

CHAPTER 1

ALL KIDNEY REPLACEMENT THERAPY IN MALAYSIA

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SECTION 1.1: STOCK AND FLOW

There were 9,905 new KRT patients reported at time of closure of the database in 2025 as compared to 10,056 patients in 2023, notwithstanding the usual trend for close to a further 450 new cases being reported late. In addition, starting with this report, patients who have undergone transplantation and subsequently returned to dialysis due to graft failure are not counted as new dialysis patients. Therefore the true actual incidence is likely to be close to 10,000 and appears to have reached a plateau over the last 4 years.

The breakdown in ratio of dialysis modalities at initiation is now 79.4% HD and 17.8% PD, signalling that the trend toward increasing PD utilisation may have reached a plateau (see Table 1.1.1). The transplant rate per million population also currently remains at 8 pmp having earlier achieved significant growth over the last decade, increasing from 3 pmp in 2016 to 8 pmp by 2023.

In 2025, the number of prevalent patients on KRT has reached 60,079 of which 50,833 (84.6%) are on HD, 6,805 (11.3%) are on PD and 2,441 (4.1%) are kidney transplant recipients (Table 1.1.2).

Table 1.1.1: Stock and flow of New KRT Incidence, Malaysia 2016-2025

Year	2025	2024	2023	2022	2021	2020	2019	2018	2017	2016
New Dialysis Patients	9905	10056	10446	10087	9434	9492	9499	8554	8089	8110
New HD Patients	8089	8249	8479	8170	7738	7923	8066	7324	6955	7104
New PD Patients	1816	1807	1967	1917	1696	1569	1433	1230	1134	1006
New Transplant Patients	277	258	283	215	80	152	160	99	112	92
New Dialysis Rate, pmp	289	295	313	308	290	293	292	264	253	256
New HD Rate, pmp	236	242	254	250	238	244	248	226	217	225
New PD Rate, pmp	53	53	59	59	52	48	44	38	35	32
New Transplant Rate, pmp	8	8	8	7	2	5	5	3	3	3
New HD, %	79.4	80.0	79.0	79.3	81.3	82.2	83.5	84.6	84.8	86.6
New PD, %	17.8	17.5	18.3	18.6	17.8	16.3	14.8	14.2	13.8	12.3
New Tx, %	2.7	2.5	2.6	2.1	0.8	1.6	1.7	1.1	1.4	1.1

Figure 1.1.1(a): Number of new KRT patients by modality (New Dialysis and New Transplant), Malaysia 1969-2025

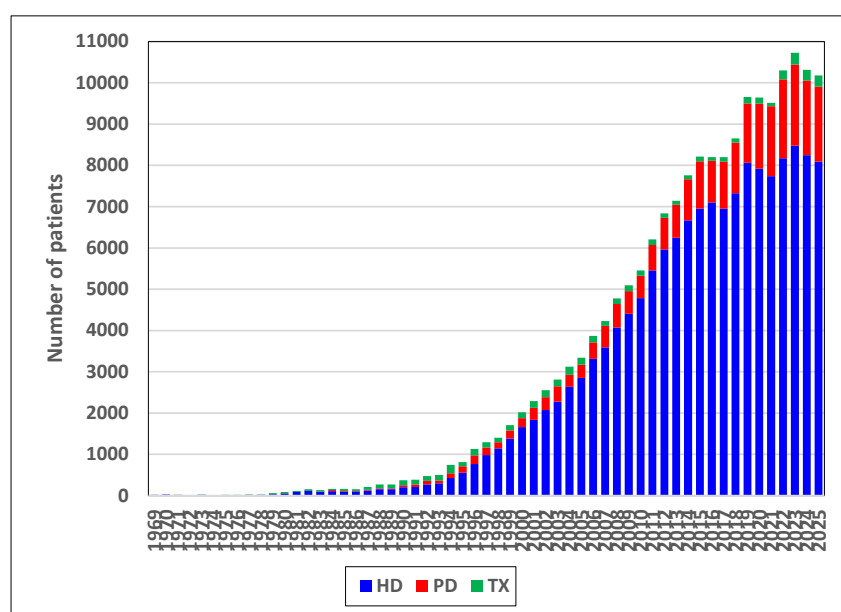


Figure 1.1.1.b provides a historical perspective over the last 5-6 decades in terms of the trends in utilisation of KRT modalities. Haemodialysis has been the predominant form of KRT from the start but in the early years when access to dialysis therapy was limited, there was a greater proportion of new transplants in relation to dialysis. PD began in Malaysia in the 1980's and has slowly grown to almost 18 % of all new KRT by 2021-2022 as compared to 14% in 2015. (Fig 1.1.1b). The proportion of prevalent home dialysis patients has increased slightly over the last 5 years to 11.3% in 2025, with PD reaching 4. For many years prior to 2019, this figure was less than 10%. (Fig 1.1.2a and Fig.1.1.2b).The capacity to increase PD utilisation further is likely dependant on restructuring of provider payment design and PD models.

Figure 1.1.1(b): Proportion of new KRT patients by modality (New Dialysis and New Transplant), Malaysia 1969-2025

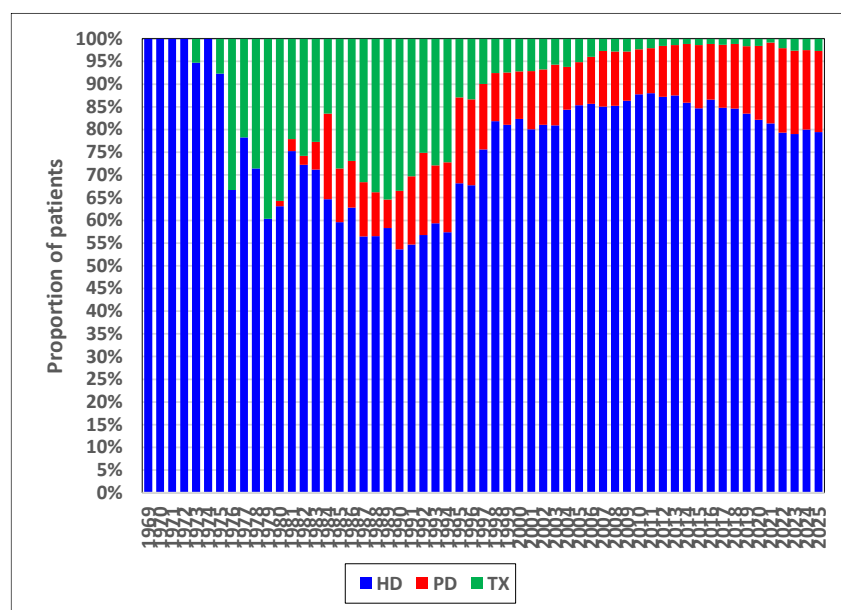


Table 1.1.2: Stock and flow of ESKD Patients on KRT at 31st Dec, Malaysia 2016-2025

Year	2025	2024	2023	2022	2021	2020	2019	2018	2017	2016
Dialysis Patients	57638	56149	54662	52221	50559	50412	47498	44758	42550	40603
HD Patients	50833	49339	47979	45859	44633	44883	42516	40194	38264	36626
PD Patients	6805	6810	6683	6362	5926	5529	4982	4564	4286	3977
Transplant Patients	2441	2281	2138	1949	1862	1917	1885	1838	1860	1839
Dialysis Rate, pmp	1684	1649	1636	1597	1552	1554	1460	1382	1329	1284
HD Rate, pmp	1485	1449	1436	1402	1370	1383	1307	1241	1195	1158
PD Rate, pmp	199	200	200	195	182	170	153	141	134	126
Transplant Rate, pmp	71	67	64	60	57	59	58	57	58	58
HD, %	84.6	84.4	84.5	84.7	85.1	85.8	86.1	86.3	86.2	86.3
PD, %	11.3	11.7	11.8	11.7	11.3	10.6	10.1	9.8	9.7	9.4
Tx, %	4.1	3.9	3.8	3.6	3.6	3.7	3.8	3.9	4.2	4.3

Figure 1.1.2(a): Prevalence of treated ESKD patients by modality (On KRT at 31st Dec), Malaysia 1969-2025

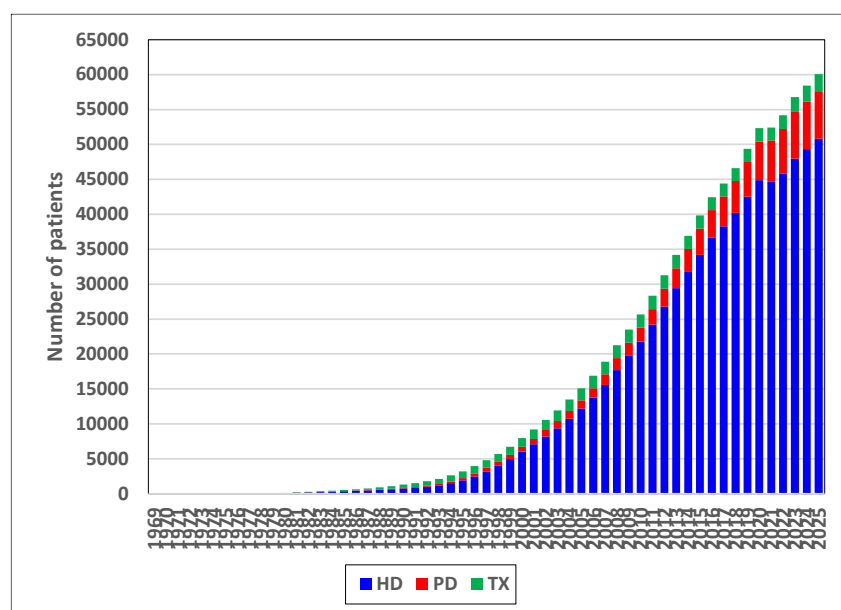
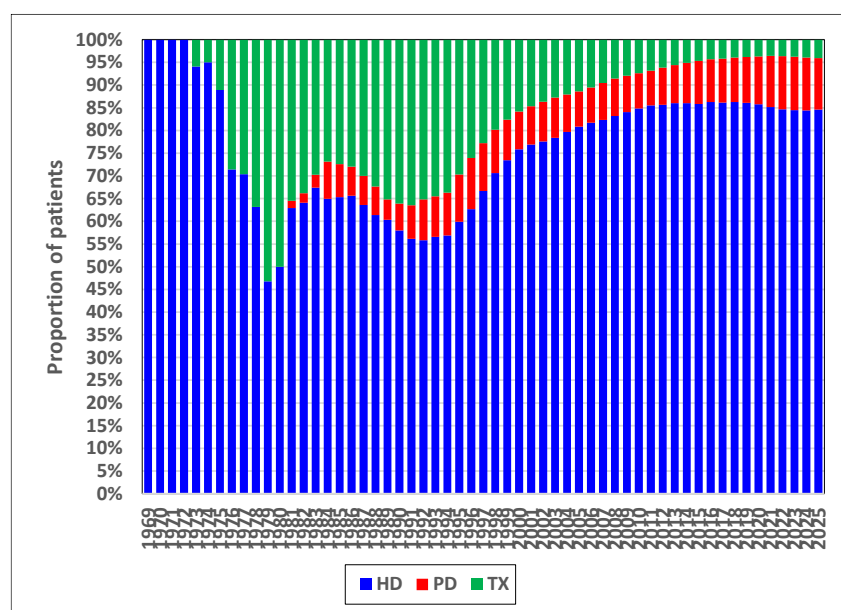


Figure 1.1.2(b): Proportion of treated prevalent ESKD patients by modality (On KRT at 31st Dec), Malaysia 1969-2025



SECTION 1.2: TREATMENT PROVISION RATE

Dialysis acceptance rate in 2024 is 289 pmp as compared with 256 pmp a decade ago (Table 1.1.1). The dialysis prevalence rate increased from 1284 pmp in 2016 to 1684 pmp in 2025, which is a consistent 1.3 fold rise, similar to previous comparisons (Table 1.1.2).

The new transplant recipient rate is 4.8 per 1000 dialysis patients in 2025 as compared to 1.6 per 1000 dialysis patients in 2021 during the height of the COVID pandemic. 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 with increasing dialysis access. The lowest point occurred in 2021 but subsequently there has been a slow rise.

Figure 1.2.1: Incidence rate of newly treated ESKD patients (per million population) by modality (New Dialysis and New Transplant), Malaysia 1969-2025

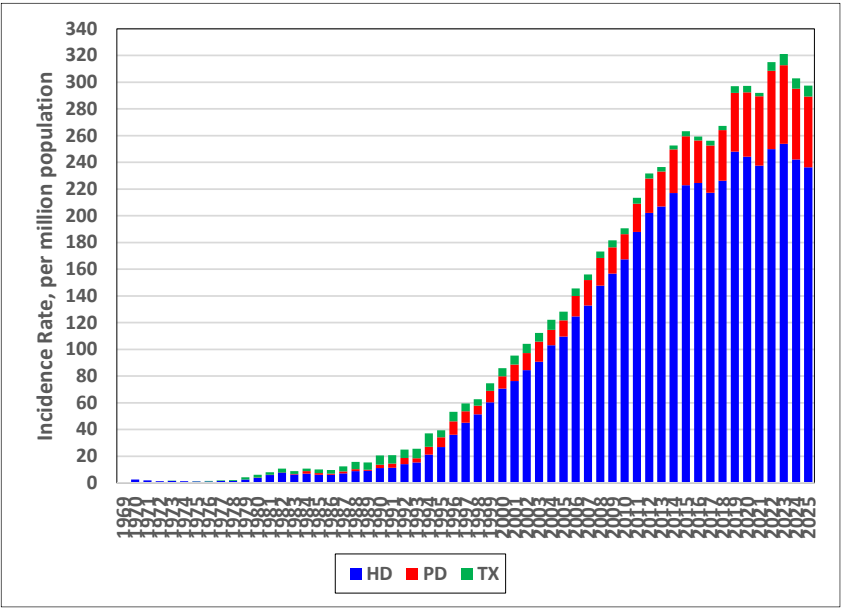


Figure 1.2.2: Prevalence rate of treated ESKD patients (per million population) by modality (On KRT at 31st Dec), Malaysia 1969-2025

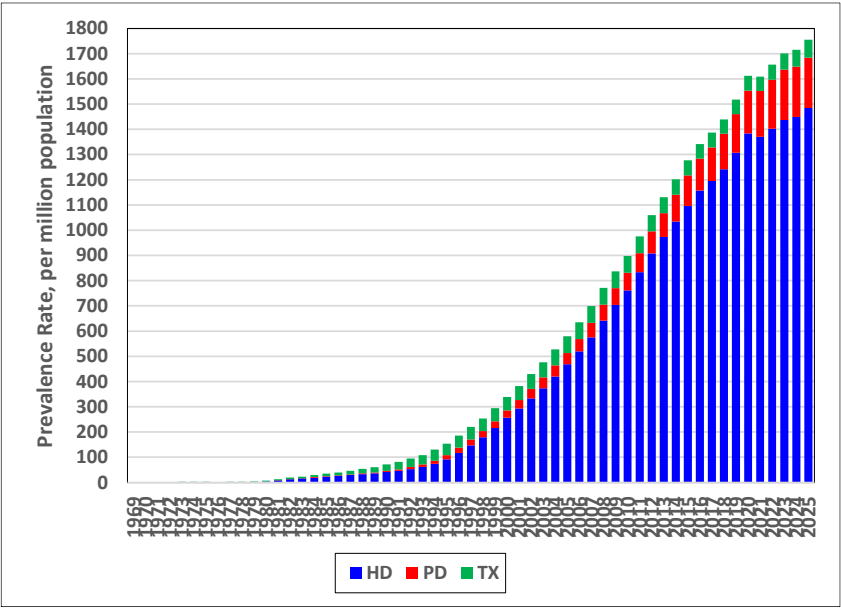


Table 1.2.3: Kidney transplant rate per 1000 dialysis patients, 1969-2025

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
2025	277	57638	4.8	1996	151	2925	51.6
2024	258	56149	4.6	1995	105	2236	47.0
2023	283	54662	5.2	1994	203	1744	116.4
2022	215	52221	4.1	1993	140	1395	100.4
2021	80	50559	1.6	1992	119	1176	101.2
2020	152	50412	3.0	1991	117	965	121.2
2019	160	47498	3.4	1990	125	831	150.4
2018	99	44758	2.2	1989	96	696	137.9
2017	112	42550	2.6	1988	91	627	145.1
2016	92	40603	2.3	1987	66	536	123.1
2015	115	37968	3.0	1986	42	461	91.1
2014	91	35043	2.6	1985	46	402	114.4
2013	100	32274	3.1	1984	27	330	81.8
2012	108	29365	3.7	1983	30	248	121.0
2011	130	26416	4.9	1982	40	190	210.5
2010	128	23779	5.4	1981	25	120	208.3
2009	142	21638	6.6	1980	30	55	545.5
2008	133	19430	6.8	1979	23	29	793.1
2007	113	17112	6.6	1978	8	24	333.3
2006	153	15098	10.1	1977	5	19	263.2
2005	173	13369	12.9	1976	6	15	400.0
2004	194	11853	16.4	1975	1	16	62.5
2003	160	10421	15.4	1974	0	19	0.0
2002	172	9119	18.9	1973	1	16	62.5
2001	163	7844	20.8	1972	0	17	0.0
2000	145	6704	21.6	1971	0	15	0.0
1999	127	5555	22.9	1970	0	18	0.0
1998	106	4551	23.3	1969	0	12	0.0
1997	129	3708	34.8				

Figure 1.2.3(a): Kidney transplant rate per 1000 dialysis patients, Malaysia 1969-2025

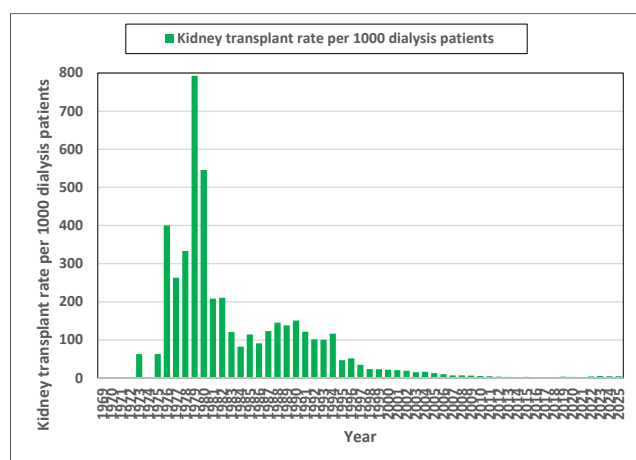
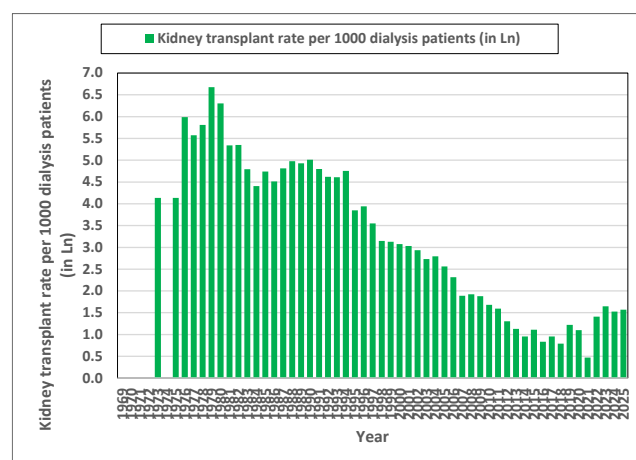


Figure 1.2.3(b): Kidney transplant rate per 1000 dialysis patients (in Ln), Malaysia 1969-2025



SECTION 1.3: HIV POSITIVE PATIENTS ON KRT

There is a small number of HIV positive patients on KRT, i.e. 144 in total but there has been a notable increase of 20 patients over the last year. This is much greater than the earlier increase by 3 patients between 2023 to 2024 (Table 1.3.1). In terms of KRT modalities, 49.3% are on PD, 47.9% on HD and 2.78% are transplant recipients. The majority (92.4%) are managed in Ministry of Health (MOH) facilities. Of the 4 HIV-positive transplant patients, 2 are local living donor kidney transplant recipients (LKTR), one was a local LKTR who seroconverted post-transplant in 2023, and one received a LKT overseas in 2018.

Table 1.3.1: HIV positive patients in the KRT population, 2023-2025

	Haemodialysis		Peritoneal Dialysis		Kidney Transplant		Total	
	n	%	n	%	n	%	n	%
2025								
MOH	67	97.1	63	88.7	3	75.0	133	92.4
PRIVATE	0	0.0	1	1.4	0	0.0	1	0.7
UNIVERSITY	2	2.9	7	9.9	1	25.0	10	6.9
Total	69	100	71	100	4	100	144	100
2024								
MOH	57	95.0	52	85.2	2	66.7	111	89.5
PRIVATE	1	1.7	1	1.6	0	0.0	2	1.6
UNIVERSITY	2	3.3	8	13.1	1	33.3	11	8.9
Total	60	100	61	100	3	100	124	100
2023								
MOH	49	96.1	59	88.1	2	66.7	110	90.9
PRIVATE	0	0.0	1	1.5	0	0.0	1	0.8
UNIVERSITY	2	3.9	7	10.4	1	33.3	10	8.3
Total	51	100	67	100	3	100	121	100

NGO = Non-governmental organisation

HIV = human immunodeficiency virus

SECTION 1.4: WORK RELATED REHABILITATION

Overall, 48.4% of all dialysis patients are in gainful employment or homemakers (Table 1.4.1) and 0.6% are students. The remaining new dialysis patients are not working for pay but this needs to be interpreted together with the fact that median age of new dialysis patients is 57.3 years Table 2.1.4(a). As expected, PD has a higher proportion of patients working fulltime/part time for pay i.e. 31% as compared to HD (19.2%). Similarly 2.4% of PD patients are students as opposed to 0.2% of those on HD.

Table 1.4.1: Work related rehabilitation in relation to modality, new dialysis patients 2016 - 2025

	2025		2024		2023		2022		2021	
	n	%	n	%	n	%	n	%	n	%
Working full or part time for pay	1639	21.3	1718	22.5	1708	21.3	1582	20.4	1451	20.0
Home maker e.g. Housewife	2085	27.1	2170	28.5	2006	25.0	2004	25.9	1861	25.6
Student (full-time)	48	0.6	71	0.9	78	1.0	79	1.0	76	1.0
Not working for pay	3914	50.9	3668	48.1	4231	52.7	4076	52.7	3872	53.3
Total	7686	100	7627	100	8023	100	7741	100	7260	100

	2020		2019		2018		2017		2016	
	n	%	n	%	n	%	n	%	n	%
Working full or part time for pay	1333	17.8	1326	18.4	1306	19.4	1269	20.8	1332	23.6
Home maker e.g. Housewife	1903	25.4	1858	25.8	1679	24.9	1453	23.8	1114	19.8
Student (full-time)	78	1.0	87	1.2	71	1.1	66	1.1	75	1.3
Not working for pay	4171	55.7	3934	54.6	3682	54.6	3312	54.3	3115	55.3
Total	7485	100	7205	100	6738	100	6100	100	5636	100

analysis based on new patient with available data (alive as of 31 December)

Table 1.4.2: Work related rehabilitation in relation to year of entry, new HD patients 2016 - 2025

	2025		2024		2023		2022		2021	
	n	%	n	%	n	%	n	%	n	%
Working full or part time for pay	1216	19.2	1280	20.4	1302	19.9	1178	18.8	1094	18.5
Home maker e.g. Housewife	1687	26.7	1796	28.6	1668	25.4	1615	25.8	1521	25.8
Student (full-time)	15	0.2	20	0.3	23	0.4	28	0.4	26	0.4
Not working for pay	3402	53.8	3173	50.6	3563	54.3	3444	55.0	3262	55.3
Total	6320	100	6269	100	6556	100	6265	100	5903	100

	2020		2019		2018		2017		2016	
	n	%	n	%	n	%	n	%	n	%
Working full or part time for pay	1046	16.7	1068	17.7	1051	18.4	1040	20.2	1147	23.6
Home maker e.g. Housewife	1587	25.4	1576	26.1	1424	25.0	1224	23.7	951	19.6
Student (full-time)	25	0.4	23	0.4	17	0.3	24	0.5	30	0.6
Not working for pay	3593	57.5	3369	55.8	3208	56.3	2868	55.6	2736	56.3
Total	6251	100	6036	100	5700	100	5156	100	4864	100

analysis based on new patient with available data (alive as of 31 December)

Table 1.4.3: Work related rehabilitation in relation to year of entry, new PD patients 2016 – 2025

	2025		2024		2023		2022		2021	
	n	%	n	%	n	%	n	%	n	%
Working full or part time for pay	423	31.0	438	32.3	406	27.7	404	27.4	357	26.3
Home maker e.g. Housewife	398	29.1	374	27.5	338	23.0	389	26.4	340	25.1
Student (full-time)	33	2.4	51	3.8	55	3.7	51	3.5	50	3.7
Not working for pay	512	37.5	495	36.5	668	45.5	632	42.8	610	45.0
Total	1366	100	1358	100	1467	100	1476	100	1357	100

	2020		2019		2018		2017		2016	
	n	%	n	%	n	%	n	%	n	%
Working full or part time for pay	287	23.3	258	22.1	255	24.6	229	24.3	185	24.0
Home maker e.g. Housewife	316	25.6	282	24.1	255	24.6	229	24.3	163	21.1
Student (full-time)	53	4.3	64	5.5	54	5.2	42	4.4	45	5.8
Not working for pay	578	46.8	565	48.3	474	45.7	444	47.0	379	49.1
Total	1234	100	1169	100	1038	100	944	100	772	100

analysis based on new patient with available data (alive as of 31 December)

SECTION 1.5: QUALITY OF LIFE ON DIALYSIS USING THE EQ-5D-5L QUESTIONNAIRE

This is the first MDTR report on health-related quality of life (HRQoL) using the EQ-5D-5L Questionnaire. We would like to acknowledge the EuroQoL Research Foundation for permission to use the instrument. The overall response rate was 54.8%, with a higher participation rate among adult HD patients (57.5%) than among adult PD patients (34.4%). The PD respondents were younger (32.4% aged 18-44 years, versus 18.9% in HD patients), and a greater proportion self-completed the questionnaire (53.7% versus 44.3%), possibly reflecting this age difference. Males and females were similarly represented (52.4% and 47.6%).

Table 1.5.1: Characteristics of EQ-5D-5L respondents on dialysis, 2025

	All Dialysis		Haemodialysis		Peritoneal Dialysis	
	n	%	n	%	n	%
Age						
18-24	376	1.2	280	1.0	96	4.1
25-34	1799	5.7	1535	5.3	264	11.3
35-44	4082	12.9	3678	12.6	404	17.3
45-54	6426	20.4	5943	20.3	483	20.6
55-64	8866	28.1	8262	28.3	604	25.8
65-74	7429	23.5	7062	24.2	367	15.7
≥ 75	2579	8.2	2456	8.4	123	5.3
Total	31557	100	29216	100	2341	100
Mean	57.3		57.7		52.2	
Standard Deviation	13.6		13.4		15.0	
Median	58.8		59.2		53.7	
Minimum	18.0		18.0		18.1	
Maximum	98.0		98.0		94.3	
Mode of administration						
Self-complete	14212	45.0	12955	44.3	1257	53.7
Proxy	3352	10.6	3178	10.9	174	7.4
Interviewer	13993	44.3	13083	44.8	910	38.9
Total	31557	100	29216	100	2341	100
Language						
Malay	27878	88.3	25715	88.0	2163	92.4
Chinese	1834	5.8	1724	5.9	110	4.7
Tamil	627	2.0	616	2.1	11	0.5
English	1218	3.9	1161	4.0	57	2.4
Total	31557	100	29216	100	2341	100
Gender						
Male	16547	52.4	15376	52.6	1171	50.0
Female	15010	47.6	13840	47.4	1170	50.0
Total	31557	100	29216	100	2341	100

For all five dimensions, a higher percentage of HD patients reported moderate to extreme problems (levels 3-5), i.e. 22.6%, 18.0%, 20.8%, 12.4% and 7.4% for mobility, self-care, usual activities, pain/discomfort and anxiety/depression, respectively, compared with 16.0%, 11.4%, 13.3%, 4.7% and 4.2% respectively in PD patients (Table 1.5.2). Most of the difference between PD and HD patients was at level 3 (moderate problems), except for mobility, where the largest difference was at level 5 (extreme problems/unable to do; 7.2% versus 4.4%). These differences are unadjusted and likely reflect patient selection for each modality, including the younger age of the PD cohort, rather than an effect of the modality itself. A substantial proportion of patients reported full health (state 11111; 43.6% overall).

Table 1.5.2: Frequencies reported by dimension and level in dialysis patients, 2025

	All Dialysis		Haemodialysis		Peritoneal Dialysis	
	n	%	n	%	n	%
Mobility						
Lvl 1-No problems	18913	59.9	17369	59.5	1544	66.0
Lvl 2-Slight problems	5657	17.9	5235	17.9	422	18.0
Lvl 3-Moderate problems	3336	10.6	3136	10.7	200	8.5
Lvl 4-Severe problems	1460	4.6	1387	4.7	73	3.1
Lvl 5-Extreme problems/unable to do	2191	6.9	2089	7.2	102	4.4
Total	31557	100	29216	100	2341	100
Self-care						
Lvl 1-No problems	21228	67.3	19480	66.7	1748	74.7
Lvl 2-Slight problems	4780	15.1	4455	15.2	325	13.9
Lvl 3-Moderate problems	2984	9.5	2841	9.7	143	6.1
Lvl 4-Severe problems	1138	3.6	1089	3.7	49	2.1
Lvl 5-Extreme problems/unable to do	1427	4.5	1351	4.6	76	3.2
Total	31557	100	29216	100	2341	100
Usual activities						
Lvl 1-No problems	18433	58.4	16883	57.8	1550	66.2
Lvl 2-Slight problems	6726	21.3	6248	21.4	478	20.4
Lvl 3-Moderate problems	3541	11.2	3355	11.5	186	7.9
Lvl 4-Severe problems	1356	4.3	1299	4.4	57	2.4
Lvl 5-Extreme problems/unable to do	1501	4.8	1431	4.9	70	3.0
Total	31557	100	29216	100	2341	100
Pain/discomfort						
Lvl 1-No problems	19531	61.9	17749	60.8	1782	76.1
Lvl 2-Slight problems	8310	26.3	7862	26.9	448	19.1
Lvl 3-Moderate problems	2689	8.5	2593	8.9	96	4.1
Lvl 4-Severe problems	653	2.1	646	2.2	7	0.3
Lvl 5-Extreme problems/unable to do	374	1.2	366	1.3	8	0.3
Total	31557	100	29216	100	2341	100
Anxiety/depression						
Lvl 1-No problems	23360	74.0	21477	73.5	1883	80.4
Lvl 2-Slight problems	5938	18.8	5577	19.1	361	15.4
Lvl 3-Moderate problems	1603	5.1	1518	5.2	85	3.6
Lvl 4-Severe problems	395	1.3	389	1.3	6	0.3
Lvl 5-Extreme problems/unable to do	261	0.8	255	0.9	6	0.3
Total	31557	100	29216	100	2341	100

Figure 1.5.2 (a): Frequencies reported on Mobility in dialysis patients, 2025

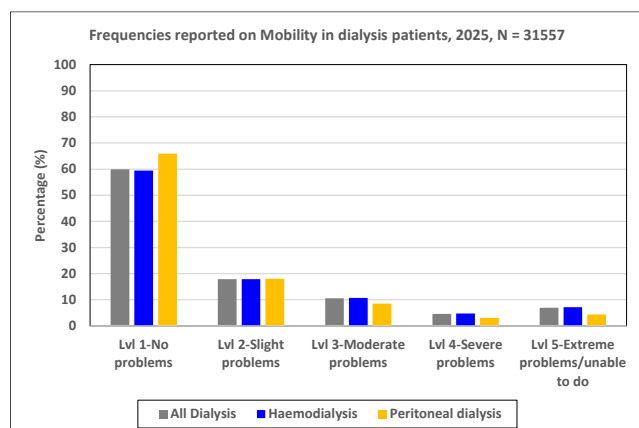


Figure 1.5.2 (b): Frequencies reported on Self-care in dialysis patients, 2025

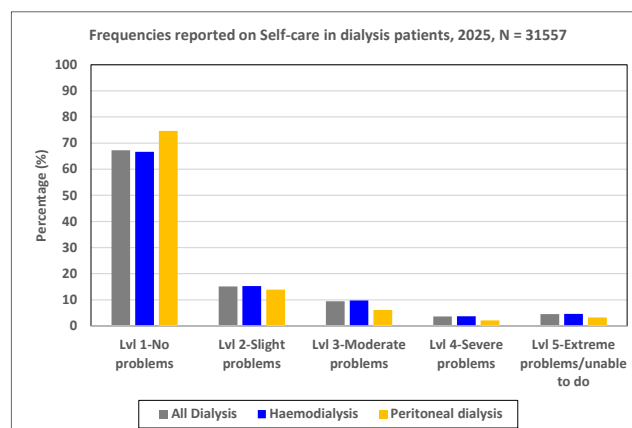


Figure 1.5.2 (c): Frequencies reported on Usual activities in dialysis patients, 2025

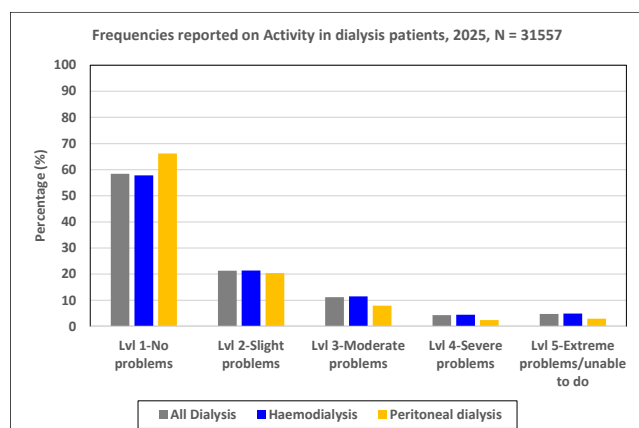


Figure 1.5.2 (d): Frequencies reported on Pain/discomfort in dialysis patients, 2025

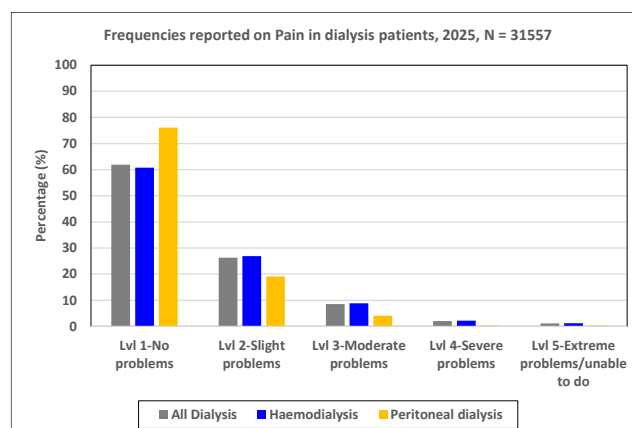
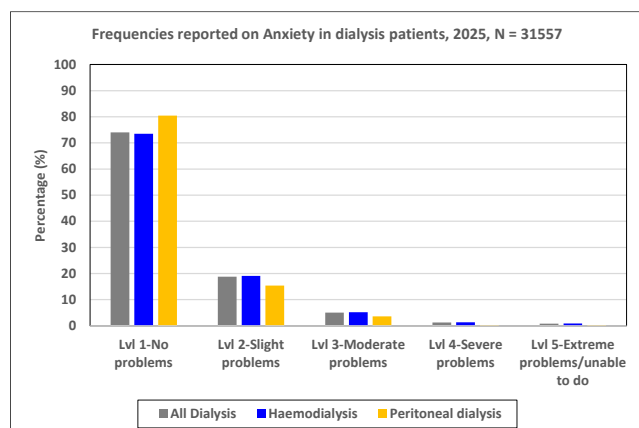


Figure 1.5.2 (e): Frequencies reported on Anxiety/depression in dialysis patients, 2025



EQ-5D-5L index values and EQ VAS (visual analogue scale) scores were higher in PD patients, indicating better self-reported HRQoL (Tables 1.5.3 and 1.5.4). The mean difference in index value between PD and HD (0.064) is of a magnitude generally regarded as clinically meaningful. This may be due to a number of factors, including the KRT modality itself, the overall younger age of PD patients and possibly fewer comorbidities (these factors were not adjusted for in this analysis). The low response rate among PD patients (34.4%) may also have favoured healthier respondents. Nevertheless, some studies have shown that younger patients may actually be more likely to report worse QOL than older patients, because they have higher expectations and experience more activity restrictions relative to similarly-aged healthy counterparts.

Table 1.5.3: EQ-5D-5L index values in dialysis patients, 2025

	All Dialysis (n: 31557) EQ-5D-5L index value	Haemodialysis (n: 29216) EQ-5D-5L index values	Peritoneal Dialysis (n: 2341) EQ-5D-5L index values
Mean	0.805	0.800	0.864
Standard Deviation	0.281	0.284	0.221
Median	0.919	0.919	1.000
Minimum	-0.441	-0.441	-0.441
Maximum	1	1	1

Index value 1.000: EQ-5D-5L health state 11111 (full health)

Index value -0.441: EQ-5D-5L health state 5555 (worst state)

Dialysis patients in full health (level 1, all 5 dimensions) = 43.6%

Haemodialysis patients in full health (level 1, all 5 dimensions) = 42.9%

Peritoneal dialysis patients in full health (level 1, all 5 dimensions) = 52.6%

Figure 1.5.3: Mean EQ-5D-5L index values in dialysis patients, 2025

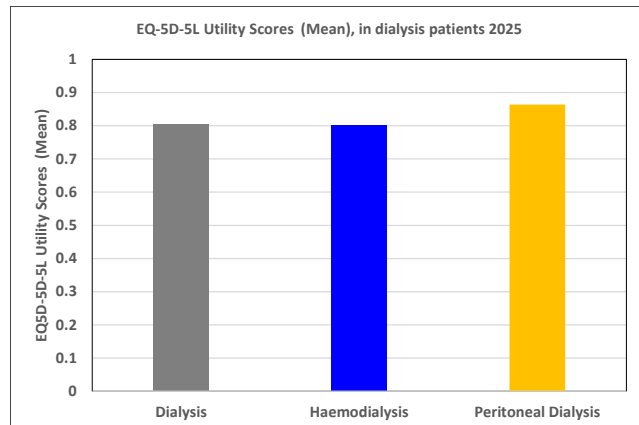


Figure 1.5.4: Mean EQ VAS Score in dialysis patients, 2025

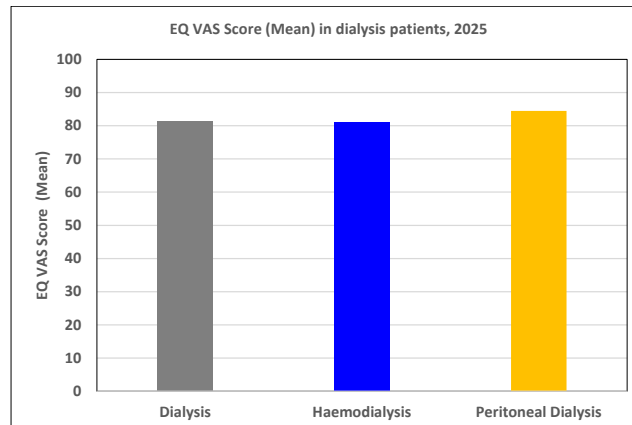


Table 1.5.4: EQ VAS Score in dialysis patients, 2025

	Health score on assessment day										Total n
	0 - 10 n	11 - 20 n	21 - 30 n	31 - 40 n	41 - 50 n	51 - 60 n	61 - 70 n	71 - 80 n	81 - 90 n	91 - 100 n	
Dialysis											
Age											
18-24	8	0	0	1	5	3	18	50	121	170	376
25-34	54	7	1	3	40	51	95	263	498	787	1799
35-44	110	12	13	8	110	137	255	710	1121	1606	4082
45-54	175	14	22	34	265	241	480	1231	1707	2257	6426
55-64	247	32	43	46	439	410	901	1897	2213	2638	8866
65-74	212	24	36	79	503	410	885	1753	1696	1831	7429
≥ 75	71	15	30	50	240	238	375	595	508	457	2579
Total	877	104	145	221	1602	1490	3009	6499	7864	9746	31557
Mean						81.3					
SD						19.9					
Median						88.0					
Min						0					
Max						100					
HD											
Age											
18-24	7	0	0	1	5	3	16	41	75	132	280
25-34	47	7	1	3	37	48	86	232	406	668	1535
35-44	98	10	13	8	105	127	236	657	962	1462	3678
45-54	166	13	22	33	255	232	454	1143	1519	2106	5943
55-64	233	29	43	45	424	389	846	1771	1985	2497	8262
65-74	209	23	36	79	494	393	843	1671	1562	1752	7062
≥ 75	71	15	30	50	234	232	361	559	466	438	2456
Total	831	97	145	219	1554	1424	2842	6074	6975	9055	29216
Mean						81.0					
SD						20.2					
Median						85.0					
Min						0					
Max						100					
PD											
Age											
18-24	1	0	0	0	0	0	2	9	46	38	96
25-34	7	0	0	0	3	3	9	31	92	119	264
35-44	12	2	0	0	5	10	19	53	159	144	404
45-54	9	1	0	1	10	9	26	88	188	151	483
55-64	14	3	0	1	15	21	55	126	228	141	604
65-74	3	1	0	0	9	17	42	82	134	79	367
≥ 75	0	0	0	0	6	6	14	36	42	19	123
Total	46	7	0	2	48	66	167	425	889	691	2341
Mean						84.5					
SD						16.2					
Median						90					
Min						0					
Max						100					