

# **CHAPTER 1**

# **ALL KIDNEY REPLACEMENT THERAPY IN MALAYSIA**

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**SECTION 1.1: STOCK AND FLOW**

The incidence of patients requiring kidney replacement therapy (KRT) continues to rise with 10,027 new patients on KRT overall in 2023 as compared to 7601 patients in 2014. The breakdown in terms of dialysis modalities shows a rise of 5% in utilisation of PD from 13% in 2014 to 18% in 2023 (see Table 1.1.1). The transplant rate per million population has also achieved significant growth, particularly in the last 5 years where it has moved up from 3-4 pmp to 8 pmp by 2023.

In 2023, the number of prevalent patients on KRT has increased to 55,311 of whom 46,659 are on HD, 6551 are on PD and 2101 are kidney transplant recipients (Table 1.1.2).

**Table 1.1.1: Stock and flow of New KRT Incidence, Malaysia 2014-2023**

Year	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
New Dialysis Patients	10027	10037	9351	9420	9426	8494	8046	8072	8006	7601
New HD Patients	8150	8132	7659	7856	7992	7263	6913	7065	6869	6604
New PD Patients	1877	1905	1692	1564	1434	1231	1133	1007	1137	997
New Transplant Patients	279	213	80	152	160	98	112	91	115	91
New Dialysis Rate, pmp	300	307	285	291	295	269	259	263	264	254
New HD Rate, pmp	244	249	234	243	250	230	222	230	227	221
New PD Rate, pmp	56	58	52	48	45	39	36	33	38	33
New Transplant Rate, pmp	8	7	2	5	5	3	4	3	4	3
New HD, %	79.1	79.3	81.2	82.1	83.4	84.5	84.7	86.5	84.6	85.9
New PD, %	18.2	18.6	17.9	16.3	15	14.3	13.9	12.3	14	13
New Tx, %	2.7	2.1	0.8	1.6	1.7	1.1	1.4	1.1	1.4	1.2

**Figure 1.1.1(a): Number of new KRT patients by modality (New Dialysis and New Transplant), Malaysia 1969-2023**

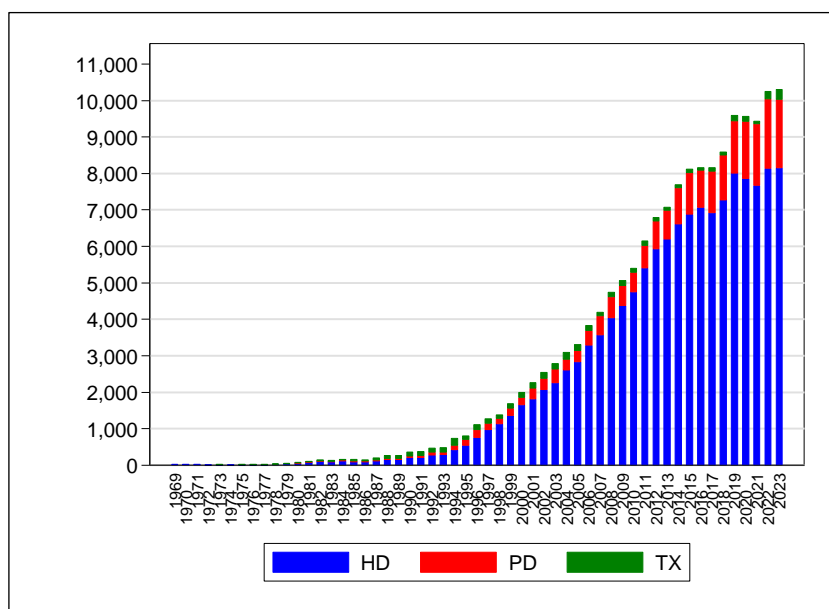
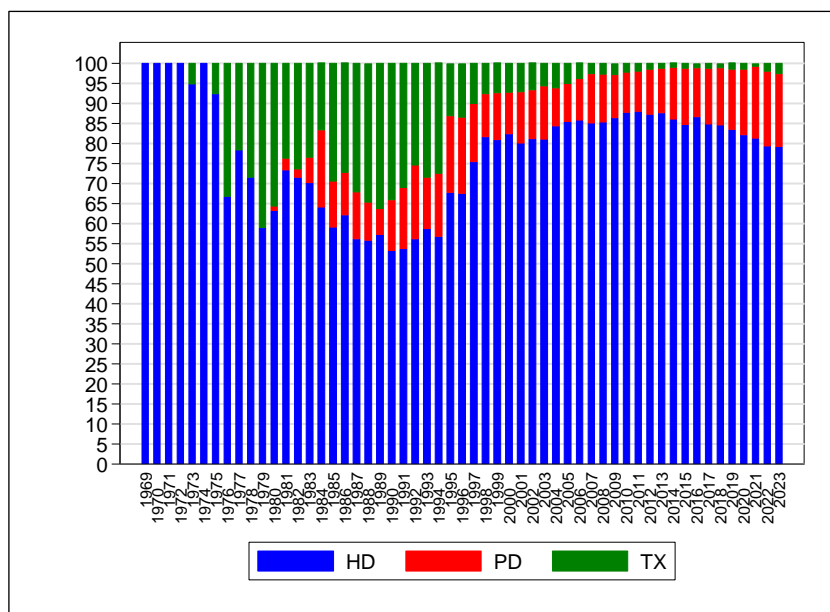


Figure 1.1.1.b provides a historical perspective over the last 5-6 decades in terms of the shifts in proportions of new KRT patients by modality. In the early years of KRT in Malaysia, there was a greater proportion of new transplant in relation to all modalities KRT and this was largely due to limited access to dialysis therapy. PD was introduced in the country in the 1980's and has slowly grown to 18.2% of all KRT in 2022 as compared to 13% in 2013. (Fig 1.1.1b). The proportion of prevalent home dialysis patients has slowly increased to 11.8% in 2023 whereas for many years prior to 2018, the proportion used to remain at ≤10% (Fig 1.1.2b).

**Figure 1.1.1(b): Proportion of new KRT patients by modality (New Dialysis and New Transplant), Malaysia 1969-2023**



**Table 1.1.2: Stock and flow of ESKD Patients on KRT at 31st Dec, Malaysia 2014-2023**

Year	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Dialysis Patients	53210	51481	49995	49992	47212	44625	42521	40634	38003	35068
HD Patients	46659	45147	44074	44457	42219	40045	38219	36645	34212	31763
PD Patients	6551	6334	5921	5535	4993	4580	4302	3989	3791	3305
Transplant Patients	2101	1923	1835	1889	1861	1813	1834	1816	1842	1858
Dialysis Rate, pmp	1594.1	1574.4	1525.3	1544.6	1477.7	1415.4	1367	1324.2	1255.4	1174.2
HD Rate, pmp	1397.8	1380.7	1344.7	1373.6	1321.4	1270.1	1228.7	1194.2	1130.2	1063.5
PD Rate, pmp	196.3	193.7	180.6	171	156.3	145.3	138.3	130	125.2	110.7
Transplant Rate, pmp	62.9	58.8	56	58.4	58.2	57.5	59	59.2	60.9	62.2
HD, %	84.4	84.5	85	85.7	86	86.2	86.2	86.3	85.9	86
PD, %	11.8	11.9	11.4	10.7	10.2	9.9	9.7	9.4	9.5	9
Tx, %	3.8	3.6	3.5	3.6	3.8	3.9	4.1	4.3	4.6	5

Figure 1.1.2(a): Prevalence of treated ESKD patients by modality (On KRT at 31st Dec), Malaysia 1969-2023

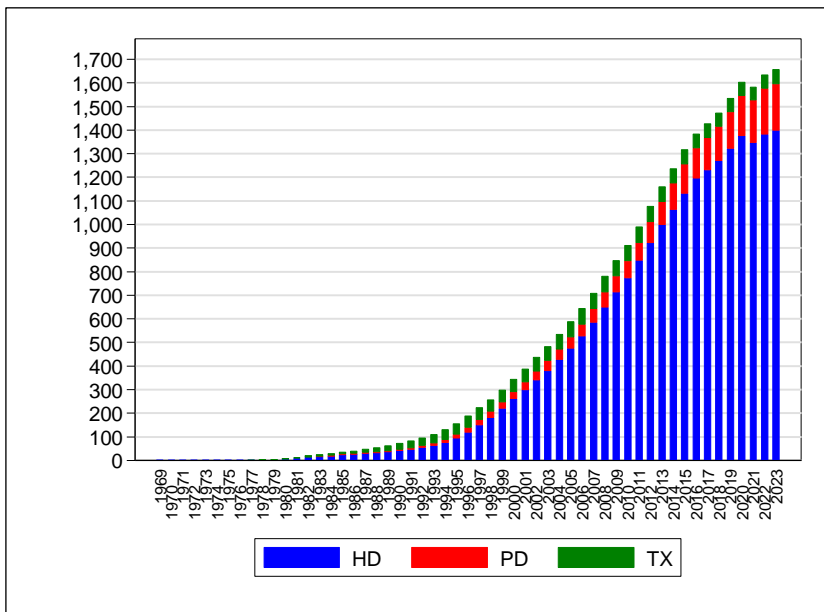
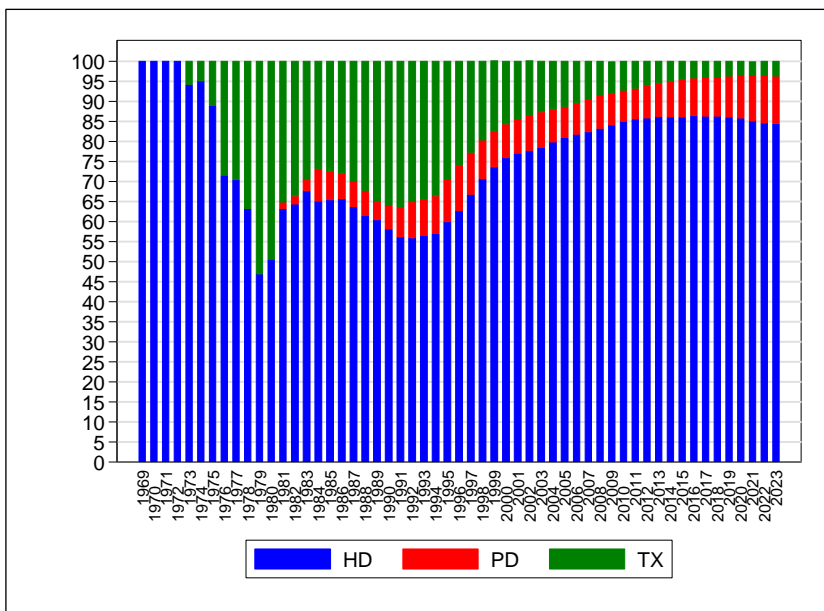


Figure 1.1.2(b): Proportion of treated prevalent ESKD patients by modality (On KRT at 31st Dec), Malaysia 1969-2023

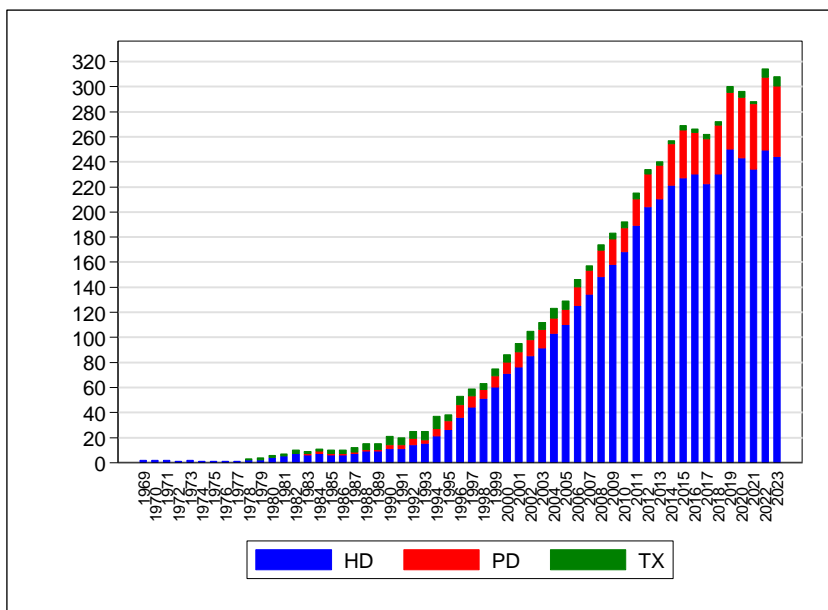


**SECTION 1.2: TREATMENT PROVISION RATE**

Dialysis acceptance rates are now at 300 pmp as compared with 254 pmp a decade ago (Table 1.1.1). The dialysis prevalence rate increased from 1174 pmp in 2014 to 1594 pmp in 2023, which is a 1.3 fold rise (Table 1.1.2).

The new transplant recipient rate has doubled from 2.6 per 1000 dialysis patients in 2014 to 5.2 per 1000 dialysis patients in 2023. As shown in table 1.2.2 and figure 1.2.3, the transplant rate per 1000 dialysis patients had been declining since the 1990’s, reached a nadir in 2016 when the new transplant rate was 2.2 per 1000 dialysis patients, but has shown an uptick in recent years.

**Figure 1.2.1: Incidence rate of newly treated ESKD patients (per million population) by modality (New Dialysis and New Transplant), Malaysia 1969-2023**



**Figure 1.2.2: Prevalence rate of treated ESKD patients (per million population) by modality (On KRT at 31st Dec), Malaysia 1969-2023**

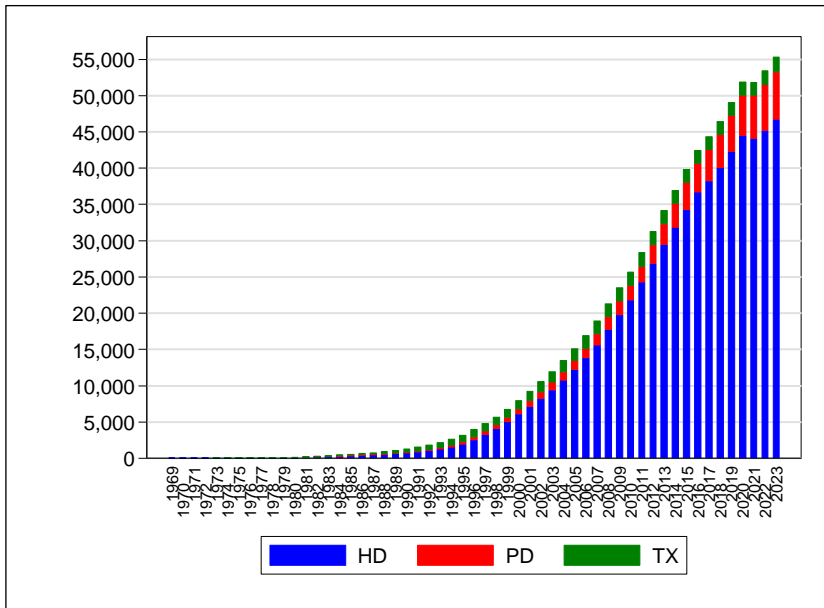
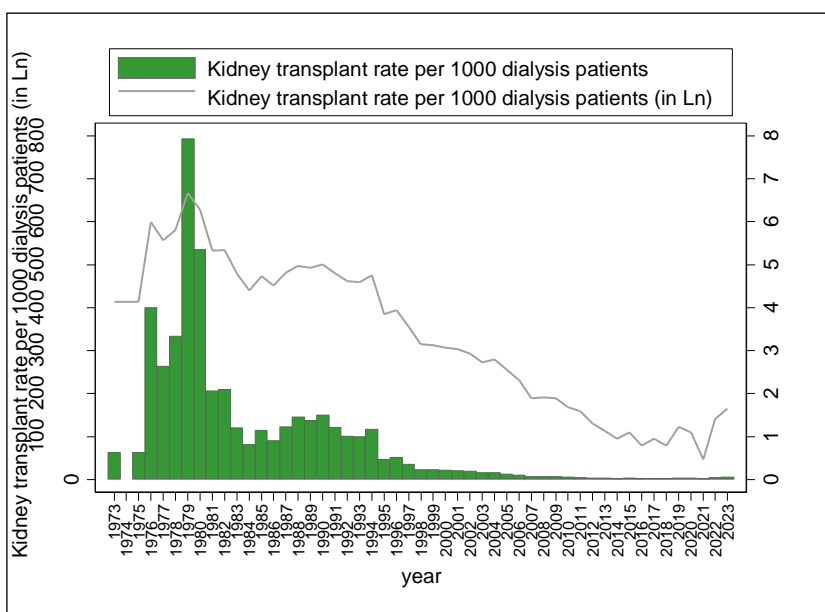


Table 1.2.3: Kidney transplant rate per 1000 dialysis patients, 1969-2023

Year	Number of new transplant recipients	Number of prevalent dialysis patients	Kidney transplant rate per 1000 dialysis patients	Year	Number of new transplant recipients	Number of prevalent dialysis patients	Kidney transplant rate per 1000 dialysis patients
2023	279	53210	5.2	1995	105	2237	46.9
2022	213	51481	4.1	1994	203	1744	116.4
2021	80	49995	1.6	1993	139	1396	99.6
2020	152	49992	3	1992	119	1176	101.2
2019	160	47212	3.4	1991	117	965	121.2
2018	98	44625	2.2	1990	125	831	150.4
2017	112	42521	2.6	1989	96	697	137.7
2016	91	40634	2.2	1988	91	628	144.9
2015	115	38003	3	1987	66	538	122.7
2014	91	35068	2.6	1986	42	462	90.9
2013	100	32273	3.1	1985	46	403	114.1
2012	108	29372	3.7	1984	27	331	81.6
2011	130	26421	4.9	1983	30	249	120.5
2010	128	23788	5.4	1982	40	191	209.4
2009	142	21643	6.6	1981	25	121	206.6
2008	133	19436	6.8	1980	30	56	535.7
2007	113	17125	6.6	1979	23	29	793.1
2006	153	15110	10.1	1978	8	24	333.3
2005	173	13375	12.9	1977	5	19	263.2
2004	194	11861	16.4	1976	6	15	400
2003	160	10428	15.3	1975	1	16	62.5
2002	172	9123	18.9	1974	0	19	0
2001	163	7851	20.8	1973	1	16	62.5
2000	145	6712	21.6	1972	0	17	0
1999	127	5558	22.8	1971	0	15	0
1998	106	4553	23.3	1970	0	18	0
1997	129	3710	34.8	1969	0	12	0
1996	151	2927	51.6				

Figure 1.2.3: Kidney transplant rate per 1000 dialysis patients, Malaysia 1969 – 2023



**SECTION 1.3: HIV POSITIVE PATIENTS ON KRT**

There is a small number of HIV positive patients on KRT, i.e. 112 in total, with 53% on PD and 45% on HD. Most of the HIV positive patients i.e., 91% are managed in Ministry of Health (MOH) facilities. Of the 3 HIV positive transplant patients, one was the first local living donor kidney transplant (LKT) for a HIV positive patient done in University of Malaya Medical Centre in 2022, one was a local LKT who seroconverted post-transplant in 2023, and one was a LKT done in India in 2018.

**Table 1.3.1: Prevalent HIV positive patients in the KRT population, 2023**

	Haemodialysis		Peritoneal dialysis		Kidney transplant		Total	
	n	%	n	%	n	%	n	%
MOH	47	94.0	53	89.8	2	66.7	102	91.1
NGO	1	2.0	0	0.0	0	0.0	1	0.9
UNIVERSITY	2	4.0	6	10.2	1	33.3	9	8.0
Total	50	100	59	100	3	100	112	100

*NGO = Non-governmental organisation*

*HIV = human immunodeficiency virus*