b>1235 (1220)</b>	<b>3206 (3092)</b>

Historical data (Figure 1.10 show a steady increase in the number of prevalent patients in both Australia and New Zealand.

**Figure 1.10**

**Prevalent Transplant and Dialysis Patients 1983 to 2006**  
**Country of Transplant**  
**# Patients Lost of Follow-up are not included**  
**(Number Per Million Population at 31 December)**

Year	Australia			New Zealand		
	Transplant #	Dialysis	Total	Transplant #	Dialysis	Total
1983	1771 (115)	2019 (131)	<b>3790 (246)</b>	318 (99)	339 (105)	<b>657 (203)</b>
1984	1971 (127)	2152 (138)	<b>4123 (265)</b>	348 (107)	370 (113)	<b>718 (220)</b>
1985	2163 (137)	2230 (141)	<b>4393 (278)</b>	377 (115)	402 (122)	<b>779 (237)</b>
1986	2392 (149)	2339 (146)	<b>4731 (295)</b>	426 (129)	402 (122)	<b>828 (250)</b>
1987	2574 (158)	2526 (155)	<b>5100 (314)</b>	452 (135)	437 (131)	<b>889 (266)</b>
1988	2798 (169)	2675 (162)	<b>5473 (331)</b>	484 (145)	482 (144)	<b>966 (289)</b>
1989	3054 (182)	2750 (164)	<b>5804 (345)</b>	531 (158)	527 (156)	<b>1058 (313)</b>
1990	3265 (191)	2955 (173)	<b>6220 (364)</b>	579 (171)	557 (162)	<b>1136 (331)</b>
1991	3493 (202)	3138 (182)	<b>6631 (384)</b>	607 (174)	630 (180)	<b>1237 (354)</b>
1992	3699 (211)	3383 (193)	<b>7082 (405)</b>	677 (192)	674 (191)	<b>1351 (383)</b>
1993	3870 (219)	3703 (210)	<b>7573 (429)</b>	705 (197)	721 (202)	<b>1426 (399)</b>
1994	4060 (227)	4098 (230)	<b>8158 (457)</b>	731 (202)	784 (217)	<b>1515 (418)</b>
1995	4230 (234)	4519 (250)	<b>8749 (484)</b>	783 (213)	851 (232)	<b>1634 (445)</b>
1996	4441 (243)	4883 (267)	<b>9324 (509)</b>	824 (221)	935 (250)	<b>1759 (471)</b>
1997	4687 (253)	5189 (280)	<b>9876 (533)</b>	882 (233)	1018 (269)	<b>1900 (502)</b>
1998	4904 (262)	5535 (296)	<b>10,439 (558)</b>	936 (245)	1127 (295)	<b>2063 (541)</b>
1999	5073 (268)	6021 (318)	<b>11,094 (586)</b>	984 (257)	1231 (321)	<b>2215 (577)</b>
2000	5275 (275)	6407 (335)	<b>11,682 (610)</b>	1024 (265)	1334 (346)	<b>2358 (611)</b>
2001	5485 (283)	6852 (353)	<b>12,337 (635)</b>	1063 (274)	1465 (378)	<b>2528 (651)</b>
2002	5750 (293)	7266 (370)	<b>13,016 (663)</b>	1116 (283)	1599 (406)	<b>2715 (689)</b>
2003	5967 (300)	7724 (389)	<b>13,691 (689)</b>	1168 (291)	1715 (428)	<b>2883 (719)</b>
2004	6251 (311)	8008 (398)	<b>14,259 (709)</b>	1220 (300)	1776 (437)	<b>2996 (738)</b>
2005	6516 (321)	8620 (424)	<b>15,136 (745)</b>	1238 (302)	1872 (457)	<b>3110 (759)</b>
2006	6845 (332)	9182 (446)	<b>16,027 (778)</b>	1253 (303)	1971 (476)	<b>3224 (779)</b>



Variation in incidence rates and especially transplant rates leads to differences in the balance between dialysis and transplantation in various States (Figure 1.11 - 1.14).

**Figure 1.11**

**Comparison of Prevalent Transplant and Dialysis Dependent Patients 2002 - 2006**  
(Number Per Million Population at 31 December)

	2002	2003	2004	2005	2006
<b>Transplants **</b>					
Queensland	1179 (318)	1230 (324)	1269 (327)	1307 (330)	1355 (334)
New South Wales *	1669 (259)	1757 (271)	1833 (281)	1901 (289)	1983 (299)
Aust. Capital Territory *	146 (283)	162 (312)	181 (345)	185 (349)	191 (358)
Victoria	1407 (290)	1440 (293)	1500 (302)	1585 (316)	1687 (331)
Tasmania	122 (258)	130 (272)	141 (292)	145 (299)	156 (319)
South Australia	626 (412)	652 (427)	693 (452)	706 (458)	743 (478)
Northern Territory	68 (342)	67 (338)	73 (365)	71 (350)	73 (353)
Western Australia	548 (285)	547 (280)	580 (293)	634 (315)	675 (329)
<b>Australia</b>	<b>5765 (294)</b>	<b>5985 (301)</b>	<b>6270 (312)</b>	<b>6534 (321)</b>	<b>6863 (333)</b>
<b>New Zealand</b>					
	<b>1101 (279)</b>	<b>1150 (287)</b>	<b>1201 (296)</b>	<b>1220 (298)</b>	<b>1235 (298)</b>
** By Resident State and Country					
<b>Dialysis</b>					
Queensland	1202 (324)	1338 (352)	1444 (372)	1602 (404)	1690 (417)
New South Wales *	2431 (378)	2543 (392)	2554 (391)	2756 (419)	3010 (454)
Aust. Capital Territory *	178 (345)	187 (360)	185 (353)	192 (362)	205 (385)
Victoria	1930 (397)	1991 (405)	2056 (413)	2185 (435)	2334 (458)
Tasmania	142 (300)	153 (321)	148 (307)	155 (319)	158 (323)
South Australia	457 (301)	505 (331)	512 (334)	568 (368)	599 (385)
Northern Territory	233 (1173)	249 (1255)	279 (1396)	314 (1548)	326 (1577)
Western Australia	693 (360)	758 (388)	830 (419)	848 (422)	860 (419)
<b>Australia</b>	<b>7266 (370)</b>	<b>7724 (389)</b>	<b>8008 (398)</b>	<b>8620 (424)</b>	<b>9182 (446)</b>
<b>New Zealand</b>					
	<b>1599 (406)</b>	<b>1715 (428)</b>	<b>1776 (437)</b>	<b>1872 (457)</b>	<b>1971 (476)</b>

\* NSW population excludes residents of the Southern Area Health Service  
 \* ACT population includes residents of the Southern Area Health Service (Medical services in the ACT service this Southern Area Region)  
 Transplanted patients lost to follow up have been excluded

Figure 1.12

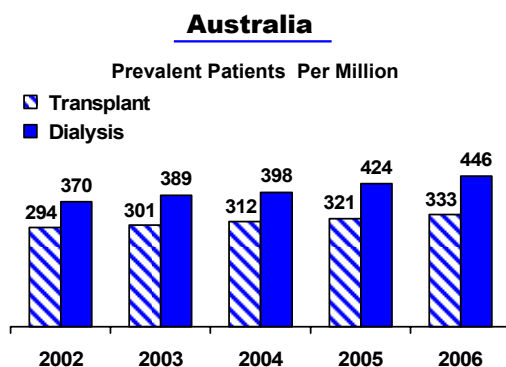
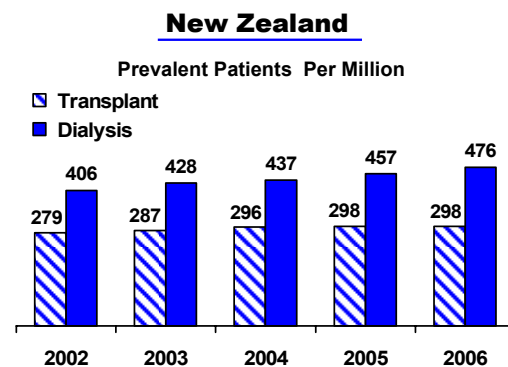


Figure 1.13



**Figure 1.14**

**Comparison of Transplant and Dialysis Dependent Patients 2002 - 2006**

