



Singapore Renal Registry Annual Registry Report 1999 - 2014

(INTERIM)

**National Registry of Diseases Office
(NRDO)**

Acknowledgement

This report was produced with joint efforts from the following:

SINGAPORE RENAL REGISTRY ADVISORY COMMITTEE

Chairman	A/Prof Evan Lee Jon Choon Senior Consultant, Nephrology, NUHS Pte Ltd
Secretary	A/Prof Lina Choong Hui Lin Senior Consultant, Renal Medicine & Director of Dialysis, SGH
Members	Prof A Vathsala Head & Senior Consultant, Nephrology & Director, Adult Renal Transplant Programme, NUHS Pte Ltd
	Dr Marjorie Foo Head & Senior Consultant, Renal Medicine, SGH
	A/Prof Terence Kee Senior Consultant, Renal Medicine, SGH
	A/Prof Adrian Liew Head & Senior Consultant, Renal Medicine, TTSH
	Dr Grace Lee Senior Consultant, Gleneagles Medical Centre
	Dr Chow Khuan Yew Dy Director, National Registry Diseases Office, Research & Strategic Planning Division, HPB

HEALTH PROMOTION BOARD **Research & Strategic Planning Division**

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Senior Resident	Dr Lim Boon Tar Raymond
Field Administrator NRDO	Ms Lee Hailen
Nurse Manager NRDO	Ms Wong Seow Foong
Registry Coordinators NRDO	Ms Lynn Khor (Team Leader) Ms Mary Lee Ms Maureen Ng Ms Ang Ghim Sin Dr U Win Nyunt Ms Siti Zuraidah

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RENAL REGISTRY REPORT FOR THE YEAR 1999-2014

Executive Summary

An increase in the number of cases and the corresponding age-standardised incidence rates of Chronic Kidney Disease Stage 5 (CKD5) has increased from 1999 to 2014.

Haemodialysis (HD) remained the main dialysis modality among incident (67.2% in 1999; 86.6% in 2014) and prevalent (83.5% in 1999; 88.4% in 2014) CKD5 patients on dialysis. Although majority of the incident dialysis patients was Chinese, the proportion had increased among the Malays (from 16.6% in 1999 to 24.5% in 2014) and the Indians (from 6.2% in 1999 to 8.8% in 2014). The same phenomenon was observed for the prevalent cases (from 16.2% in 1999 to 24.4% in 2014 for the Malays and from 4.8% in 1999 to 7.0% in 2014 for the Indians).

Diabetic nephropathy (DN) remained the main cause of CKD5 for incident (64.9% of HD; 63.4% of Peritoneal Dialysis (PD) in 2014) and prevalent (51.0% of HD; 49.1% of PD in 2014) patients on dialysis.

The age standardised incidence rates of renal transplants increased from 20.4 per million population (pmp) in 1999 to 27.0 pmp in 2006 but dropped to 13.3 pmp in 2014.

1 INCIDENCE

Table 1.1: CKD5 Incidence, 1999 – 2014

Year	No	CR*	ASR*
1999	680	210.5	193.8
2000	744	227.3	208.3
2001	785	236.0	211.1
2002	730	215.8	189.2
2003	855	254.0	220.4
2004	931	272.8	229.2
2005	1021	294.4	245.6
2006	1202	340.9	282.6
2007	1321	368.7	295.5
2008	1270	348.6	268.3
2009	1274	341.2	256.1
2010	1446	383.4	273.4
2011	1588	419.1	288.8
2012	1549	405.7	272.3
2013	1657 [^]	431.0	301.5 [^]
2014	1730 [^]	446.9	309.0 [^]

* Crude rates (CR) and age-standardised rates (ASR) are expressed as per 1,000,000 residential populations (DOS) and ASR are standardised to World Population.

[^] Approximated using linear regression based on past trend, as a linear trend in the data was observed. The corresponding 95% CI was between 1570 and 1742 for year 2013 and between 1635 and 1825 for year 2014.

Table 1.2: Incidence of CKD5 Patients on Definitive Dialysis, 1999 – 2014

Year	No	CR*	ASR*
1999	536	165.9	153.8
2000	632	193.1	172.7
2001	621	186.7	168.7
2002	646	191.0	166.6
2003	567	168.4	144.5
2004	627	183.7	154.8
2005	663	191.2	159.5
2006	729	206.8	170.8
2007	762	212.7	169.4
2008	769	211.1	164.1
2009	770	206.2	159.2
2010	741	196.5	144.7
2011	903	238.3	169.6
2012	921	241.2	169.3
2013	978	254.4	171.1
2014	1000	258.3	169.1

* Crude rates (CR) and age-standardised rates (ASR) are expressed as per 1,000,000 residential populations (DOS) and ASR are standardised to World Population.

Figure 1.1: Incidence of Patients on Dialysis by Ethnic Group, 1999 – 2014

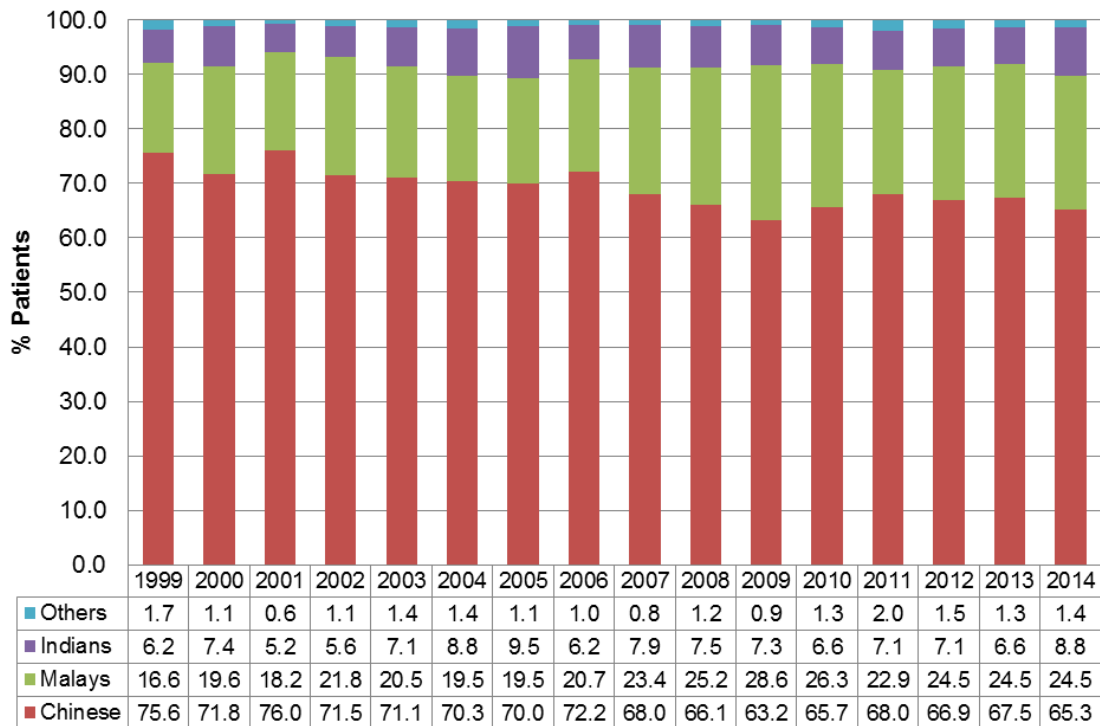


Figure 1.2: Incidence of Patients on Dialysis by Gender, 1999 – 2014

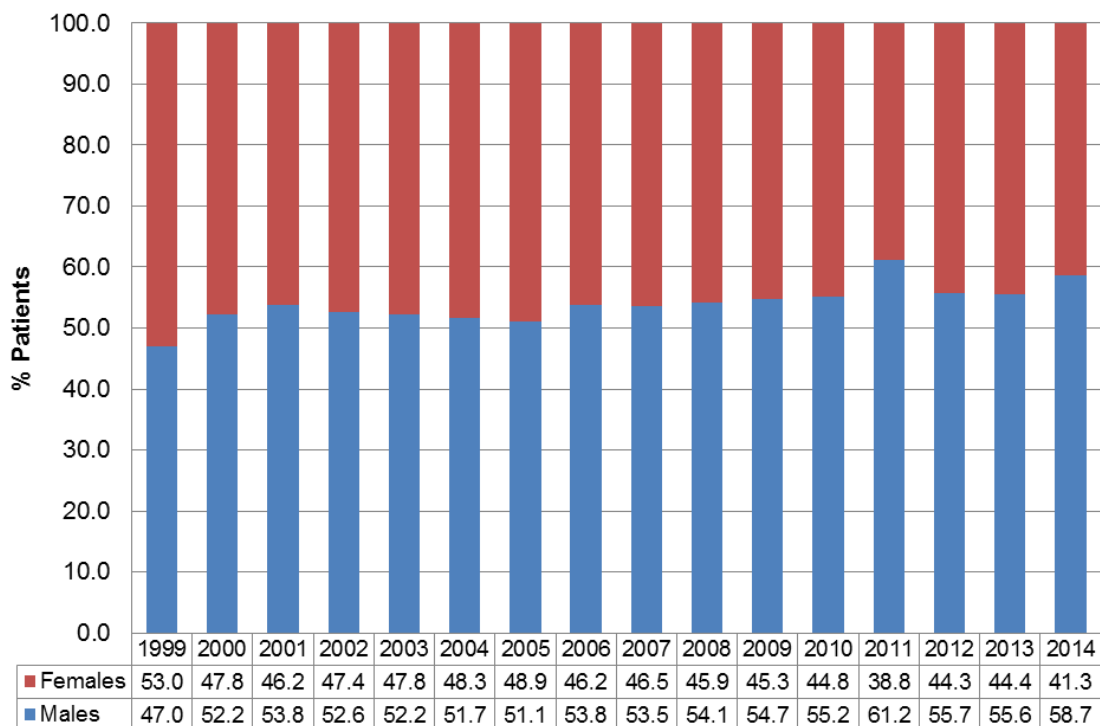


Figure 1.3: Incidence of Patients on Dialysis by Mode of Dialysis, 1999 – 2014

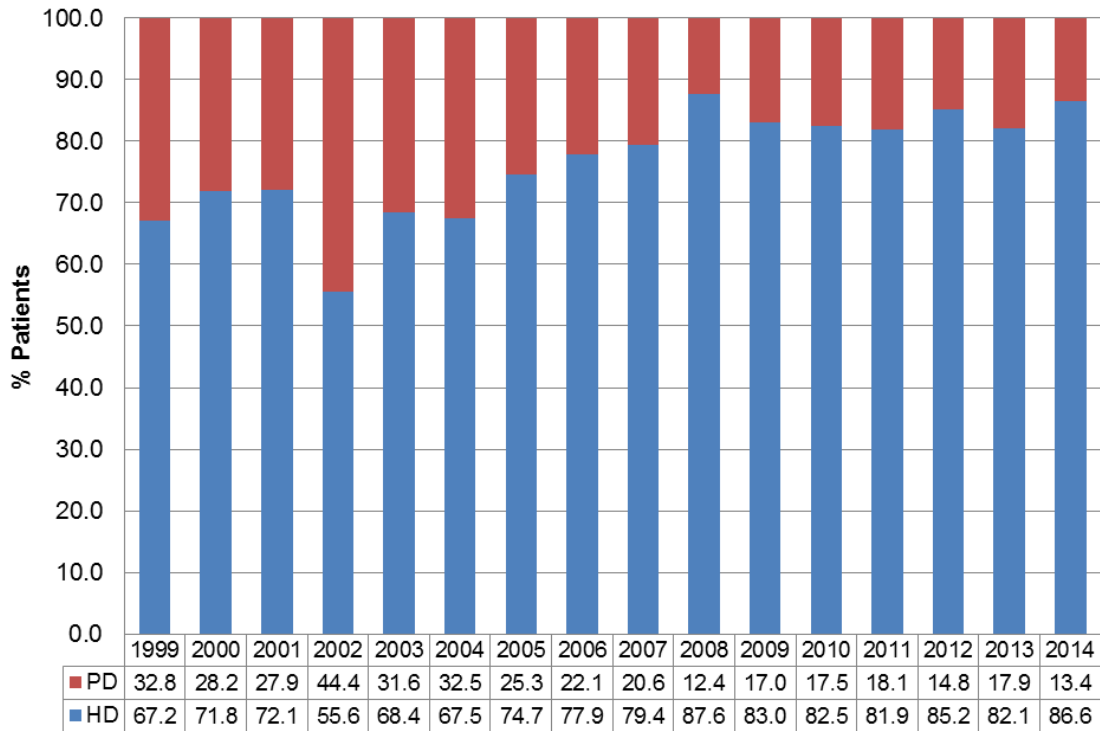
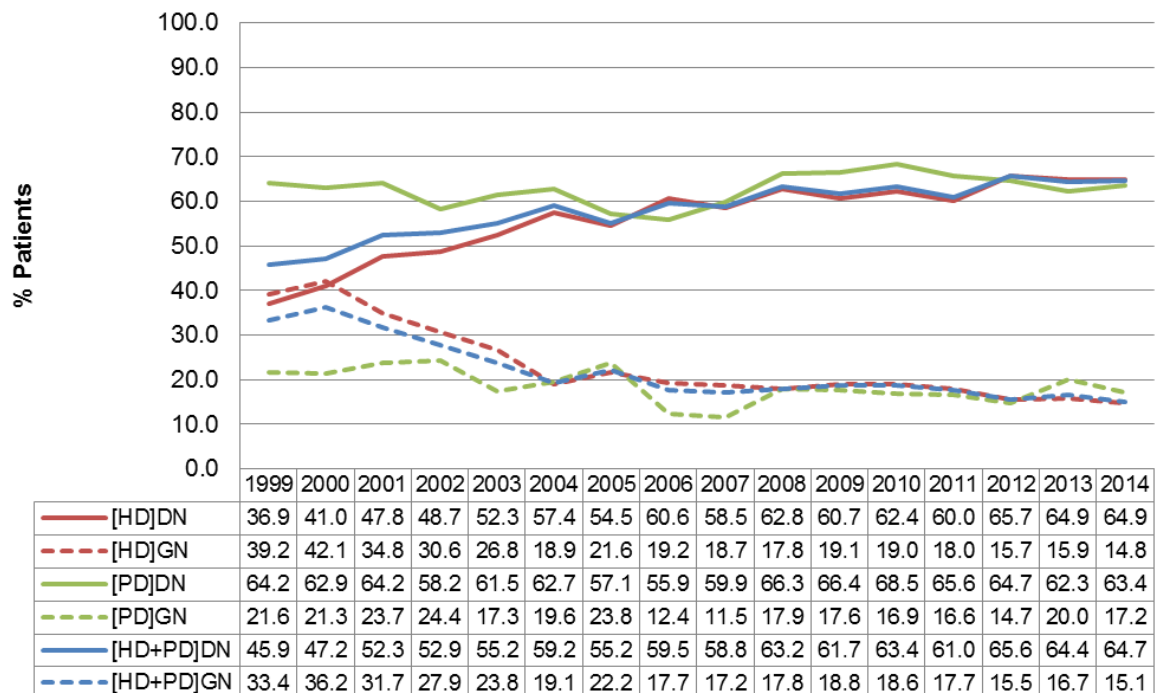


Figure 1.4: Incidence of Patients on Dialysis by Mode of Dialysis and Etiology (Diabetic Nephropathy and Primary Glomerulonephritis), 1999 – 2014



2 PREVALENCE

Table 2.1: Prevalence of Dialysis Patients (No, CR, ASR), 1999 – 2014

Year	No	CR*	ASR*
1999	2466	763.5	691.2
2000	2764	844.4	747.8
2001	2991	899.3	788.2
2002	3202	946.5	813.5
2003	3308	982.5	835.1
2004	3413	999.9	829.1
2005	3570	1029.5	838.5
2006	3780	1072.1	864.4
2007	3949	1102.1	871.2
2008	4179	1147.2	884.8
2009	4387	1174.9	892.0
2010	4601	1220.0	896.9
2011	4900	1293.1	920.0
2012	5250	1375.2	949.7
2013	5528	1437.9	962.6
2014	5912	1527.4	991.9

* Crude rates (CR) and age-standardised rates (ASR) are expressed as per 1,000,000 residential populations (DOS) and ASR are standardised to World Population.

Figure 2.1: Prevalence of Patients on Dialysis by Ethnic Group, 1999 – 2014

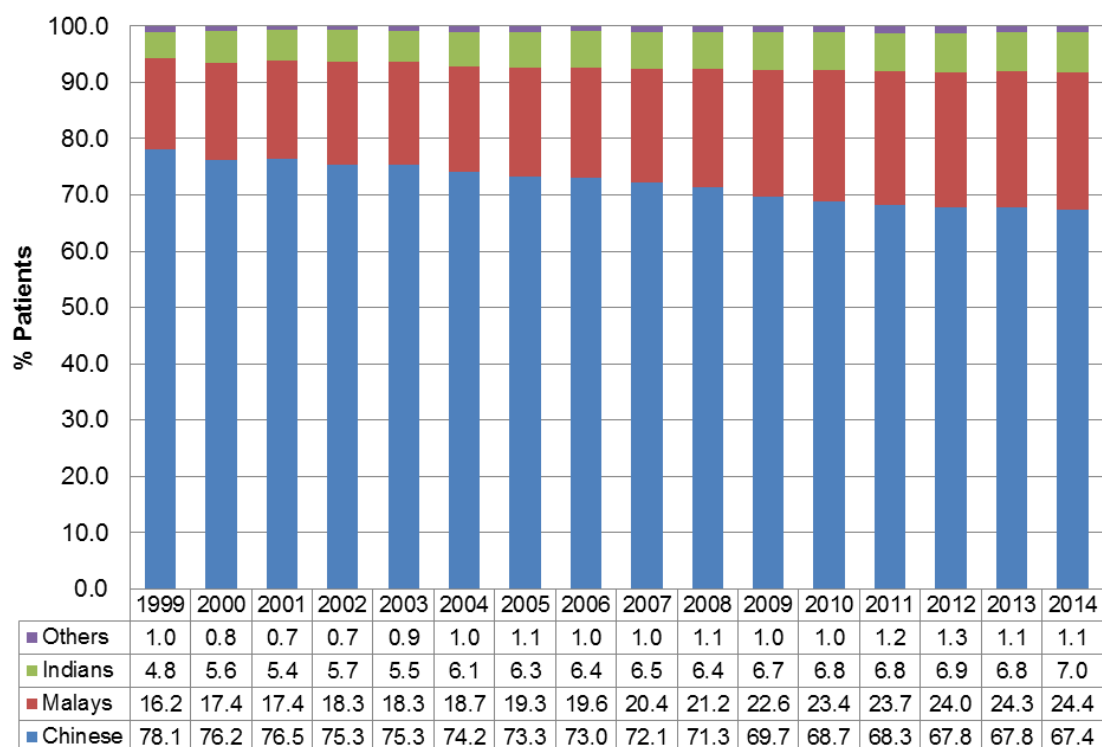


Figure 2.2: Prevalence of Patients on Dialysis by Gender, 1999 – 2014

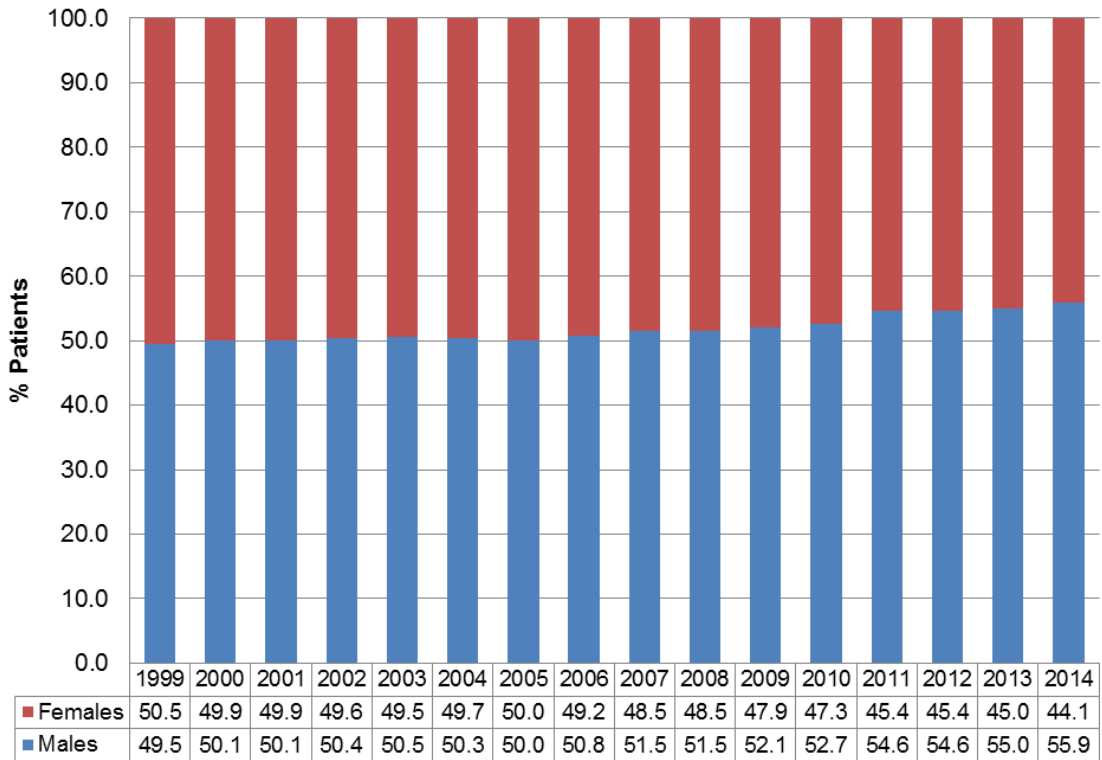


Figure 2.3: Prevalence of Patients on Dialysis by Mode of Dialysis, 1999 – 2014

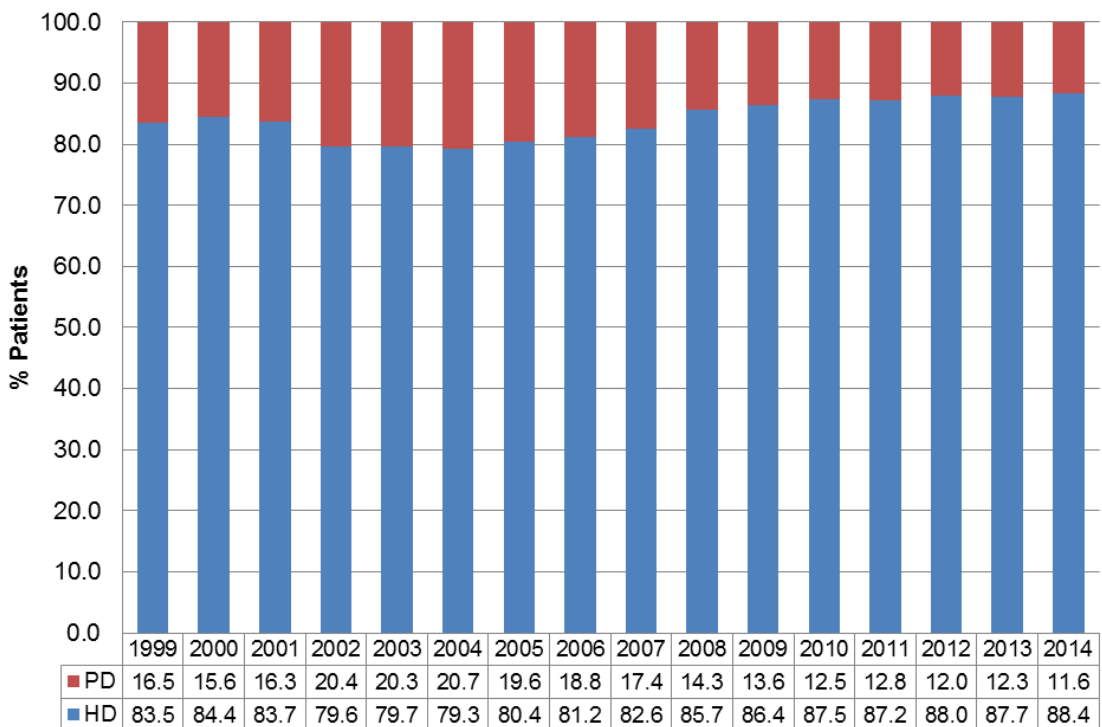
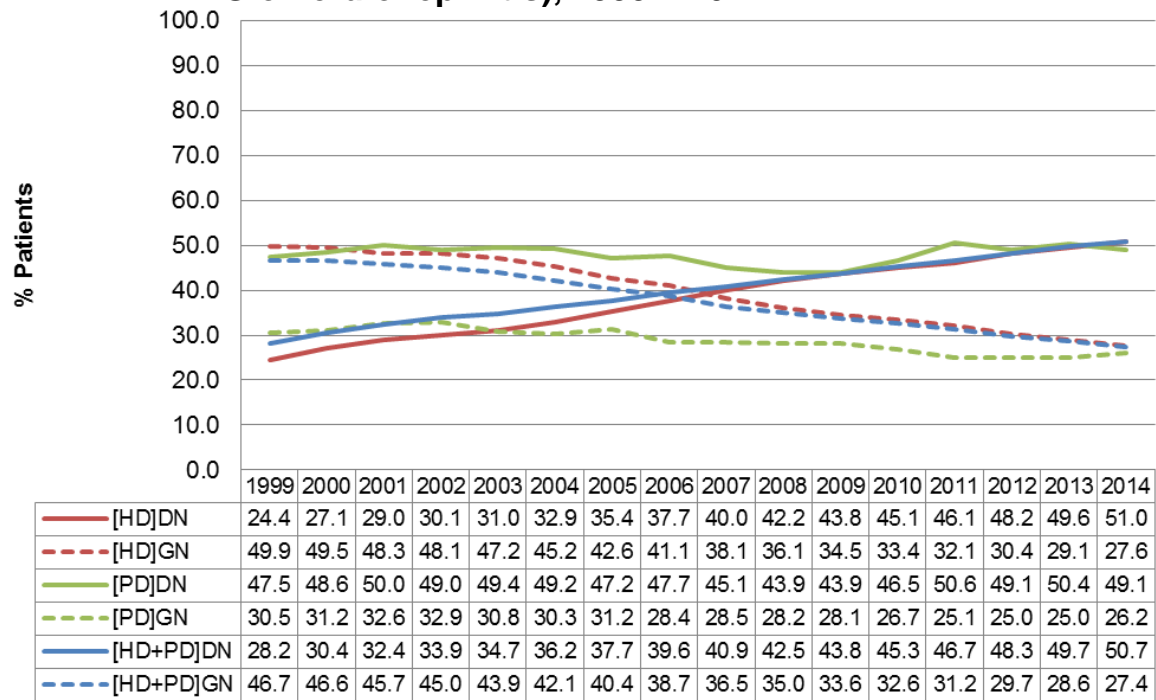


Figure 2.4: Prevalence of Patients on Dialysis by Mode of Dialysis and Etiology (Diabetic Nephropathy and Primary Glomerulonephritis), 1999 – 2014



3 TRANSPLANT

Table 3.1: Incidence of Renal Transplantation (No, CR, ASR), 1999 – 2014

Year	No	CR*	ASR*
1999	83	25.7	20.4
2000	83	25.4	20.5
2001	107	32.2	24.2
2002	81	23.9	18.5
2003	63	18.7	15.3
2004 [†]	103	30.2	22.9
2005	117	33.7	26.1
2006	125	35.5	27.0
2007	112	31.3	24.5
2008 [†]	104	28.6	23.0
2009	96	25.7	19.6
2010	84	22.3	17.6
2011	92	24.3	17.7
2012	62	16.2	13.4
2013	84	21.8	16.9
2014	63	16.3	13.3

* Crude rates (CR) and age-standardised rates (ASR) are expressed as per 1,000,000 residential populations (DOS) and ASR are standardised to World Population.

- [†] (a) The Human Organ Transplant Act (HOTA) was established in 1987 to allow for transplantation of cadaveric kidneys removed from those who died in a hospital as a result of an accident and had chosen not to opt out of donating their organs prior to their deaths.[1]
- (b) HOTA was amended in January 2004 to allow (i) transplantation of liver, heart and cornea and (ii) organ donation from living (both related and unrelated) organ donors.1
- (c) HOTA was amended in August 2008 to include Muslim organ donors.[2]

[1] Shum E, Chern A. Amendment of The Human Organ Transplant Act. Ann Acad Med Singapore. 2006; 35 428 - 32

[2] Ministry of Health. 10 February 2009. "Dental Care, HOTA, Infection Control and Cloning".
Website: <http://www.moh.gov.sg/mohcorp/speeches.aspx?id=20980>. Accessed on: 22 July 2010

Table 3.2: Incidence of Renal Transplant Patients by Gender, 1999 – 2014

Year	Male		Female	
	No	%	No	%
1999	44	53.0	39	47.0
2000	43	51.8	40	48.2
2001	71	66.4	36	33.6
2002	39	48.1	42	51.9
2003	41	64.5	22	35.5
2004	51	49.5	52	50.5
2005	67	57.3	50	42.7
2006	66	52.8	59	47.2
2007	58	51.8	54	48.2
2008	60	57.7	44	42.3
2009	51	53.1	45	46.9
2010	42	50.0	42	50.0
2011	53	57.6	39	42.4
2012	31	50.0	31	50.0
2013	49	58.3	35	41.7
2014	33	52.4	30	47.6

Figure 3.1: Incidence of Renal Transplant Patients by Etiology, 1999 – 2014

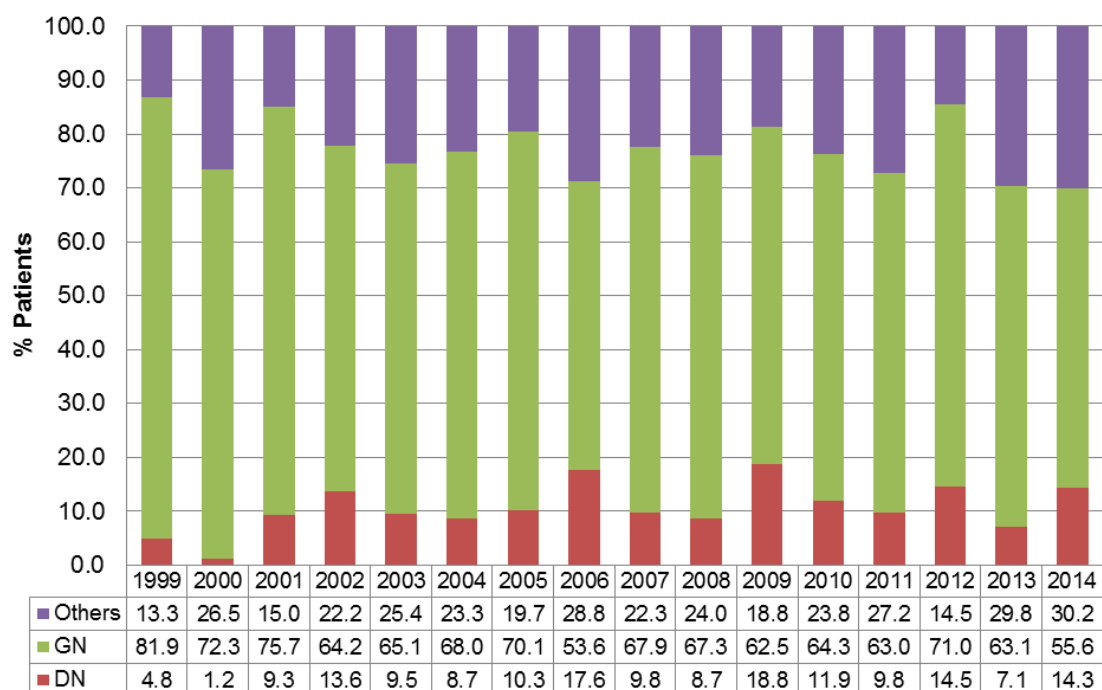


Table 3.3: Prevalence of Renal Transplantation (No, CR, ASR), 1999 – 2014

Year	No	CR*	ASR*
1999	836	258.8	204.7
2000	876	267.6	212.3
2001	952	286.2	224.2
2002	964	285.0	220.7
2003	989	293.8	225.0
2004	1044	305.9	231.9
2005	1108	319.5	240.6
2006	1174	333.0	250.2
2007	1229	343.0	255.6
2008	1273	349.5	261.2
2009	1322	354.1	263.2
2010	1361	360.9	264.6
2011	1404	370.5	266.8
2012	1405	368.0	261.7
2013	1435	373.3	261.5
2014	1440	372.0	257.8

Table 3.4: Prevalence of Renal Transplant Patients by Ethnic Group, 1999 – 2014

Year	Chinese		Malay		Indian		Others	
	No	%	No	%	No	%	No	%
1999	711	85.0	73	8.7	46	5.5	6	0.7
2000	749	85.5	75	8.6	46	5.3	6	0.7
2001	810	85.1	82	8.6	52	5.5	8	0.8
2002	827	85.8	83	8.6	46	4.8	8	0.8
2003	840	84.9	85	8.6	53	5.4	11	1.1
2004	887	85.0	85	8.1	58	5.6	14	1.3
2005	948	85.6	89	8.0	57	5.1	14	1.3
2006	999	85.1	95	8.1	65	5.5	15	1.3
2007	1039	84.5	102	8.3	71	5.8	17	1.4
2008	1063	83.5	114	9.0	78	6.1	18	1.4
2009	1099	83.1	125	9.5	76	5.7	22	1.7
2010	1127	82.8	132	9.7	79	5.8	23	1.7
2011	1159	82.5	136	9.7	84	6.0	25	1.8
2012	1156	82.3	135	9.6	88	6.3	26	1.8
2013	1174	81.8	145	10.1	88	6.1	28	2.0
2014	1172	81.4	149	10.3	90	6.3	29	2.0