16TH REPORT
OF THE MALAYSIAN
DIALYSIS & TRANSPLANT REGISTRY
2008

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Important information:

This report is also published electronically on the website of the National Renal Registry at: http://www.msn.org.my/nrr

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The Ministry of Health, Malaysia for their grant and other support seen and unseen,

For their generous support:-

Ain Medicare

Baxter Healthcare

Fresenius Medical Care

Roche

Members of the National Transplant Registry who have kindly contributed to this Report

&

All who have in one way or another contributed to the success of the Malaysian Dialysis and Transplant Registry.

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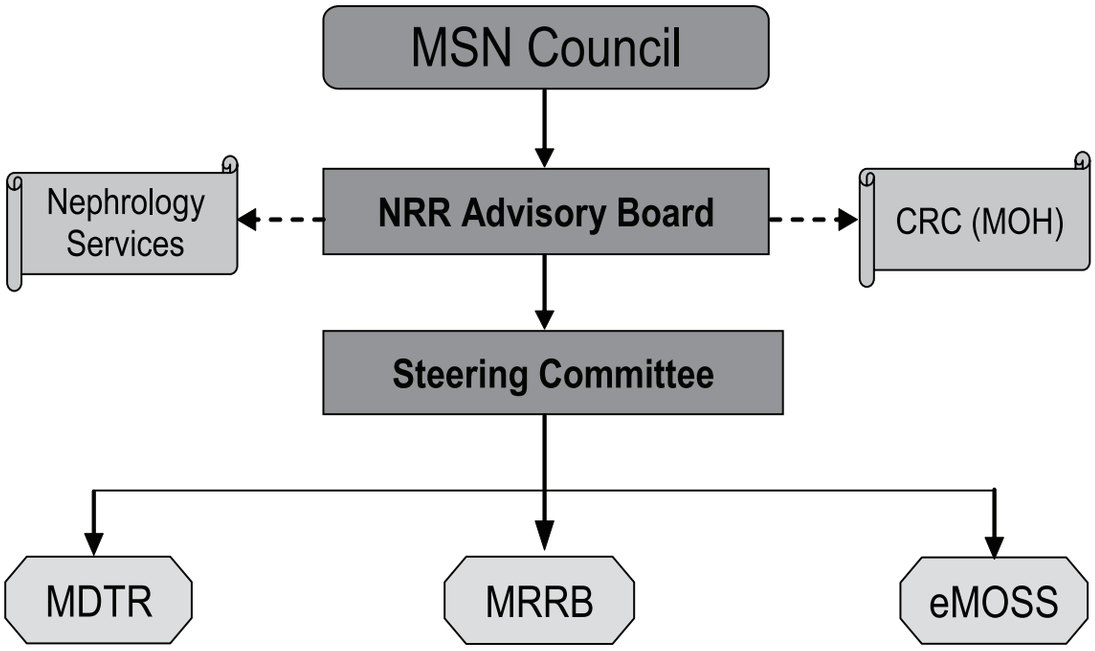
About the National Renal Registry (NRR)

The National Renal Registry (NRR) has its origin in the Dialysis and Transplant Registry established by the Department of Nephrology in 1992. Its ownership was subsequently transferred to the Malaysian Society of Nephrology in 1995.

The NRR organization is as follows:



NRR Advisory Board

This is the committee established by the MSN to oversee the operations of the NRR registries and databases. Members are appointed be the MSN Council for the same duration of the council. Interested parties including source data producers, Renal Registry Unit and target groups or users are represented on this committee. The board will be the liaison between Nephrology Services and the Clinical Research Centre.

Clinical Research Centre (MOH)

The Clinical Research Centre (CRC) is the clinical research arm of the Ministry of Health (MOH) to conduct clinical trials, clinical epidemiology and economic research, and manage complex medical databases. It is through the CRC that the registry received part of its funding from the National Institutes of Health (NIH). One of the public health missions of MOH is to improve patients' health outcomes through ethical and quality clinical research.

Steering Committee

The members in this committee are appointed by the NRR Advisory Board. The chair person shall be co-opted into the NRR Advisory Committee without voting right for decision making. The committee shall oversee to the operation of the designated registry / databases.

The NRR family registries/databases are as follows. The established and operation are:

- Malaysian Dialysis and Transplant Registry (MDTR)
- Malaysian Registry of Renal Biopsy (MRRB)
- e-Malaysian Organ Sharing System (eMOSS) – Potential renal recipient waiting list.

Expert panels

Members appointed by Steering Committee as content experts to the individual chapters of the annual report.

The objectives of the NRR are to:

1. Determine the disease burden attributable to renal diseases, and its geographic and temporal trends in Malaysia.
2. Determine the outcomes, and factors influencing outcomes of treatment and services
3. Stimulate and facilitate research related to renal diseases and its prevention to ESRD.
4. Evaluate the RRT program.
5. Maintain the national renal transplant waiting list.
6. Tracking the nephrology trainee performance of specialize procedures.

ABOUT THE MALAYSIAN DIALYSIS AND TRANSPLANT REGISTRY (MDTR)

The Dialysis and Transplant Registry was established by the Department of Nephrology, Kuala Lumpur Hospital (HKL) in 1992 to collect data from patients on renal replacement therapy within the Ministry of Health (MOH). In order to expand coverage to include non-MOH patients so that the registry may truly claim to be a national one, the ownership was transferred to the Malaysian Society of Nephrology. It was subsequently named Malaysian Dialysis and Transplant Registry (MDTR). MDTR collects information on patients with end stage renal disease (ESRD) on renal replacement therapy (RRT) in Malaysia.

Objectives:

The objectives of the registry are as follows:

1. **Describe the natural history of ESRD.** The registry shall describe the characteristics of patients with ESRD, its management, and patient survival and quality of life outcomes with treatment; and shall describe variation thereof across different groups, healthcare sectors or geographic regions, and its secular trend over time in Malaysia.

2. **Determine effectiveness of treatments for ESRD.** The registry shall determine clinical effectiveness and cost effectiveness of treatments of ESRD in real-world clinical practices in Malaysia.

3. **Monitor safety and harm of products and services used in the treatment of ESRD.** The registry shall serve as an active surveillance system for the occurrence of unexpected or harmful events for products and services.

4. **Evaluating access to and quality of treatment services for ESRD**. The registry shall assess differences between providers or patient populations based on performance measures that compare treatments provided or outcomes achieved with "gold standards" (e.g., evidence-based guidelines) or comparative benchmarks for specific health outcomes (e.g., risk-adjusted survival rates). Such programs may be used to identify disparities in access to care, demonstrate opportunities for improvement, establish differentials for payment by third parties, or provide transparency through public reporting.

5. **To maintain the national renal transplant waiting list electronically – the eMOSS or electronic Malaysian Organ Sharing System.** The dialysis registry shall maintain and update patients on dialysis who do not have contraindications to kidney transplantation onto the national renal transplant waiting list according to published agreed criteria. This list is available on the web for ready access by the transplant physicians any time a deceased kidney becomes available.

Registry design:

This is a multi-center, observational cohort study designed to evaluate the health outcomes of patients with ESRD undergoing treatment at participating clinical centres. Patient inclusion criterion is deliberately broad and shall include any patient with a confirmed diagnosis of ESRD.

There is no prescribed study visits. Patient shall attend the clinical site as and when required per the standard of care at the site. Required data shall be collected as they become available.

- A clinical site shall notify all new patients to the registry, and shall continue to do so until the termination of the registry. Patients shall be follow-up for life.

- Participation. Site shall notify the patients' treatment to the registry in a calendar year of its participation. A site shall similarly notify patients during each year of its participation in the registry.

Registry study population:
The registry study population consists of male or female patients with ESRD to be recruited from participating sites in Malaysia. Participation in this study is voluntary. However, in accordance with the Private Health-care Facilities Act 1998 (AKTA 586), all dialysis health facility are required to submit data to the Malaysian Dialysis and Transplant Registry (MDTR).

All clinical centres or sites that satisfy the following selection criteria will be invited to participate:

1. This registry is opened to all clinical sites that provide RRT services for patients with ESRD in Malaysia.

2. Each site shall have a Principal Investigator who is also a licensed physician / Surgeon and a qualified professional experienced with ESRD management.

3. Each site shall appoint a Site Coordinator (SC). The SC is the person at the participating clinical site who is responsible for all aspects of registry management and data collection at site, and who will liaise with the Clinical Registry Manager (CRM) and Clinical Registry Assistant (CRA) at the Registry Coordinating Centre (RCC).

4. Each site shall accept responsibility for data collection, as well as for ensuring proper record keeping and registry document filing.

5. Each site shall agree to comply with the registry procedures and shall be willing to be subjected to ongoing review of data by CRM or CRA or other representative of MDTR. This may include one or more site visits by prior arrangement

Patient eligibility criteria:

- All new patients with ESRD undergoing treatment at a participating clinical site are eligible for entry into the registry.

- In addition, a site may opt to enter existing patients on follow-up at the site into the registry.

Registry data:
The data elements to be collected by the registry shall be relevant and reliable with modest burden to sites, shall comply with existing data standard where this exists, shall be compatible with established data set used by other existing registries, and shall employ standard terminology (dictionary) where available.

Two datasets are defined:

- Core dataset: These are data elements that are needed to address the key questions for which the registry was created.
- Non-core dataset: these are speculative data elements included to provide an opportunity to generate hypotheses or to explore other subsidiary questions not of primary interest to the registry.

The data domains and related specific data elements to be collected by this registry is tabulated below:

A	Identifier	Name, NRIC number, Other identifying document numbers, Address, Contact numbers
B	Demographics	Age, Sex, Ethnicity, Educational attainment, Occupation, Household Income group, Weight & Height, Use of tobacco, Funding for Treatment
C	Medical history	Medical history/ comorbidities, Family history
D	ESRD diagnosis	Date of first diagnosis, Date re-entering each RRT.
E	Laboratory investigations	Date & time of tests, Blood chemistry, Hematology, Serology
F	Treatment	Modalities of RRT- haemodialysis, peritoneal dialysis; treatment of other uraemic complications; kidney transplantation
G	Outcomes	Patient survival; death, date of death, cause of death Quality of Life/ Work rehabilitation status
H	Economics	Source of funding for dialysis treatment, and immunosuppressive drug treatment for transplantation
J	Healthcare provider characteristics	Sector providing dialysis treatment, (private, public or NGO),

PARTICPATING HAEMODIALYSIS CENTRES 2008

Johor Darul Takzim

1. Amitabha Haemodialysis Centre Johor Bahru, HD Unit
2. Batu Pahat Hospital, HD Unit
3. Batu Pahat Rotary, HD Unit
4. BP Renal Care (Rengit), HD Unit
5. BP Renal Care (Batu Pahat), HD Unit
6. BP Renal Care (Kluang), HD Unit
7. BP Renal Care (Segamat), HD Unit
8. BP Renal Care Simpang Renggam, HD Unit
9. BP Renalcare (Yong Peng), HD Unit
10. Hospital Pakar Sultanah Fatimah Muar, HD Unit
11. JB Lions MAA-Medicare Charity Dialysis Centre (1), HD Unit
12. JB Lions MAA-Medicare Charity Dialysis Centre (2), HD Unit
13. JJ Lions Dialysis Centre, HD Unit
14. Johor Quarries Association Dialysis Centre, HD Unit
15. Johor Specialist Hospital, HD Unit
16. Kluang Hospital, HD Unit
17. Kota Tinggi Hospital, HD Unit
18. Mersing Hospital, HD Unit
19. Mersing Rotary Centre, HD Unit
20. Muar Dialysis, HD Unit
21. Muar Lions Renal Centre, HD Unit
22. Persatuan Membaiki Akhlak-Che Luan Khor_NKF, HD Unit
23. Pertubuhan Hemodialisis Muhibbah Segamat (Labis), HD Unit
24. Pertubuhan Hemodialisis Muhibbah, HD Unit
25. Pontian Hospital, HD Unit
26. Pontian Rotary Haemodialysis Centre, HD Unit
27. Premier Renal Care, HD Unit
28. Prima Dialysis Kluang, HD Unit
29. Prima Dialysis Masai, HD Unit
30. Pusat Dialisis Nefro Utama (Johor Bahru), HD Unit
31. Pusat Dialisis Nefro Utama (Kota Tinggi), HD Unit
32. Pusat Dialisis Nefro Utama (Pontian), HD Unit
33. Pusat Dialisis Perbadanan Islam (Johor Bahru), HD Unit
34. Pusat Dialisis Perbadanan Islam (Pontian), HD Unit
35. Pusat Dialisis Waqaf An-nur (Batu Pahat), HD Unit
36. Pusat Dialisis Waqaf An-nur (Kota Raya), HD Unit
37. Pusat Dialisis Waqaf An-nur (Pasir Gudang), HD Unit
38. Pusat Dialysis Makmur, HD Unit
39. Pusat Haemodialisis Suria (Tangkak), HD Unit
40. Pusat Haemodialysis Amal Lexin, HD Unit
41. Pusat Hemodialisis Ar-Raudhah, HD Unit
42. Pusat Hemodialisis Darul Takzim, HD Unit
43. Pusat Hemodialisis Hidayah, HD Unit
44. Pusat Hemodialisis MAIJ, HD Unit
45. Pusat Hemodialisis Muar, HD Unit
46. Pusat Hemodialisis Rotary Kota Tinggi, HD Unit
47. Pusat Hemodialisis Rotary Kulai, HD Unit
48. Pusat Hemodialisis Sejahtera Muar, HD Unit
49. Pusat Kesihatan Universiti (UTHO), HD Unit
50. Pusat Perubatan Perbadanan Islam (Segamat), HD Unit
51. Segamat Hospital, HD Unit
52. Sultan Ismail Hospital (Paed), HD Unit
53. Sultan Ismail Hospital, HD Unit
54. Sultanah Aminah Hospital, HD Unit
55. Systemic Dialysis Centre, HD Unit
56. Tangkak Hospital, HD Unit
57. Tangkak Lions Renal Centre, HD Unit
58. Temenggong Seri Maharaja Tun Ibrahim Hospital, HD Unit
59. The Rotary HD Centre (Johor Bahru), HD Unit
60. Yayasan Pembangunan Keluarga Johor-NKF, HD Unit
61. Yayasan Rotary Kluang, HD Unit
62. Zhi En Dialysis Centre, HD Unit

Kedah Darul Aman

63. 807 Rumah Sakit Angkatan Tentera (Sg. Petani), HD Unit
64. Asia Renal Care (Penang), HD Unit
65. Baling Hospital, HD Unit
66. Buddhist Tzu Chi (Jitra), HD Unit
67. Kuala Nerang Hospital, HD Unit
68. Kulim Haemodialysis (CS Tan), HD Unit
69. Kulim Hospital, HD Unit
70. Langkawi Hospital, HD Unit
71. Metro Specialist Hospital, HD Unit
72. Pertubuhan Bakti Fo En Bandar Kulim, HD Unit
73. Pusat Dialisis Albukhary, HD Unit
74. Pusat Dialysis K K Tan (Sg Petani), HD Unit
75. Pusat Haemodialisis Dr. Ismail, HD Unit
76. Pusat Hemodialisis Beng Siew, HD Unit
77. Pusat Hemodialisis Mergong, HD Unit
78. Pusat Hemodialisis S P, HD Unit
79. Pusat Kesihatan Jitra, HD Unit
80. Pusat Pakar Dialisis Traktif Sdn Bhd (Jitra), HD Unit
81. Pusat Rawatan Hemodialisis Yayasan Emkay & Sultanah Bahiyah, HD Unit
82. Putra Medical Centre, HD Unit
83. Rawatan Dialisis Amal Lion_NKF, HD Unit
84. Renal Care (Kedah), HD Unit
85. Renal Medicare, HD Unit
86. Sik Hospital, HD Unit
87. Sultan Abdul Halim Hospital, HD Unit
88. Sultanah Bahiyah Hospital, HD Unit
89. Superkids Trinity-NKF Dialysis Centre, HD Unit
90. Yan Hospital, HD Unit

PARTICPATING HAEMODIALYSIS CENTRES 2008 (CONT...)

Kelantan Darul Naim

91. Gua Musang Hospital, HD Unit
92. Jeli Hospital, HD Unit
93. KB Rotary-MAA Charity Dialysis, HD Unit
94. Kuala Krai Hospital, HD Unit
95. Machang Hospital, HD Unit
96. Nephrolife Haemodialysis Centre, HD Unit
97. Pakar Perdana Hospital, HD Unit
98. Pasir Mas Hospital, HD Unit
99. Pusat Dialisis Yayasan Buah Pinggang Kebangsaan (Kota Bharu), HD Unit
100. Pusat Pakar Dialysis Traktif (Kota Bharu), HD Unit
101. Pusat Perubatan Tentera (Kota Bharu), HD Unit
102. Pusat Rawatan Dialisis Islah (Kota Bharu), HD Unit
103. Raja Perempuan Zainab II Hospital, HD Unit
104. Renal-Link (Kelantan), HD Unit
105. Tanah Merah Hospital, HD Unit
106. Tengku Anis Hospital, HD Unit
107. Tumpat Hospital, HD Unit
108. Universiti Sains Malaysia Hospital, HD Unit

Negeri Melaka

109. 94 Hospital Angkatan Tentera (Terendak), HD Unit
110. Alor Gajah Dialysis Centre, HD Unit
111. Alor Gajah Hospital, HD Unit
112. Amitabha Centre (Melaka), HD Unit
113. Damai Medical & Heart Clinic, HD Unit
114. Mahkota Medical Centre, HD Unit
115. Melaka Hospital, HD Unit
116. Pantai Air Keroh Hospital, HD Unit
117. Pusat Dialisis Giat Kurnia (Masjid Tanah), HD Unit
118. Pusat Dialisis Giat Kurnia (Merlimau), HD Unit
119. Pusat Dialisis Kenanga, HD Unit
120. Pusat Dialysis Comfort, HD Unit
121. Pusat Haemodialysis Suria (Jasin), HD Unit
122. Pusat HD SJAM Bacang Melaka, HD Unit
123. Pusat Hemodialisis Krisda, HD Unit
124. Pusat Hemodialisis SJAM Pulau Sebang, HD Unit
125. Sinar Hemodialisis, HD Unit
126. Tenang Haemodialysis Centre, HD Unit
127. Tenang Haemodialysis Jasin, HD Unit
128. Yakin Jaya, HD Unit
129. Yayasan Kebajikan The Southern Melaka, HD Unit

Negeri Sembilan Darul Khusus

130. Giat Kurnia Dialysis Centre (Nilai), HD Unit
131. Haemodialysis Mawar Gemas, HD Unit
132. Jelebu Hospital, HD Unit
133. Persada Dialysis Centre, HD Unit
134. Port Dickson Hospital, HD Unit
135. Pusat Dialisis Suria (Tampin), HD Unit
136. Pusat Haemodialisis Renalife, HD Unit
137. Pusat Hemodialisis Berkat Seroja, HD Unit
138. Pusat Hemodialisis Mawar N. Sembilan (Bahau), HD Unit
139. Pusat Hemodialisis Mawar N. Sembilan (Lukut), HD Unit
140. Pusat Hemodialisis Mawar N. Sembilan (Rantau), HD Unit
141. Pusat Hemodialisis Mawar N. Sembilan (Seremban), HD Unit
142. Pusat Pakar Dialisis Traktif (Kuala Pilah), HD Unit
143. Pusat W aqaf An-nur (Senawang), HD Unit
144. Seremban Specialist Hospital, HD Unit
145. Tampin Hospital, HD Unit
146. Tuanku Ampuan Najihah Hospital, HD Unit
147. Tuanku Jaafar Hospital (Paed), HD Unit
148. Tuanku Jaafar Hospital, HD Unit

Pahang Darul Makmur

149. Bentong Hospital, HD Unit
150. Fitra Med, HD Unit
151. Jengka Hospital, HD Unit
152. Jerantut Hospital, HD Unit
153. Kuala Lipis Hospital, HD Unit
154. Kuantan Clinical Diagnostic Centre, HD Unit
155. Lipis Dialysis Centre, HD Unit
156. MAA-Medicare Charity (Mentakab), HD Unit
157. Mentakab Haemodialysis Unit, HD Unit
158. Muadzam Shah Hospital, HD Unit
159. Pahang Buddhist Association, HD Unit
160. Pekan Hospital, HD Unit
161. Pusat Hemodialisis Islam Makmur, HD Unit
162. Pusat Rawatan Dialisis Tun Abdul Razak-NKF Kuantan, HD Unit
163. Raub Hospital, HD Unit
164. SJAM-KPS Haemodialysis Centre 9 (Raub), HD Unit
165. Sultan Haji Ahmad Shah Hospital, HD Unit
166. Suria Dialysis Centre (Temerloh)
167. Tengku Ampuan Afzan Hospital (Paed), HD Unit
168. Tengku Ampuan Afzan Hospital, HD Unit

Perak Darul Ridzuan

169. 96 Hospital Angkatan Tentera (Lumut), HD Unit
170. Batu Gajah Hospital, HD Unit
171. Berchaam Dialysis Centre, HD Unit
172. Changkat Melintang Hospital, HD Unit
173. Fatimah Hospital, HD Unit
174. Gerik Hospital, HD Unit
175. Hope Haemodialysis Society Ipoh, HD Unit
176. Kampar Hospital, HD Unit
177. Kuala Kangsar Hospital, HD Unit
178. MAA-Medicare Charity (Teluk Intan), HD Unit

PARTICPATING HAEMODIALYSIS CENTRES 2008 (CONT...)

179. MB Star Rawatan Dialisis, HD Unit
180. Parit Buntar Hospital, HD Unit
181. Perak Community Specialist Hospital, HD Unit
182. Persatuan Amal Chin Malaysia Barat, HD Unit
183. Pertubuhan Perkhidmatan Haemodialisis Ar-Ridzuan, HD Unit
184. Pertubuhan Perkhidmatan Hemodialisis AIXIN Kerian, HD Unit
185. PMA Chan Meng Khor-MAA Medicare Charity Dialysis Centre, HD Unit
186. Pulau Pangkor Hospital, HD Unit
187. Pusat Dialisis Darul Iltizam Taiping, HD Unit
188. Pusat Dialisis Ehsan Perak (Parit Buntar), HD Unit
189. Pusat Dialisis Intan, HD Unit
190. Pusat Dialisis Kuala Kangsar, HD Unit
191. Pusat Dialisis Penawar Permai, HD Unit
192. Pusat Dialisis Setia (Ipoh), HD Unit
193. Pusat Dialisis Taiping (Kamunting), HD Unit
194. Pusat Dialisis Taiping (Kuala Kangsar), HD Unit
195. Pusat Dialisis Taiping (Parit Buntar), HD Unit
196. Pusat Dialisis Taiping, HD Unit
197. Pusat Dialysis Setia, HD Unit
198. Pusat Hemodialisis Darul Iltizam (Ipoh), HD Unit
199. Pusat Hemodialisis Kampar Yayasan Nanyang-SJAM, HD Unit
200. Pusat Hemodialisis Manjung, HD Unit
201. Pusat Rawatan Dialisis Wan Nong, HD Unit
202. Raja Permaisuri Bainun Hospital, HD Unit
203. Raja Permaisuri Bainun Hospital, Home Unit
204. Renal Care (Ipoh Specialist), HD Unit
205. Selama Hospital, HD Unit
206. Seri Manjung Hospital, HD Unit
207. Sg Siput Hospital, HD Unit
208. Slim River Hospital (Tanjong Malim), HD Unit
209. Taiping Hospital, HD Unit
210. Tapah Hospital, HD Unit
211. Teluk Intan Hospital, HD Unit
212. Woh Peng Cheang Seah, HD Unit
213. Yayasan Akhlak-NKF Taiping, HD Unit
214. Yayasan Dialysis Pendidikan Akhlak Perak-NKF Ipoh, HD Unit

Perlis Indera Kayangan

215. Tuanku Fauziah Hospital, HD Unit
216. Tuanku Syed Putra_NKF Kangar Haemodialysis Centre, HD Unit

Penang

217. AMD Rotary (Penang), HD Unit
218. Asia Renal Care (Penang), HD Unit
219. Balik Pulau Hospital, HD Unit
220. Buddhist Tzu Chi Dialysis Centre (Butterworth), HD Unit
221. Buddhist Tzu Chi HD Centre (Penang), HD Unit
222. Bukit Mertajam Hospital, HD Unit
223. Fo Yi NKF Dialysis Centre (1), HD Unit
224. Fo Yi NKF Dialysis Centre (2), HD Unit
225. Gleneagles Medical Centre, HD Unit
226. Island Hospital, HD Unit
227. K K Tan Specialist (BM), HD Unit
228. Kepala Batas Hospital, HD Unit
229. Lam Wah Ee Hospital, HD Unit
230. Loh Guan Lye Specialist Centre, HD Unit
231. MAA-Medicare Charity (Butterworth), HD Unit
232. NEPH Sdn Bhd, HD Unit
233. Pantai Mutiara Hospital, HD Unit
234. Penang Adventist Hospital, HD Unit
235. Penang Caring Dialysis Society, HD Unit
236. Persatuan Kebajikan Haemodialysis St Anne BM, HD Unit
237. Pertubuhan Dialisis Rotary-Satu Hati, HD Unit
238. Pertubuhan Hemodialisis SPS, HD Unit
239. Province Wellesley Renal Medifund, HD Unit
240. Pulau Pinang Hospital (Home), HD Unit
241. Pulau Pinang Hospital (Paed), HD Unit
242. Pulau Pinang Hospital, HD Unit
243. Pusat Dialisis Ehsan Perak (Pedar), HD Unit
244. Pusat Haemodialisis Zakat (Jawi), HD Unit
245. Pusat Hemodialisis Zakat (Balik Pulau), HD Unit
246. Pusat Hemodialisis Zakat (Bukit Mertajam), HD Unit
247. Pusat Hemodialisis Zakat (Butterworth), HD Unit
248. Pusat Hemodialisis Zakat (Kepala Batas), HD Unit
249. Pusat Hemodialisis Zakat (P. Pinang), HD Unit
250. PWRM (BM) Dialysis Centre, HD Unit
251. Renal Link (Penang), HD Unit
252. Seberang Jaya Hospital (Butterworth), HD Unit
253. Seberang Perai (Bagan), HD Unit
254. SJ Dialysis Centre, HD Unit
255. Sungai Bakap Hospital, HD Unit
256. The Penang Community HD Society, HD Unit
257. TSC Renal Care, HD Unit

Sabah

258. Beaufort Hospital, HD Unit
259. Beluran Hospital, HD Unit
260. Duchess of Kent Hospital, HD Unit
261. Keningau Hospital, HD Unit
262. Kota Belud Hospital, HD Unit
263. Kota Kinabatangan Hospital, HD Unit
264. Kota Marudu Hospital, HD Unit
265. Kudat Hospital, HD Unit
266. Labuan Hospital, HD Unit
267. Lahad Datu Hospital, HD Unit
268. Likas Hospital (Paed), HD Unit
269. Likas Hospital, HD Unit
270. MAA-Medicare Charity (Kota Kinabalu), HD Unit
271. Nobel Dialysis Centre, HD Unit

PARTICPATING HAEMODIALYSIS CENTRES 2008 (CONT...)

272. Papar Hospital, HD Unit
273. Persatuan Buah Pinggang Sabah, HD Unit
274. Persatuan Hemodialysis Kinabalu Sabah, HD Unit
275. Queen Elizabeth Hospital, HD Unit
276. Ranau Hospital, HD Unit
277. Rotary Tawau Tanjung, HD Unit
278. Sabah Medical Centre, HD Unit
279. Sandakan Kidney Society, HD Unit
280. Semporna Hospital, HD Unit
281. Sipitang Hospital, HD Unit
282. Tambunan Hospital, HD Unit
283. Tawau Hospital, HD Unit
284. Tenom Hospital, HD Unit

Sarawak

285. 801 Rumah Sakit Angkatan Tentera (Kuching), HD Unit
286. Bau Hospital, HD Unit
287. Betong Hospital, HD Unit
288. Bintulu Hospital, HD Unit
289. CHKMUS-MAA Medicare Charity, HD Unit
290. Hospital Daerah Daro, HD Unit
291. Kanowit Hospital, HD Unit
292. Kapit Hospital, HD Unit
293. KAS-Rotary-NKF, HD Unit
294. Kuching Specialist Hospital, HD Unit
295. Lawas Hospital, HD Unit
296. Limbang Hospital, HD Unit
297. Lundu Hospital, HD Unit
298. Marudi Hospital, HD Unit
299. Miri Hospital, HD Unit
300. Miri Red Crescent Dialysis Centre, HD Unit
301. Mukah Hospital, HD Unit
302. Normah Medical Specialist Centre, HD Unit
303. Rejang Medical Centre, HD Unit
304. Renal Life Dialysis Centre, HD Unit
305. Saratok Hospital, HD Unit
306. Sarawak General Hospital, HD Unit
307. Sarikei Hospital, HD Unit
308. Serian Hospital, HD Unit
309. Sibu Hospital, HD Unit
310. Sibu Kidney Foundation, HD Unit
311. Simunjan Hospital, HD Unit
312. SJAM-KPS 10 (Bintulu), HD Unit
313. SJAM-KPS Haemodialysis Centre 8 (Sibu), HD Unit
314. Sri Aman Hospital, HD Unit
315. Timberland Medical Centre, HD Unit

Selangor Darul Ehsan

316. 819 Rumah Sakit Angkatan Tentera, HD Unit
317. Ampang Hospital, HD Unit
318. Ampang Puteri Specialist Hospital, HD Unit
319. Apex Club of Klang-NKF Charity Dialysis Centre, HD Unit
320. Assunta Hospital, HD Unit
321. Bakti-NKF Dialysis Centre, HD Unit
322. Bangi Dialysis Centre, HD Unit
323. Banting Hospital, HD Unit
324. Berjaya NKF Dialysis Centre, HD Unit
325. Caring Dialysis Centre Andalas (Klang), HD Unit
326. Damansara Specialist Hospital, HD Unit
327. EAM Dialysis Centre, HD Unit
328. Haemodialysis Association Klang, HD Unit
329. Haemodialysis Edina, HD Unit
330. Healthcare Dialysis Centre, HD Unit
331. Hemodialisis Yayasan Veteran ATM, HD Unit
332. Kajang Hospital, HD Unit
333. Kelana Jaya Medical Centre, HD Unit
334. KPJ Kajang Specialist Hospital, HD Unit
335. KPJ Selangor Specialis Hospital, HD Unit
336. Kuala Kubu Bharu Hospital, HD Unit
337. MAA-Medicare Charity (Kajang), HD Unit
338. Persatuan Dialisis Kurnia PJ, HD Unit
339. Persatuan Dialisis Touch, HD Unit
340. Pertubuhan Hemodialisis Pasar Besar Meru, HD Unit
341. Ping Rong-NKF, HD Unit
342. PNSB Dialisis Centre, HD Unit
343. Pusat Dialisis Aiman (Shah Alam), HD Unit
344. Pusat Dialisis LZS (Kapar), HD Unit
345. Pusat Dialisis LZS (Sg. Besar), HD Unit
346. Pusat Dialisis LZS (Shah Alam), HD Unit
347. Pusat Dialisis Pakar Medi-Nefro, HD Unit
348. Pusat Dialisis Putra Jaya (Kajang), HD Unit
349. Pusat Dialisis Sijangkang, HD Unit
350. Pusat Dialysis Mesra (Rahman Putra), HD Unit
351. Pusat Dialysis Mesra KKB, HD Unit
352. Pusat Dialysis Putra Jaya (Semenyih), HD Unit
353. Pusat Haemodialysis Nilam, HD Unit
354. Pusat Hemodialisis Fasa, HD Unit
355. Pusat Hemodialisis Kau Ong Yah Ampang, HD Unit
356. Pusat Hemodialisis Mawar N. Sembilan (Sepang), HD Unit
357. Pusat Hemodialisis Mawar N. Sembilan (Seri Kembangan), HD Unit
358. Pusat Perubatan Primier HUKM, HD Unit
359. Pusat Rawatan Dialisis Islah (Batu Caves), HD Unit
360. Pusat Rawatan Dialisis Mukmin, HD Unit
361. Pusat Rawatan Dialisis Nefro Utama (Puchong Jaya), HD Unit
362. Pusat Rawatan Dialisis Traktif (Selayang), HD Unit

PARTICPATING HAEMODIALYSIS CENTRES 2008 (CONT...)

363. Pusat Rawatan Hemodialisis Felina, HD Unit
364. Putrajaya Hospital, HD Unit
365. Rawatan Dialysis Bukit Tinggi, HD Unit
366. Renal Associates, HD Unit
367. S.P. Menon Dialysis Centre (Klang), HD Unit
368. S.P. Menon Dialysis Centre (Petaling Jaya), HD Unit
369. Selayang Hospital (Paed), HD Unit
370. Selayang Hospital, HD Unit
371. Serdang Hospital, HD Unit
372. Sime Darby Medical Centre Subang Jaya, HD Unit
373. SJAM-KPS Haemodialysis Centre 1 (Raja Muda Musa), HD Unit
374. SJAM-KPS Haemodialysis Centre 2 (Klang), HD Unit
375. SJAM-KPS Haemodialysis Centre 3 (Banting), HD Unit
376. SJAM-KPS Haemodialysis Centre 5 (Rawang), HD Unit
377. SJAM-KPS Haemodialysis Centre 6 (Kuala Selangor), HD Unit
378. SJAM-KPS Haemodialysis Centre 11 (Shah Alam), HD Unit
379. SJAM-KPS Haemodialysis Centre 12 (Balakong), HD Unit
380. SJAM-KPS Pusat Hemodialisis Tasik Puteri, HD Unit
381. Smartcare Dialysis Centre (Subang Jaya), HD Unit
382. Sri Kota Medical Centre, HD Unit
383. Sungai Buloh Hospital, HD Unit
384. Sunway Medical Centre (2), HD Unit
385. Sunway Medical Centre, HD Unit
386. Syukur Elit Sdn Bhd, HD Unit
387. Tanjung Karang Hospital, HD Unit
388. Tengku Ampuan Jemaah Hospital, HD Unit
389. Tengku Ampuan Rahimah Hospital, HD Unit
390. Universiti Kebangsaan Malaysia Bangi, HD Unit
391. Yayasan Kebajikan SSL (Petaling Jaya), HD Unit
392. Yayasan Kebajikan SSL (Puchong), HD Unit

Terengganu Darul Iman

393. Besut Hospital, HD Unit
394. Dungun Hospital, HD Unit
395. Hulu Terengganu Hospital, HD Unit
396. Jerteh Dialysis Centre
397. Kemaman Hospital, HD Unit
398. Pusat Dialisis Terengganu/NKF, HD Unit
399. Pusat Hemodialisis Nabilah, HD Unit
400. Pusat Pakar Dialisis Traktif Sdn Bhd (Besut), HD Unit
401. Pusat Rawatan Dialisis Islah (Kuala Terengganu), HD Unit
402. Sultanah Nur Zahirah Hospital, HD Unit
403. YKN Dialisis (Terengganu), HD Unit

Wilayah Persekutuan Kuala Lumpur

404. Aiman Dialysis Centre, HD Unit
405. Charis-NKF Dialysis Centre, HD Unit
406. Cheras Dialysis Centre, HD Unit
407. Kampong Baru Medical Centre, HD Unit
408. Kuala Lumpur Hospital (Home), HD Unit
409. Kuala Lumpur Hospital (Paed.), HD Unit
410. Kuala Lumpur Hospital (Unit 1), HD Unit
411. Kuala Lumpur Hospital (Unit 3), HD Unit
412. Kuala Lumpur Hospital (Unit 4), HD Unit
413. Kuala Lumpur Lions Renal Centre, HD Unit
414. MAA-Medicare Charity (Cheras), HD Unit
415. MAA-Medicare Charity (Kuala Lumpur), HD Unit
416. MDZ Haemodialysis Centre, HD Unit
417. National Kidney Foundation Dialysis Centre (KL), HD Unit
418. Pantai ARC Dialysis Services, HD Unit
419. Pantai Indah Hospital, HD Unit
420. Pantai Medical Centre (KL), HD Unit
421. Poliklinik Komuniti Tanglin, HD Unit
422. Pusat Dialisis Falah, HD Unit
423. Pusat Dialisis Pusat Punggutan Zakat (Kuala Lumpur), HD Unit
424. Pusat Hemodialisis Dato' Lee Kok Chee, HD Unit
425. Pusat Hemodialisis Harmoni, HD Unit
426. Pusat Hemodialisis KEMENTAH, HD Unit
427. Pusat Hemodialisis Mawar N. Sembilan (Seputih), HD Unit
428. Pusat Hemodialisis PUSRAWI, HD Unit
429. Pusat Hemodialisis Waz Lian, HD Unit
430. Pusat Hemodialisis Yayasan Felda, HD Unit
431. Pusat Pakar Tawakal, HD Unit
432. Pusat Perubatan Universiti Kebangsaan Malaysial, HD Unit
433. Pusat Rawatan Dialisis Nefro Utama (Setapak), HD Unit
434. Renal Dialysis Centre, HD Unit
435. Rotary Damansara-NKF Dialysis, HD Unit
436. S.P. Menon Dialysis Centre (Kuala Lumpur), HD Unit
437. Sentosa Medical Centre, HD Unit
438. Smartcare Dialysis Clinic, HD Unit
439. The Kidney Dialysis Centre (1), HD Unit
440. The Kidney Dialysis Centre (2), HD Unit
441. The Nayang-NKF Dialysis Centre, HD Unit
442. Traktif Specialist Dialysis Centre (Wangsa Maju), HD Unit
443. Tung Shin Hospital & Yayasan Nanyang Press, HD Unit
444. Tung Shin Hospital, HD Unit
445. University Malaya Medical Centre, HD Unit
446. YKN Dialisis (Kuala Lumpur), HD Unit

Participating PD centres 2008

Johor Darul Takzim

BP Renal Care (Batu Pahat), CAPD Unit
BP Renal Care (Segamat), CAPD Unit
Sultan Ismail Hospital (Paed), CAPD Unit
Sultanah Aminah Hospital, CAPD Unit

Kedah Darul Aman

Sultanah Bahiyah Hospital, CAPD Unit

Kelantan Darul Naim

Raja Perempuan Zainab II Hospital , CAPD Unit
Universiti Sains Malaysia Hospital, CAPD Unit

Melaka

Damai Medical & Heart Clinic, CAPD Unit
Melaka Hospital, CAPD Unit

Negeri Sembilan Darul Khusus

Tuanku Jaafar Hospital (Paed), CAPD Unit
Tuanku Jaafar Hospital, CAPD Unit

Pahang Darul Makmur

Tengku Ampuan Afzan Hospital (Paed), CAPD Unit
Tengku Ampuan Afzan Hospital, CAPD Unit

Perak Darul Ridzuan

96 Hospital Angkatan Tentera (Lumut), CAPD Unit
Ipoh Hospital, CAPD Unit

Penang

Pulau Pinang Hospital (Paed), CAPD Unit
Pulau Pinang Hospital, CAPD Unit

Sabah

Likas Hospital (Paed), CAPD Unit
Queen Elizabeth Hospital, CAPD Unit
Sabah Medical Centre, CAPD Unit

Sarawak

Kuching Specialist Hospital, CAPD Unit
Sarawak General Hospital, CAPD Unit

Selangor Darul Ehsan

Selayang Hospital (Paed), CAPD Unit
Selayang Hospital, CAPD Unit
Serdang Hospital, CAPD Unit
Sri Kota Medical Centre, CAPD Unit
Tengku Ampuan Rahimah Hospital, CAPD Unit

Terengganu Darul Iman

Sultanah Nur Zahirah Hospital, CAPD Unit

Wilayah Persekutuan Kuala Lumpur

Kuala Lumpur Hospital (Paed.), CAPD Unit
Kuala Lumpur Hospital, CAPD Unit
Pusat Perubatan Universiti Kebangsaan Malaysia, CAPD Unit
University Malaya Medical Centre, CAPD Unit

Participating Transplant follow-up Centres 2008

Johor Darul Takzim
Batu Pahat Hospital
Hospital Sultan Ismail Pandan
Kluang Hospital
Pakar Sultanah Fatimah Muar Hospital
Pontian Hospital
Segamat Hospital
Sultanah Aminah Hospital

Kedah Darul Aman
Hospital Sultanah Bahiyah

Kelantan Darul Naim
Hospital Raja Perempuan Zainab II
Universiti Sains Malaysia Hospital

Negeri Melaka
Melaka Hospital
Wee Kidney & Medical Specialist Clinic
(Mahkota Medical Centre)

Negeri Sembilan Darul Khusus
Hospital Tuanku Ja'afar Seremban

Pahang Darul Makmur
Tg. Ampuan Afzan Hospital

Perak Darul Ridzuan
Hospital Raja Permaisuri Bainun
Taiping Hospital

Penang
Pulau Pinang Hospital

Sabah
Duchess of Kent Hospital
Queen Elizabeth Hospital
Sabah Medical Centre
Tawau Hospital

Sarawak
Bintulu Hospital Tx Unit
Miri Hospital
Sarawak General Hospital
Sibu Hospital
Timberland Medical Centre

Selangor Darul Ehsan
Ampang Puteri Specialist Hospital
Selayang Hospital
Serdang Hospital
Sri Kota Medical Centre
Sunway Medical Centre
Tan Medical Renal Clinic
Tg. Ampuan Rahimah Hospital

Terengganu Darul Iman
Hospital Sultanah Nur Zahirah
Kemaman Hospital

Wilayah Persekutuan Kuala Lumpur
Fan Medical Renal Clinic
Kuala Lumpur Hospital
Pusat Perubatan UKM
Smartcare Dialysis Centre (Cheras)
University Malaya Medical Centre

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FOREWORD

Prevalent dialysis patients are now close to 19,000 giving a rate of nearly 700 per million population (pmp), an increase from 626 pmp at the end of 2007. A few years ago we predicted that the prevalent dialysis patients will reach 20,000 by the year 2010. The continued impressive increase in the number of new patients accepted for dialysis coupled with a stable annual mortality rate of about 10% means that this number will be reached earlier than 2010. The "high performing states" continued to do well in 2008 with acceptance rates greater than 200 pmp. Almost all states showed an improvement in acceptance rates but some can and should do better to improve equity in dialysis provision.

Renal transplantation rate continued to be dismal and unchanged in the last many years. The Ministry of Health had initiated many new measures since 2007 but they do not seem to make an impact. A National Organ Transplantation Policy was enunciated, the organizational structure for transplantation services was strengthened and more money was allocated for the service but yet organ transplantation (and not just renal transplantation) did not increase. The ubiquitous dialysis centres (from "shop-lots centres" to hospital- based facilities) could possibly be blamed for the lack of interest in kidney transplantation but heart and liver transplantation fared worse. The apathy amongst the public needs to be studied.

The Registry has been collecting data on funding for many years now. The data shows that the government is still the major sponsor of dialysis funding. In fact the Registry presently can only collect data on direct funding of dialysis treatment – either full subsidy as in Ministry of Health dialysis centres or partial subsidy in the NGO centre. There is however a substantial indirect subsidy by the government for which no data is available. This include evaluation of patients in the immediate pre-dialysis period (most of these patients eventually were dialysed in NGO or private centres), continued provision of medications and performance of regular blood tests even when they are on Dialysis at non- government centre, creation of vascular access and admission for dialysis related complications. The involvement of government agencies in dialysis funding is only expected as most patients cannot afford the total costs of dialysis care. There should perhaps be a clearer structure on government involvement and contribution so that the true costs of dialysis can bee seen. The NRR can certainly facilitate an initiative to study the contributions of government agencies to funding of dialysis. The results of such a study may help the formulation of clearer policies on funding and monitoring of such funding.

As in the previous ones, this report also looks at quality measures and variation in practices and outcomes. There have been no substantial changes in the quality measures. There still is variation in practices which impact on outcomes. It is only through continuing education and training that such variations can be reduced. And the Registry hopes that professional bodies such as the Malaysian Society of Nephrology and the Association of Dialysis Medical Assistants and Nurses will intensify their training programs

The National Renal Registry is taking on additional responsibilities. It has initiated a number of new renal-based registries. The Malaysian Registry of Renal Biopsies has produced its first report. Two other registries are in the planning stages: the Registry of Interventional Nephrology and the Registry of Diabetic nephropathy. This additional workload has placed considerable stress on the facilities and staff of NRR. The staff under the able leadership of Lee Day Guat has coped admirably well and the Advisory committee of NRR expresses it thanks and appreciation to them. We are also indebted to the two editors Dr Lim Teck Onn and Dr Lim Yam Ngo for once again producing an excellent report.

Dr Zaki Morad
Chairman
National Renal Registry

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REPORT SUMMARY

- Intake of new dialysis patients increased linearly from 1559 in 1999 to 3874 in 2007 with corresponding treatment rates of 69 and 143 per million population.
- Prevalent dialysis patients increased from 5542 (244 per million population) in 1999 to more than 17015 (626 per million) at year end 2007 and almost 19000 in 2008. Transplant numbers and rates showed a decreasing trend last 2 years.
- Except for Sabah and Kelantan, all the other states have treatment rates of more than 100 per million state population since 2007. Pulau Pinang, Melaka, Johor, Negri Sembilan and WP Kuala Lumpur have dialysis treatment rates exceeding 200 per million.
- Centre survey report December 2008: 485hemodialysis centres and 31 peritoneal dialysis (PD) centres provided dialysis care to 19221 patients. The MOH provided dialysis to 32.4% of patients, NGO 29.9% and the private sector at 36.3%. Public sector dialysis centres provided PD to 98% of PD patients.
- The treatment gap between men and women has remained consistent over the years.
- Dialysis treatment rates for those >55 years of continued to increase.
- 86% of new patients were accepted into centre haemodialysis
- The government continued to fund about 54% of new dialysis treatment, NGO funding was 10% in 2007/ 2008, and self funding 25%.
- The proportion of new ESRD patients due to diabetes mellitus was 58% in 2006 and 2007 and 55% in 2008.
- The rapid economic growth led to rapid increase in dialysis provision by government, non-government and private sectors.
- Factored for inflation, the price of dialysis has declined in real terms
- The affordability of dialysis has improved, although at 65% of average household income needed to maintain one patient on dialysis, it remains a catastrophic illness for family finances when compared to affordability in most developed countries.
- The extent of inequality in provision is declining across all sectors. Public sector provision now significantly favours those in less developed states. NGO and private provision still favours the more developed states
- The annual death rate for those on PD and HD in 2008 was 14.5% and 9.6% respectively.
- Cardiovascular disease and death at home remained the commonest cause of death in 2008 at 29 and 22% respectively; death due to sepsis accounted for 17%.
- The overall unadjusted 5 years and 10 years patient survival on dialysis were 58% and 35% respectively
- There was wide centre variation with regards to HD and PD patient survival at one and 5 years adjusted for age and diabetic status. The median one-year survival for HD centres was 96% and PD centres 94%.
- There was at least 2-fold variation in odds ratio of death by dialysis centres.

- For HD patients, there were positive correlation between age of patient, diabetes mellitus, diastolic BP, serum calcium, serum phosphate and hepatitis B antigenaemia with mortality while negative correlation was noted between serum albumin, haemoglobin concentration, calcium phosphate product and Kt/V with mortality. Patients commencing dialysis in 2007-2008 has 12% lower adjusted hazard ratio for mortality when compared to those started dialysis from 2000-2006. PD patients did not show correlation with serum cholesterol, hepatitis B status and Kt/V.

- Median QoL index scores were satisfactory and HD patients achieved a lower score than PD patients. Diabetes Mellitus and older age group are factors associated with lower median QoL index scores.

- In 2008, 87% of HD and 77% of PD patients were on erythropoietin (EPO). Blood transfusion rate in dialysis patients was 16% in 2008. Use of parenteral iron has increased, with corresponding reduction in oral iron prescription. 23% of HD patients were on IV iron therapy in 2008. The median weekly EPO dose remained at 4000 units, in both HD and CAPD patients. 86 % of patients have serum ferritin of >200 ng/ml and 56% of patients >500 ng/ml. 91% of all patients have transferrin saturation greater than 20% Median haemoglobin level was 10.8g/L in 2008. Wide variations were seen in the use of EPO, blood transfusion rates, measures of iron stores and hemoglobin levels in HD and PD centres

- Serum albumin levels remained at mean and median of about 40g/L for HD and about 33 g/L in PD patients in 2008. There were wide variations in the proportion of patients with serum albumin of at least 40g/L in HD and serum albumin of >35 g/L in PD centres.

- Body mass index for HD patients has stabilized around 23 to 24, but was still increasing for patients on PD. There was wide variation in proportion of patients with BMI $\geq$ 18.5 and serum albumin > 40 g/L in both HD and PD centres.

- In 2008, predialysis systolic BP remained high in HD patients. There was better control of predialysis diastolic blood pressure in HD patients. Blood pressure (BP) control in PD patients improved over the years. The variation noted among the various HD and PD centres in median systolic or diastolic BP was not wide but there was wide variation in the proportion of patients achieving BP of <140/90 mmHg.

- Serum cholesterol and triglyceride levels were lower in HD than in PD patients. There remained significant variation in lipid control between dialysis centres.

- In 2008 about 92% of HD patients and 86% of PD patients were still on calcium carbonate. . Calcitriol remained the main vitamin D used in both HD and PD patients and its use continued to rise. The percentage of patients who underwent parathyroidectomy has doubled in 2008 compared to 2005 among those HD and PD patients The mean corrected serum calcium remained slightly lower in the HD patients compared to PD patients. Phosphate control continued to be better in PD patients. The proportion of PD patients achieving target serum phosphate 1.13-1.78 mmol/l was 55% compared to 48% of HD patients. Mean (iPTH) level seemed to be on increasing trend among both HD and PD patients. There was wide variation in the median levels of serum calcium, phosphate, calcium phosphate product and iPTH among both hemodialysis and PD centres.

- The prevalence of hepatitis C in HD patients continues to decline annually by 2-3%. Prevalence of hepatitis B though low, is also declining annually The proportion of HCV infected patients varied widely between HD centers. Previous renal transplant and history of blood transfusion were associated with a significantly higher risk of HCV seroconversion. Completely assisted HD patients and diabetics had a significantly lower risk of acquiring HCV infection

- Haemodialysis practices: In 2008, 91% of patients used native arteriovenous fistula. There was increased use of brachiocephalic fistulae, higher blood flow rates, increased usage of synthetic membranes, and almost universal use of bicarbonate buffer. 95% reuse dialysers. Although the prescribed median Kt/V was 1.6 in 2008, the delivered median Kt/V was only1.4. The percentage of patients with a delivered Kt/V $\geq$ 1. 3 was 58%. The median urea reduction ratio was 71.3% and the percentage of patients with URR $\geq$ 65% was 79%. There was wide variation in the proportion of patients with blood flow rates of >250 ml/min, prescribed Kt/V of $\geq$1.3 and delivered Kt/V of $\geq$1.2 but less variation in urea reduction ratio among HD centres. Technique survival was better in HD compared to PD. Younger age groups and the non-diabetics have better technique survival but the year of starting dialysis did not impact on technique survival.

- Chronic PD practices - . In 2008, there is a 13% increment of PD utilization compared to year 2007 with a total number of 2083 patients. APD accounted for 12% in 2008. For CAPD, 94% were on Baxter disconnect system. 86% were on 4 exchanges a day, 88% used a fill volume of 2 L. The median delivered weekly Kt/V was 2.0, 82% achieved target Kt/V of $\geq$1.7 with a 1.8 fold variation between the highest and the lowest performing centres. The risk factors associated with poor PD technique survival are older age, diabetes, peritonitis episodes, cardiovascular disease, low BMI, hypoalbuminemia, abnormal lipid profile, serum haemoglobin less than 11g/dL, high calcium phosphate level and assisted PD The commonest reason for PD drop-out was peritonitis, followed by membrane failure and patient preference.

- In 2008, the median peritonitis rate dropped to 28.4 pt-months per episode. There is still a wide inter-centre variation with the highest and lowest peritonitis rates of 12 and 132.2 pt-months per episode median peritonitis rate. Gram-positive organisms accounted for 27% of peritonitis episodes while 34% were due to gram negative organisms.

Renal transplantation

- There were 100 new renal transplant recipients in 2007 and only 88 in 2008. There were 1730 patients with functioning transplants at the end of 2008. The incidence rate and prevalence rate of kidney transplant seem to reduce in year 2008

- Age at transplant has been stable at 34 to 42 years and between 58% and 70% of recipients are males over the last 10 years. 15% were diabetics, 4% HbsAg positive and 4% anti-HCV positive at the time of transplantation.

- Commonest known primary renal disease was chronic glomerulonephritis followed by hypertension and diabetes mellitus.

- Since 2006, the number of life donor has remained low - 31 in 2007 and 25 in 2008. Local cadaveric donation made up 18% of transplants. Commercial transplants from China constituted only 41% and 45% in 2008.

- Proportion of renal transplant recipients on cyclosporine slowly declined to 69% in 2008, Tacrolimus based regimes accounted for 24%. Use of MMF increased to 5% and azathioprine decreased to 28%.

- Seven percent developed diabetes mellitus post transplantation

- The rates of transplant death and graft loss have remained static for the past 10 years. Infection, cancer and death at home were the commonest causes of death. Renal allograft rejection accounted for 50-75% of graft losses for the last 10 years

- Overall patient survival rates from 1995 to 2008 have been 95%, 91%, 88% and 81% at year 1, 3, 5 and 10 respectively. Overall graft survival rate has been 91%, 85%, 80% and 66% at year 1, 3, 5 and 10 respectively.
- Living donor transplantation had the best patient survival. Living done and commercial cadaver grafts had the best graft survival rates.

Paediatric Renal Replacement Therapy

- The dialysis acceptance rate for paediatric patients in 2008 was 7 pmarp
- New transplant rate was 2 pmarp
- The overall incidence rate for all RRT in 2008 was 8 pmarp
- At the end of 2008 there were a total of 555 patients under 20 years of age on dialysis giving a dialysis prevalence rate of 48 pmarp
- The numbers of children with functioning transplants in 2008 was 173, giving a prevalence rate of 15 pmarp
- Dialysis treatment rate were higher in economically advantaged states of Malaysia but the gap is becoming less marked in the last 5 years
- The number of 0-4 year olds provided RRT remained very low
- Chronic PD was the initial dialysis modality in about 54% of patients. Of this 5% were on automated PD
- About 90% of children received their dialysis in government centres
- The commonest cause of ESRD was glomerulonephrits (excluding FSGS), which affected 22% of patients. FSGS on its own accounted for 8% of cases.
- HD patient survival was 94% at 1 year and 82% at 5 years
- PD patients survival was 93% at 1 year and 77% at 5 years
- In the last 5 years; cadaveric renal transplant was the commonest type of renal transplant done, accounting for about 42% of cases compared to 36% for living related.
- Transplant patient survival was 98% at 1 year and 92% at 5 years; graft survival was 89% at 1 year and 75% at 5 years.

ABBREVIATIONS

BMI	Body Mass Index
BP	Blood pressure
CAPD	Continuous Ambulatory Peritoneal Dialysis
CCPD/APD	Continuous cycling peritoneal dialysis/automated peritoneal dialysis
CI	Concentration Index
CKD	Chronic kidney disease
CRA	Clinical Registry Assistant
CRA	Clinical Registry assistant
CRC	Clinical Research Centre
CRF	Case report form
CRM	Clinical Registry Manager
CVD	Cardiovascular Disease
DAPD	Daytime Ambulatory Peritoneal Dialsysis
DM	Diabetes Mellitus
DOQI	Dialysis Outcome Quality Initiative
eMOSS	Malaysian Organ Sharing System (Renal)
ESRD	End Stage Renal Disease
GDP	Gross domestic product
GNI	Gross National Income
HD	Haemodialysis
HKL	Kuala Lumpur Hospital
ITT	Intention to treat
iPTH	Intact parathyroid hormone
JNC VI	Joint National Committee on management of hypertension
Kt/V	Number used to quantify hemodialysis and peritoneal dialysis treatment adequacy
LQ	Lower quartile
MDTR	Malaysian Dialysis and Transplant Registry
MOH	Ministry of Health, Malaysia
MOSS	Malaysian Organ Sharing System
MRRB	Malaysian Registry of Renal Biopsy
MSN	Malaysian Society of Nephrology
NGO	Non-governmental organization
NRIC	National Registration Identity Card
NRR	National Renal Registry, Malaysia
PD	Peritoneal dialysis
PET D/P	peritoneal transport status dialysate and plasma (D/P ratio)
pmarp	per million age related population
pmp	per million population
QoL	Quality of Life
ref	reference
RCC	Registry coordinating centre
RRT	Renal replacement therapy
SC	Site coordinator
SDP	Source data producer
UQ	Upper quartile
URR	Urea reduction rate