

## **CHAPTER 9**

# **Blood Pressure Control and Dyslipidaemia in Dialysis Patients**

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**SECTION 9.1: BLOOD PRESSURE CONTROL ON DIALYSIS**

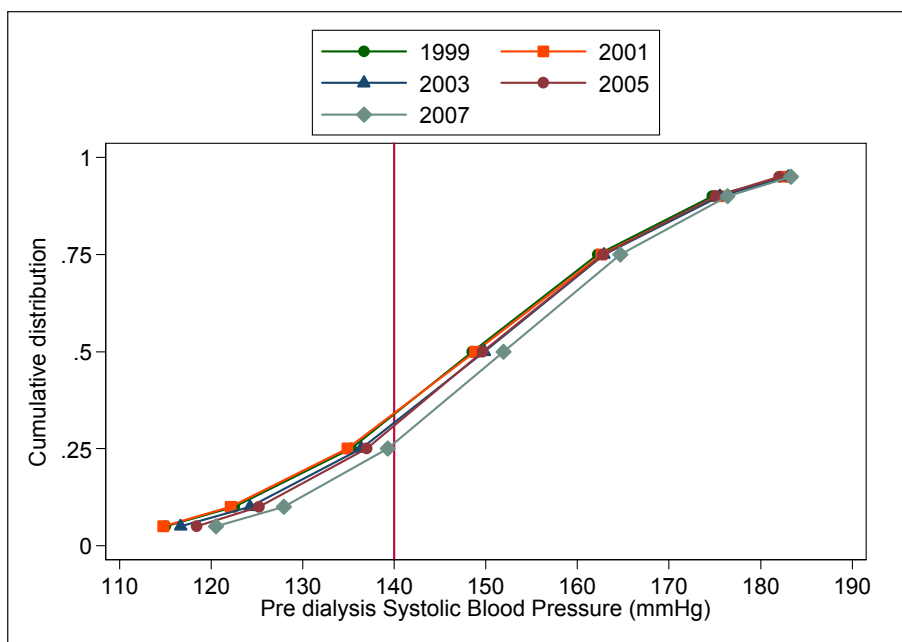
As in previous years, the predialysis systolic blood pressure in 2007 remains poorly controlled with only 26% of the patients achieving a systolic BP of < 140 mmHg. In contrast, the proportion of patients achieving predialysis systolic blood pressure of < 140 mmHg was higher at 37% a decade ago in 1998 (Table 9.1.1). The mean and median predialysis systolic blood pressure in 2007 was 152.1 and 151.9 mmHg respectively.

The increase in the proportion of elderly patients entering the dialysis program in the past few years may be related to this documented poorer control of predialysis systolic blood pressure in 2007.

**Table 9.1.1:** Distribution of Pre dialysis Systolic Blood Pressure, HD patients 1998-2007

| Year | No of subjects | mean  | SD   | Median | LQ    | UQ    | % patients <120 mmHg | % patients 120- <140 mmHg | % patients 140- <160 mmHg | % patients 160- <180 mmHg | % patients ≥180 mmHg |
|------|----------------|-------|------|--------|-------|-------|----------------------|---------------------------|---------------------------|---------------------------|----------------------|
| 1998 | 2108           | 146   | 20.5 | 146.7  | 133.2 | 159.2 | 10                   | 27                        | 39                        | 19                        | 5                    |
| 1999 | 2965           | 148.7 | 20.8 | 148.5  | 135.3 | 162.2 | 8                    | 25                        | 38                        | 23                        | 6                    |
| 2000 | 4310           | 148   | 20.6 | 147.8  | 134.8 | 161.7 | 9                    | 25                        | 38                        | 23                        | 6                    |
| 2001 | 5147           | 148.8 | 20.9 | 148.8  | 134.9 | 162.6 | 8                    | 25                        | 37                        | 23                        | 7                    |
| 2002 | 5911           | 149.2 | 20.6 | 149    | 135.8 | 163.3 | 8                    | 24                        | 38                        | 24                        | 6                    |
| 2003 | 6833           | 149.7 | 20.2 | 149.8  | 136.4 | 162.9 | 7                    | 24                        | 39                        | 23                        | 7                    |
| 2004 | 7936           | 149.7 | 20   | 150    | 136.6 | 163.1 | 7                    | 23                        | 39                        | 25                        | 6                    |
| 2005 | 9221           | 149.9 | 19.4 | 149.6  | 137   | 162.8 | 6                    | 24                        | 40                        | 24                        | 6                    |
| 2006 | 11526          | 151.4 | 19.3 | 151.1  | 138.8 | 164   | 5                    | 22                        | 41                        | 25                        | 7                    |
| 2007 | 12812          | 152.1 | 19.1 | 151.9  | 139.3 | 164.7 | 5                    | 21                        | 40                        | 27                        | 7                    |

**Figure 9.1.1:** Cumulative distribution of Pre dialysis Systolic Blood Pressure, HD patients 1998-2007

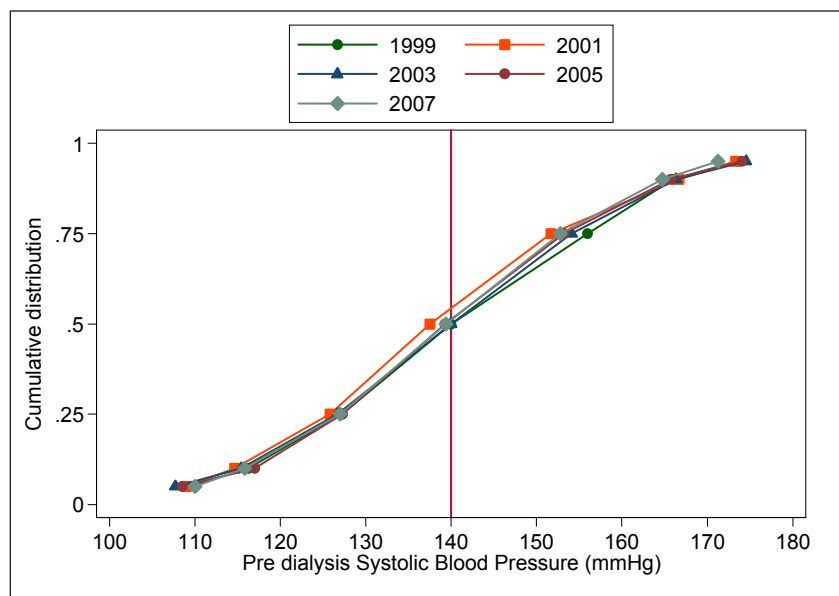


In contrast, predialysis systolic blood pressure was better controlled in CAPD patients in 2007, with 52% of CAPD patients having a predialysis systolic BP < 140 mmHg (Table 9.1.2). this result is similar to 2007 which has 54% of CAPD patients having a predialysis systolic BP < 140 mmHg.

**Table 9.1.2:** Distribution of Pre dialysis Systolic Blood Pressure, CAPD patients 1998-2007

| Year | No of subjects | mean  | SD   | Median | LQ    | UQ    | % patients <120 mmHg | % patients 120- <140 mmHg | % patients 140- <160 mmHg | % patients 160- <180 mmHg | % patients ≥180 mmHg |
|------|----------------|-------|------|--------|-------|-------|----------------------|---------------------------|---------------------------|---------------------------|----------------------|
| 1998 | 519            | 141   | 21.2 | 140    | 126.4 | 157.5 | 16                   | 34                        | 29                        | 18                        | 3                    |
| 1999 | 576            | 141   | 19.8 | 140    | 127.2 | 156   | 14                   | 35                        | 34                        | 15                        | 2                    |
| 2000 | 638            | 137.2 | 20.4 | 136.1  | 123.3 | 150   | 18                   | 39                        | 29                        | 13                        | 2                    |
| 2001 | 739            | 139   | 20.2 | 137.5  | 125.8 | 151.7 | 16                   | 38                        | 30                        | 13                        | 3                    |
| 2002 | 843            | 139.8 | 20.5 | 140    | 127.1 | 151.8 | 14                   | 36                        | 34                        | 12                        | 4                    |
| 2003 | 1154           | 140.5 | 20.1 | 140    | 126.7 | 154.1 | 15                   | 35                        | 32                        | 15                        | 3                    |
| 2004 | 1259           | 141   | 19.8 | 140.9  | 127.4 | 154.5 | 13                   | 34                        | 36                        | 14                        | 3                    |
| 2005 | 1351           | 140.4 | 20.2 | 139.3  | 127.3 | 153.2 | 13                   | 38                        | 32                        | 14                        | 3                    |
| 2006 | 1523           | 139.3 | 19.3 | 138.4  | 126.7 | 151.6 | 14                   | 40                        | 32                        | 11                        | 2                    |
| 2007 | 1753           | 139.9 | 19.2 | 139.4  | 127   | 152.8 | 15                   | 37                        | 33                        | 13                        | 2                    |

**Figure 9.1.2:** Distribution of Pre dialysis Systolic Blood Pressure , CAPD patients 1998-2007

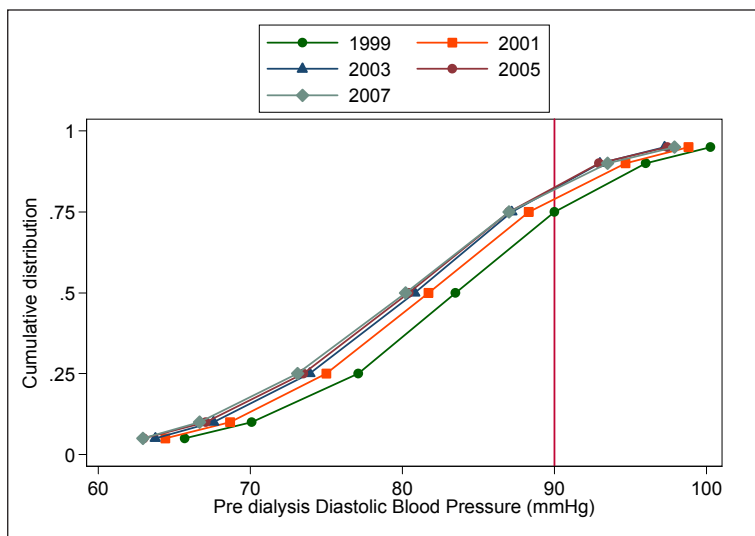


In contrast to predialysis systolic blood pressure, the predialysis diastolic blood pressure was better controlled in haemodialysis patients in 2007, with 82% of haemodialysis patients having predialysis diastolic BP < 90mmHg (Table 9.1.3). This has been the trend over the last few years.

**Table 9.1.3:** Distribution of Pre dialysis Diastolic Blood Pressure, HD patients 1998-2007

| Year | No of subjects | mean | SD   | Median | LQ   | UQ   | % patients < 70 mmHg | % patients 70-<80 mmHg | % patients 80-<90 mmHg | % patients 90-<100 mmHg | % patients ≥100 mmHg |
|------|----------------|------|------|--------|------|------|----------------------|------------------------|------------------------|-------------------------|----------------------|
| 1998 | 2108           | 83.5 | 10.7 | 83.9   | 76.9 | 90.6 | 10                   | 24                     | 38                     | 23                      | 5                    |
| 1999 | 2965           | 83.5 | 10.5 | 83.5   | 77.1 | 90   | 10                   | 24                     | 40                     | 21                      | 6                    |
| 2000 | 4309           | 82.2 | 10.4 | 82.3   | 75.7 | 89   | 11                   | 28                     | 39                     | 18                      | 4                    |
| 2001 | 5146           | 81.6 | 10.4 | 81.7   | 75   | 88.3 | 12                   | 30                     | 37                     | 17                      | 4                    |
| 2002 | 5907           | 81.2 | 10.4 | 81.3   | 74.5 | 88.1 | 13                   | 30                     | 37                     | 16                      | 3                    |
| 2003 | 6831           | 80.6 | 10.2 | 80.8   | 73.9 | 87.2 | 14                   | 32                     | 37                     | 14                      | 3                    |
| 2004 | 7934           | 80.3 | 10.2 | 80.3   | 73.6 | 86.9 | 15                   | 33                     | 36                     | 14                      | 3                    |
| 2005 | 9221           | 80.3 | 10.6 | 80.4   | 73.5 | 87   | 15                   | 32                     | 36                     | 14                      | 3                    |
| 2006 | 11525          | 80.4 | 11.1 | 80.4   | 73.3 | 87.1 | 16                   | 32                     | 35                     | 14                      | 3                    |
| 2007 | 12812          | 80.4 | 11.1 | 80.2   | 73.1 | 87   | 16                   | 32                     | 34                     | 14                      | 4                    |

**Figure 9.1.3:** Cumulative distribution of Pre dialysis Diastolic Blood Pressure, HD patients 1998-2007

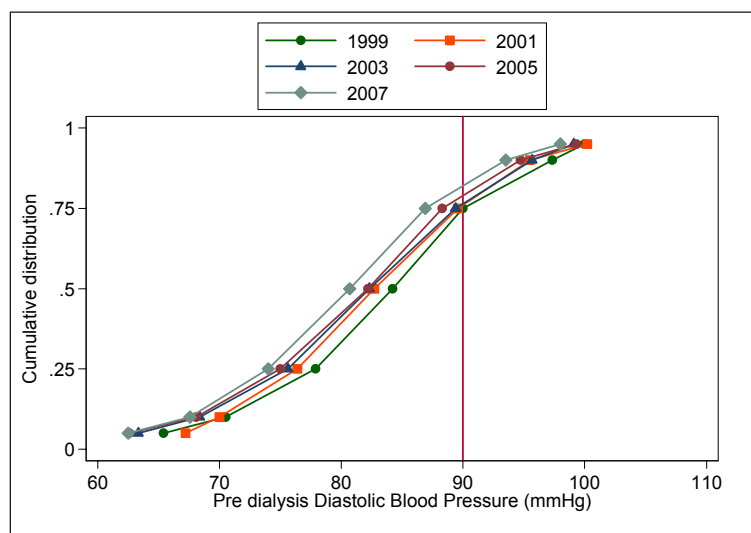


Similarly, predialysis diastolic blood pressure was also well controlled in CAPD patients in 2007 with 84% of CAPD patients have predialysis diastolic BP < 90 mmHg (Table 9.1.4). The mean and median of predialysis diastolic blood pressure in CAPD patients in 2007 were 80.6 mmHg and 80.7 mmHg respectively. These results compared favorably to data obtained 10 years ago when the mean and median predialysis diastolic blood pressure in CAPD patients were 84.3 mmHg and 85 mmHg respectively (in 1998).

**Table 9.1.4:** Distribution of Pre dialysis Diastolic Blood Pressure, CAPD patients 1998-2007

| Year | No of subjects | mean | SD   | Median | LQ   | UQ   | % patients <70 mmHg | % patients 70-<80 mmHg | % patients 80-<90 mmHg | % patients 90-<100 mmHg | % patients ≥100 mmHg |
|------|----------------|------|------|--------|------|------|---------------------|------------------------|------------------------|-------------------------|----------------------|
| 1998 | 519            | 84.3 | 11.3 | 85     | 77.1 | 90.1 | 8                   | 24                     | 36                     | 24                      | 8                    |
| 1999 | 576            | 84   | 10.9 | 84.2   | 77.9 | 90   | 9                   | 20                     | 44                     | 20                      | 7                    |
| 2000 | 638            | 82.9 | 11   | 83.3   | 76.6 | 89.6 | 10                  | 24                     | 41                     | 20                      | 5                    |
| 2001 | 739            | 83.1 | 10.9 | 82.7   | 76.4 | 89.6 | 9                   | 29                     | 38                     | 18                      | 6                    |
| 2002 | 843            | 82.8 | 10.8 | 83.4   | 76.1 | 90   | 11                  | 24                     | 41                     | 21                      | 5                    |
| 2003 | 1156           | 82.2 | 10.9 | 82.3   | 75.6 | 89.4 | 12                  | 26                     | 38                     | 19                      | 4                    |
| 2004 | 1258           | 82.2 | 10.5 | 83     | 75.4 | 89.2 | 11                  | 28                     | 38                     | 18                      | 4                    |
| 2005 | 1351           | 81.6 | 10.9 | 82.2   | 75   | 88.3 | 12                  | 29                     | 40                     | 15                      | 5                    |
| 2006 | 1522           | 81.3 | 10.6 | 81.5   | 74.8 | 88   | 13                  | 28                     | 40                     | 15                      | 3                    |
| 2007 | 1752           | 80.6 | 10.7 | 80.7   | 74   | 86.9 | 14                  | 32                     | 38                     | 12                      | 3                    |

**Figure 9.1.4:** Cumulative distribution of Pre dialysis Diastolic Blood Pressure, CAPD patients 1998-2007

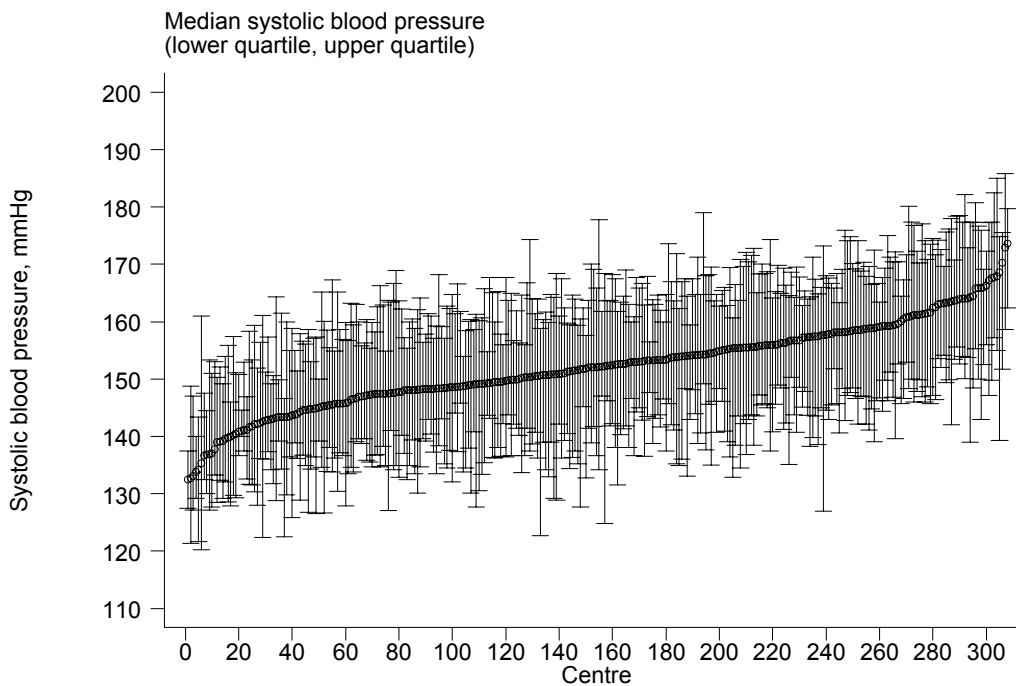


The mild variation in median systolic blood pressure among haemodialysis centres in 2007 was similar to previous years (Table 9.1.5 (a)).

**Table 9.1.5:** Variation in BP control among HD centers 2007  
(a) Median Systolic blood pressure among HD patients, HD centres

| Year | No. of centres | Min   | 5th Centile | LQ    | Median | UQ    | 95th Centile | Max   |
|------|----------------|-------|-------------|-------|--------|-------|--------------|-------|
| 1998 | 48             | 131.8 | 135         | 141.5 | 146.3  | 150.9 | 158.2        | 159.9 |
| 1999 | 74             | 134.2 | 135.8       | 144   | 148.5  | 154.5 | 163.4        | 167.3 |
| 2000 | 107            | 130.6 | 136.6       | 142.5 | 148    | 155.1 | 163.2        | 181   |
| 2001 | 124            | 127.5 | 135.4       | 143.3 | 149.3  | 155   | 161.9        | 180.5 |
| 2002 | 152            | 126.7 | 137.1       | 144.2 | 149.2  | 154.6 | 162.5        | 174.3 |
| 2003 | 176            | 126.7 | 135.8       | 144.9 | 150.6  | 155.2 | 161.8        | 173.7 |
| 2004 | 207            | 120   | 137.7       | 145.2 | 150    | 155   | 162.4        | 168.1 |
| 2005 | 236            | 119.6 | 136.7       | 144.1 | 150.1  | 155.4 | 161.3        | 171.8 |
| 2006 | 290            | 125.3 | 137.5       | 146.4 | 150.8  | 156.6 | 163.6        | 179   |
| 2007 | 308            | 132.5 | 139.8       | 147.5 | 152    | 157.2 | 164.1        | 173.7 |

**Figure 9.1.5(a):** Variation in median systolic blood pressure among HD patients, HD centers 2007

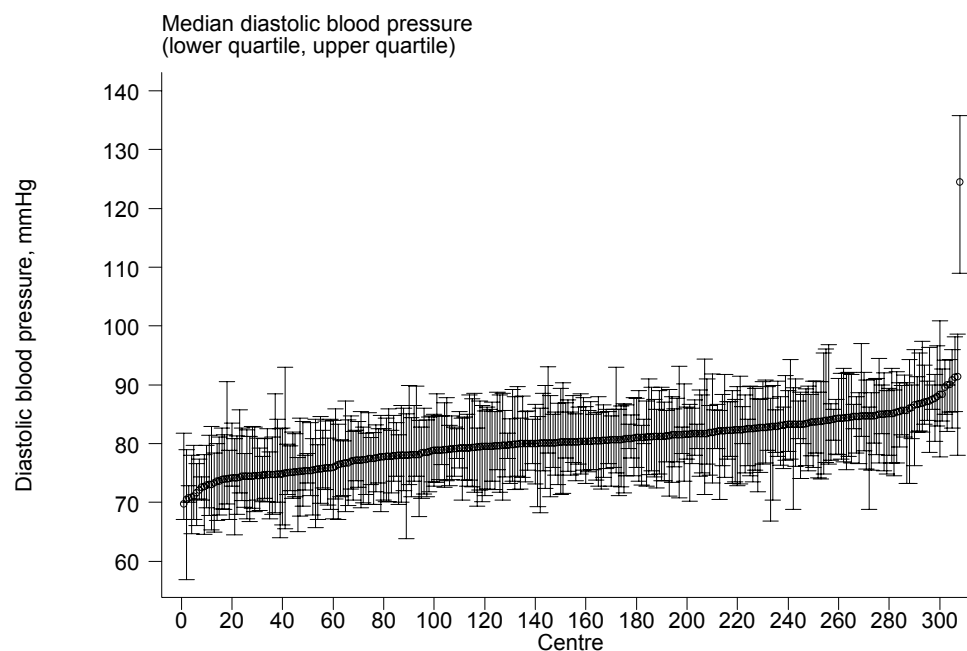


The mild variation in median diastolic blood pressure among haemodialysis centers was also similar to previous years (Table 9.1.5 (b)).

**Table 9.1.5(b):** Median Diastolic blood pressure among HD patients, HD centres

| Year | No of centers | Min  | 5th centile | LQ   | Median | UQ   | 95th centile | Max   |
|------|---------------|------|-------------|------|--------|------|--------------|-------|
| 1998 | 48            | 77.1 | 78.6        | 81.9 | 83.8   | 85.9 | 88.5         | 90    |
| 1999 | 74            | 70.9 | 77.3        | 81.7 | 83.6   | 85.9 | 89.2         | 91.8  |
| 2000 | 107           | 75.2 | 76.8        | 80   | 82.3   | 85   | 90           | 96    |
| 2001 | 124           | 73.9 | 75.9        | 79.8 | 82     | 84   | 87.5         | 91.3  |
| 2002 | 152           | 72.3 | 75.8        | 79.5 | 81.3   | 83.6 | 87.5         | 102   |
| 2003 | 176           | 73.3 | 75          | 78.4 | 80.9   | 83.6 | 87           | 97.5  |
| 2004 | 207           | 70.4 | 74          | 78.2 | 80.8   | 82.7 | 86.5         | 89.2  |
| 2005 | 236           | 69.7 | 73.1        | 77.9 | 80.5   | 82.8 | 87.1         | 90.6  |
| 2006 | 290           | 67.3 | 74.4        | 78   | 80.6   | 83   | 87.3         | 113.5 |
| 2007 | 308           | 69.8 | 73.9        | 77.6 | 80.3   | 82.8 | 86.8         | 124.5 |

**Figure 9.1.5(b):** Variation in median diastolic blood pressure among HD patients, HD centers 2007

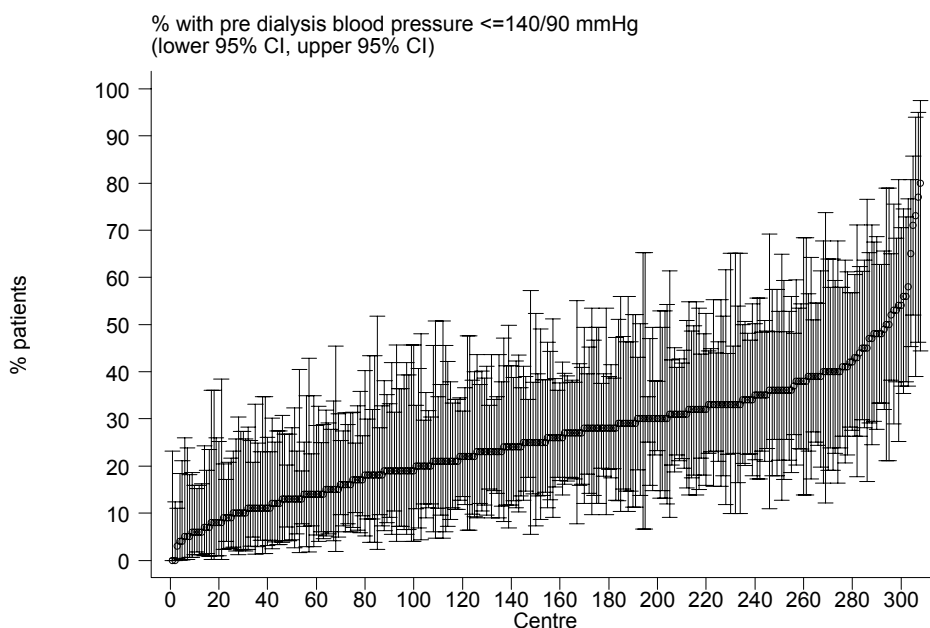


Reflecting the relatively poorer control of predialysis systolic blood pressure in haemodialysis patients, the median of haemodialysis patients predialysis BP < 140/90 mmHg was only 25.5% in 2007 (Table 9.1.5 (c)). This median is lower than the median in 1998 (35%) indicating poorer overall blood pressure control in haemodialysis centres in recent years.

**Table 9.1.5(c):** Proportion of HD patients with Pre dialysis Blood Pressure < 140/90 mmHg, HD centres

| Year | No of centers | Min | 5th centile | LQ   | Median | UQ   | 95th centile | Max |
|------|---------------|-----|-------------|------|--------|------|--------------|-----|
| 1998 | 48            | 9   | 20          | 27   | 35     | 41.5 | 54           | 72  |
| 1999 | 74            | 4   | 11          | 23   | 32     | 41   | 56           | 67  |
| 2000 | 107           | 0   | 12          | 22   | 32     | 43   | 63           | 83  |
| 2001 | 124           | 0   | 11          | 20.5 | 30     | 43   | 61           | 69  |
| 2002 | 152           | 0   | 10          | 21   | 29     | 39.5 | 56           | 71  |
| 2003 | 176           | 4   | 8           | 20   | 28     | 39.5 | 60           | 80  |
| 2004 | 207           | 0   | 10          | 21   | 29     | 38   | 56           | 90  |
| 2005 | 236           | 4   | 10          | 21   | 27     | 39   | 57           | 89  |
| 2006 | 290           | 0   | 8           | 17   | 25     | 35   | 54           | 70  |
| 2007 | 308           | 0   | 7           | 17   | 25.5   | 33   | 49           | 80  |

**Figure 9.1.5(c):** Variation in proportion of HD patients with pre dialysis blood pressure < 140/90 mmHg, HD centers 2007



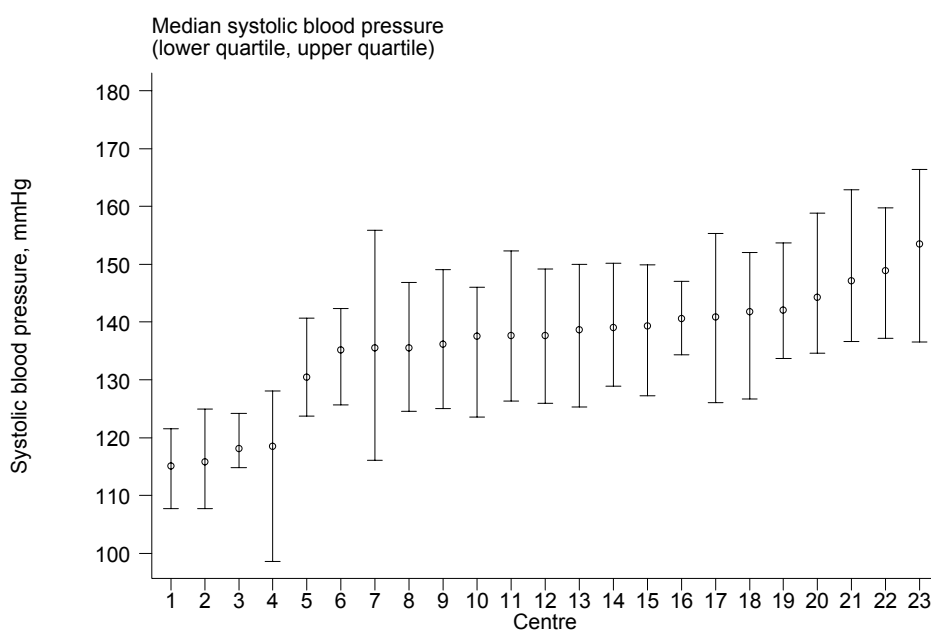


Similar to haemodialysis centers, the variation in median predialysis systolic blood pressure in 2007 was mild and similar to previous years in CAPD centers (Table 9.1.6 (a)).

**Table 9.1.6:** Variation in BP control among CAPD centers 2007  
(a) Median Systolic blood pressure among CAPD patients

| Year | No of centers | Min   | 5th centile | LQ    | Median | UQ    | 95th centile | Max   |
|------|---------------|-------|-------------|-------|--------|-------|--------------|-------|
| 1998 | 9             | 110.3 | 110.3       | 135   | 138.6  | 140.8 | 147.5        | 147.5 |
| 1999 | 9             | 116.7 | 116.7       | 132.5 | 137.8  | 140   | 152.8        | 152.8 |
| 2000 | 11            | 115.5 | 115.5       | 131.3 | 134.9  | 137.7 | 149.1        | 149.1 |
| 2001 | 11            | 119.3 | 119.3       | 130.7 | 137.5  | 138.8 | 149          | 149   |
| 2002 | 15            | 124.1 | 124.1       | 134.5 | 140    | 144.5 | 148.2        | 148.2 |
| 2003 | 19            | 124.5 | 124.5       | 131.9 | 142    | 144.3 | 151.8        | 151.8 |
| 2004 | 19            | 117.3 | 117.3       | 131.7 | 139    | 144.3 | 149.7        | 149.7 |
| 2005 | 20            | 116.9 | 119.7       | 134   | 136.7  | 140   | 152.8        | 158   |
| 2006 | 22            | 113.3 | 118.3       | 131.3 | 136.4  | 140.4 | 146          | 154.9 |
| 2007 | 23            | 115.1 | 115.8       | 135.2 | 137.7  | 141.8 | 148.9        | 153.5 |

**Figure 9.1.6(a):** Variation in median systolic blood pressure among CAPD patients, CAPD centers 2007

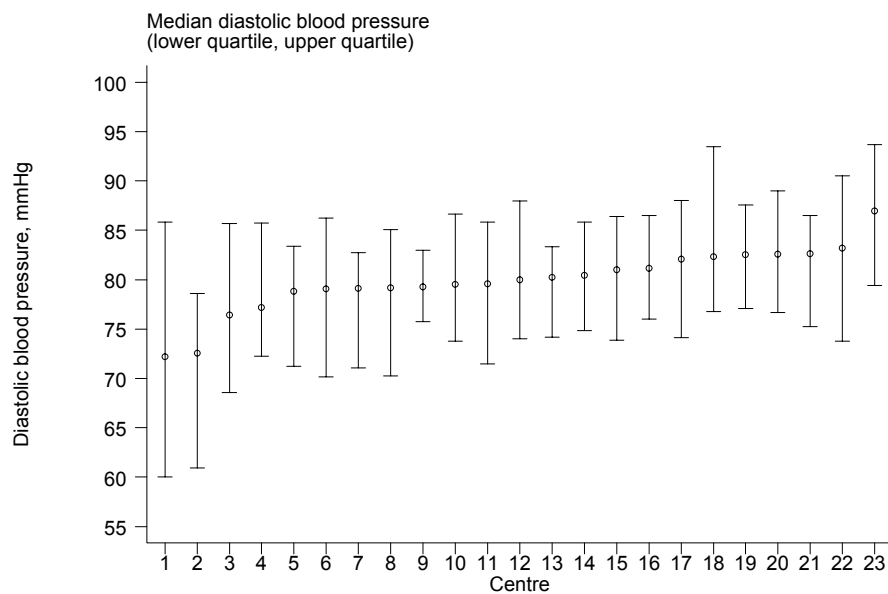


The variation in median predialysis diastolic blood pressure in CAPD centres was also mild and very similar to previous years (Table 9.1.6 (b)).

**Table 9.1.6(b):** Median Diastolic blood pressure among CAPD patients, CAPD centres

| Year | No of centers | Min  | 5th centile | LQ   | Median | UQ   | 95th centile | Max  |
|------|---------------|------|-------------|------|--------|------|--------------|------|
| 1998 | 9             | 75   | 75          | 85.2 | 85.8   | 86   | 87           | 87   |
| 1999 | 9             | 77.5 | 77.5        | 84.1 | 84.3   | 85   | 86.7         | 86.7 |
| 2000 | 11            | 73.3 | 73.3        | 80   | 83     | 84.4 | 88           | 88   |
| 2001 | 11            | 78.7 | 78.7        | 80.9 | 83.4   | 84.7 | 88           | 88   |
| 2002 | 15            | 78.4 | 78.4        | 81.7 | 83.3   | 85.7 | 89.5         | 89.5 |
| 2003 | 19            | 77.2 | 77.2        | 80.8 | 82.8   | 84.4 | 88           | 88   |
| 2004 | 19            | 76.6 | 76.6        | 80.5 | 83.2   | 84.2 | 87.5         | 87.5 |
| 2005 | 20            | 74.4 | 75.5        | 80.3 | 82.5   | 84   | 86.1         | 86.3 |
| 2006 | 22            | 71.6 | 73.2        | 80.7 | 81.6   | 82.5 | 86.5         | 88.4 |
| 2007 | 23            | 72.2 | 72.5        | 79.1 | 80     | 82.3 | 83.2         | 87   |

**Figure 9.1.6(b):** Variation in median diastolic blood pressure among CAPD patients, CAPD centers 2007

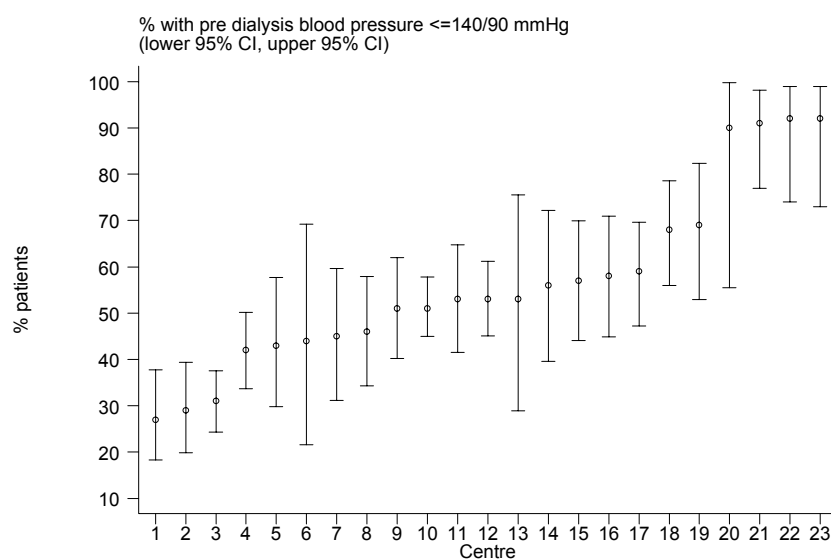


In contrast to haemodialysis centres, CAPD centres in 2007 has better overall blood pressure, with a median of 53% of CAPD centres having BP < 140/90 mmHg in their patients (Table 9.1.6 (c)). This better level of overall blood pressure control in CAPD patients has been stable over the past few years.

**Table 9.1.6(c):** Proportion of CAPD patients with Pre dialysis Blood Pressure <140/90 mmHg, CAPD centres

| Year | No of centers | Min | 5th centile | LQ   | Median | UQ | 95th centile | Max |
|------|---------------|-----|-------------|------|--------|----|--------------|-----|
| 1998 | 9             | 36  | 36          | 44   | 47     | 49 | 100          | 100 |
| 1999 | 9             | 30  | 30          | 41   | 52     | 60 | 100          | 100 |
| 2000 | 11            | 24  | 24          | 53   | 58     | 63 | 91           | 91  |
| 2001 | 11            | 36  | 36          | 48   | 52     | 63 | 83           | 83  |
| 2002 | 15            | 19  | 19          | 33   | 47     | 56 | 90           | 90  |
| 2003 | 19            | 28  | 28          | 39   | 48     | 66 | 90           | 90  |
| 2004 | 19            | 29  | 29          | 38   | 49     | 60 | 80           | 80  |
| 2005 | 20            | 23  | 26          | 45.5 | 55     | 61 | 96.5         | 100 |
| 2006 | 22            | 18  | 36          | 43   | 58     | 68 | 100          | 100 |
| 2007 | 23            | 27  | 29          | 44   | 53     | 68 | 92           | 92  |

**Figure 9.1.6(c):** Variation in proportion of CAPD patients with pre dialysis blood pressure < 140/90 mmHg, CAPD centers 2006



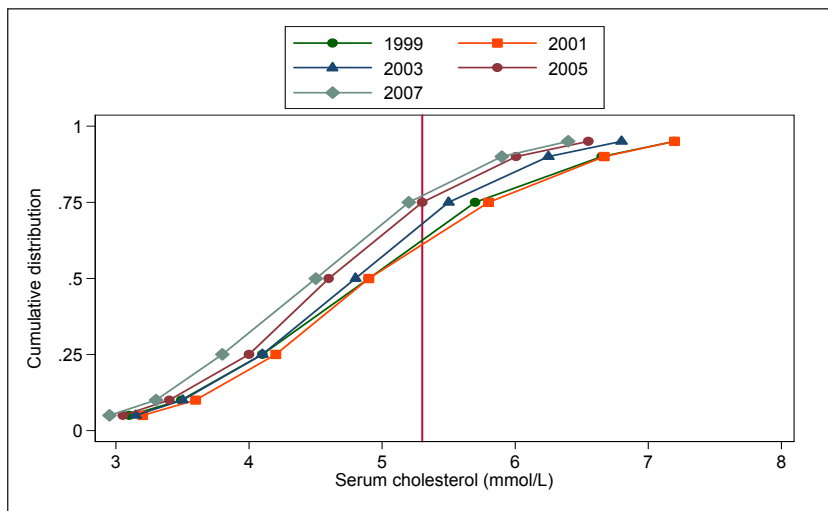
**SECTION 9.2: DYSLIPIDEMIA IN DIALYSIS PATIENTS**

The recent last few years trend of improving total cholesterol levels in haemodialysis patients continued in 2007, with 77% of haemodialysis patients achieving total cholesterol < 5.3 mmol/l (Table 9.2.1).

**Table 9.2.1:** Distribution of serum Cholesterol, HD patients 1998-2007

| Year | No of subjects | Mean | SD  | Median | LQ  | UQ  | % patients <3.5 mmol/L | % patients 3.5-<5.3 mmol/L | % patients 5.3-<6.2 mmol/L | % patients ≥ 6.2 mmol/L |
|------|----------------|------|-----|--------|-----|-----|------------------------|----------------------------|----------------------------|-------------------------|
| 1998 | 1166           | 5.1  | 1.3 | 5      | 4.2 | 5.8 | 7                      | 53                         | 22                         | 17                      |
| 1999 | 1871           | 5    | 1.3 | 4.9    | 4.1 | 5.7 | 10                     | 54                         | 20                         | 15                      |
| 2000 | 2956           | 5    | 1.2 | 4.9    | 4.2 | 5.8 | 8                      | 53                         | 23                         | 16                      |
| 2001 | 3898           | 5.1  | 1.3 | 4.9    | 4.2 | 5.8 | 8                      | 52                         | 24                         | 16                      |
| 2002 | 4751           | 5    | 1.2 | 4.9    | 4.2 | 5.7 | 9                      | 55                         | 24                         | 13                      |
| 2003 | 5805           | 4.8  | 1.1 | 4.8    | 4.1 | 5.5 | 9                      | 59                         | 21                         | 11                      |
| 2004 | 6709           | 4.7  | 1.1 | 4.7    | 4   | 5.4 | 11                     | 60                         | 21                         | 8                       |
| 2005 | 7906           | 4.7  | 1.1 | 4.6    | 4   | 5.3 | 12                     | 61                         | 19                         | 8                       |
| 2006 | 10139          | 4.6  | 1.1 | 4.6    | 3.9 | 5.3 | 14                     | 62                         | 17                         | 7                       |
| 2007 | 11331          | 4.6  | 1.1 | 4.5    | 3.8 | 5.2 | 14                     | 63                         | 17                         | 6                       |

**Figure 9.2.1:** Cumulative distribution of Cholesterol, HD patients 1998-2007

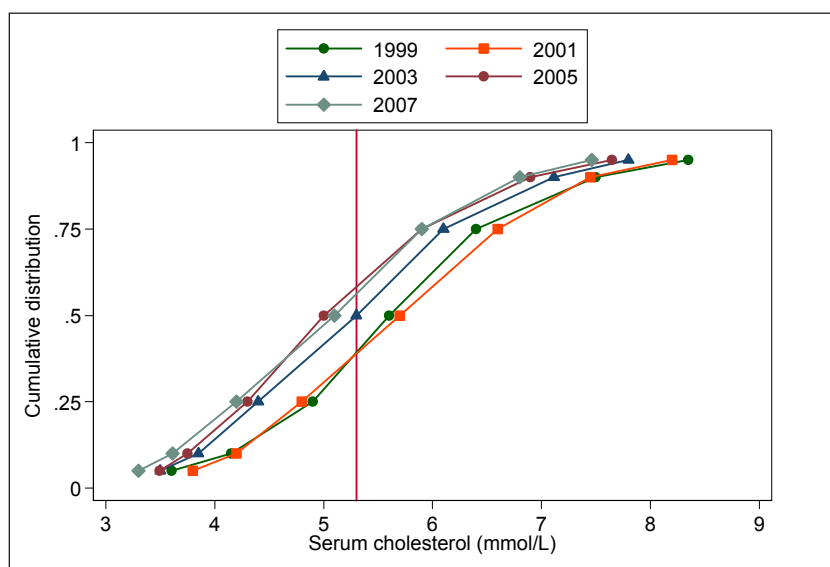


As in previous years, total cholesterol levels in CAPD patients was less optimally controlled in comparison with HD patients in 2007, with 58% of CAPD patients achieving total cholesterol < 5.3 mmol/l (Table 9.2.2).

**Table 9.2.2:** Distribution of serum Cholesterol, CAPD patients 1998-2007

| Year | No of subjects | Mean | SD  | Median | LQ  | UQ  | % patients <3.5 mmol/L | % patients 3.5-<5.3 mmol/L | % patients 5.3-<6.2 mmol/L | % patients ≥ 6.2 mmol/L |
|------|----------------|------|-----|--------|-----|-----|------------------------|----------------------------|----------------------------|-------------------------|
| 1998 | 348            | 6    | 1.4 | 5.9    | 5   | 6.8 | 3                      | 29                         | 28                         | 41                      |
| 1999 | 434            | 5.7  | 1.4 | 5.6    | 4.9 | 6.4 | 3                      | 37                         | 30                         | 31                      |
| 2000 | 526            | 5.9  | 1.6 | 5.7    | 4.9 | 6.7 | 3                      | 31                         | 30                         | 36                      |
| 2001 | 581            | 5.8  | 1.4 | 5.7    | 4.8 | 6.6 | 2                      | 36                         | 27                         | 35                      |
| 2002 | 766            | 5.6  | 1.4 | 5.5    | 4.6 | 6.4 | 4                      | 38                         | 28                         | 29                      |
| 2003 | 1104           | 5.4  | 1.4 | 5.3    | 4.4 | 6.1 | 5                      | 45                         | 27                         | 23                      |
| 2004 | 1230           | 5.3  | 1.4 | 5.2    | 4.4 | 6.1 | 5                      | 48                         | 26                         | 21                      |
| 2005 | 1242           | 5.2  | 1.3 | 5      | 4.3 | 5.9 | 5                      | 55                         | 22                         | 18                      |
| 2006 | 1395           | 5.2  | 1.4 | 5.1    | 4.3 | 5.9 | 6                      | 51                         | 25                         | 18                      |
| 2007 | 1629           | 5.1  | 1.3 | 5.1    | 4.2 | 5.9 | 8                      | 50                         | 24                         | 18                      |

**Figure 9.2.2:** Cumulative distribution of Cholesterol (mmol/L), CAPD patients 1998-2007

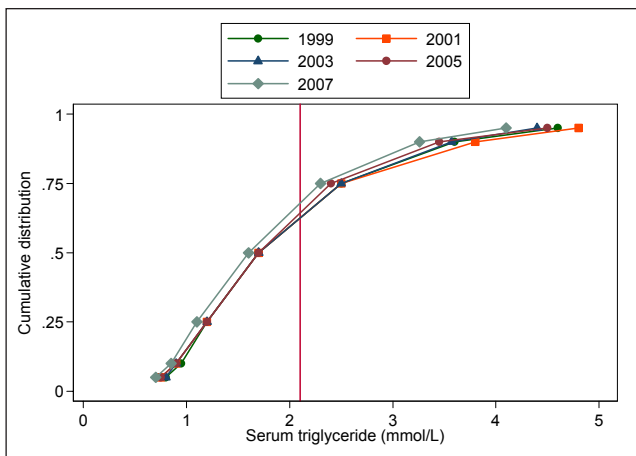


In 2007, serum triglyceride control was better in HD patients than CAPD patients with 77% of HD patients achieving serum triglyceride levels < 2.3 mmol/l (Table 9.2.3) compared to 69% of CAPD patients achieving serum triglyceride level < 2.3 mmol/l (Table 9.2.4). this trend of better control of triglyceride levels in HD patients has been consistent over the past few years.

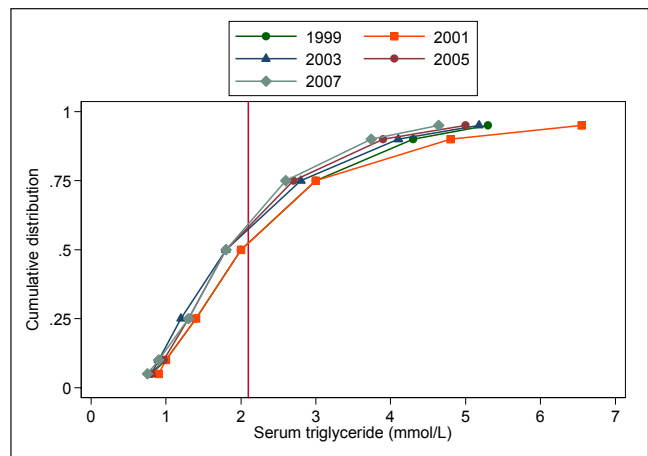
**Table 9.2.3:** Distribution of serum Triglyceride, HD patients 1998-2007

| Year | No of subjects | Mean | SD  | Median | LQ  | UQ  | % patients <1.7 mmol/L | % patients 1.7-<2.3 mmol/L | % patients 2.3-<3.5 mmol/L | % patients ≥ 3.5 mmol/L |
|------|----------------|------|-----|--------|-----|-----|------------------------|----------------------------|----------------------------|-------------------------|
| 1998 | 1089           | 2.2  | 1.5 | 1.8    | 1.3 | 2.6 | 42                     | 26                         | 20                         | 12                      |
| 1999 | 1633           | 2.1  | 1.3 | 1.7    | 1.2 | 2.5 | 49                     | 21                         | 18                         | 11                      |
| 2000 | 2393           | 2.1  | 1.4 | 1.7    | 1.3 | 2.6 | 48                     | 22                         | 19                         | 12                      |
| 2001 | 3162           | 2.1  | 1.4 | 1.7    | 1.2 | 2.5 | 48                     | 22                         | 17                         | 13                      |
| 2002 | 3861           | 2.1  | 1.4 | 1.8    | 1.2 | 2.5 | 47                     | 22                         | 18                         | 12                      |
| 2003 | 4709           | 2    | 1.3 | 1.7    | 1.2 | 2.5 | 48                     | 23                         | 18                         | 11                      |
| 2004 | 5606           | 2    | 1.2 | 1.7    | 1.2 | 2.4 | 51                     | 23                         | 17                         | 10                      |
| 2005 | 6950           | 2    | 1.3 | 1.7    | 1.2 | 2.4 | 50                     | 22                         | 18                         | 10                      |
| 2006 | 9522           | 2    | 1.3 | 1.6    | 1.2 | 2.3 | 54                     | 21                         | 16                         | 9                       |
| 2007 | 10866          | 1.9  | 1.2 | 1.6    | 1.1 | 2.3 | 55                     | 21                         | 16                         | 8                       |

**Figure 9.2.3:** Cumulative distribution of serum triglyceride, HD patients 1998-2007



**Figure 9.2.4:** Cumulative distribution of serum triglyceride, CAPD patients 1998-2007



**Table 9.2.4:** Distribution of serum triglyceride, CAPD patients 1998-2007

| Year | No of subjects | Mean | SD  | Median | LQ  | UQ  | % patients <1.7 mmol/L | % patients 1.7-<2.3 mmol/L | % patients 2.3-<3.5 mmol/L | % patients ≥ 3.5 mmol/L |
|------|----------------|------|-----|--------|-----|-----|------------------------|----------------------------|----------------------------|-------------------------|
| 1998 | 344            | 2.4  | 1.8 | 1.8    | 1.3 | 3   | 42                     | 22                         | 17                         | 19                      |
| 1999 | 421            | 2.4  | 1.6 | 2      | 1.4 | 3   | 38                     | 25                         | 18                         | 19                      |
| 2000 | 520            | 2.7  | 2.2 | 2.1    | 1.5 | 3   | 33                     | 24                         | 23                         | 21                      |
| 2001 | 576            | 2.6  | 1.8 | 2      | 1.4 | 3   | 36                     | 22                         | 22                         | 20                      |
| 2002 | 767            | 2.5  | 1.7 | 2      | 1.4 | 3   | 39                     | 21                         | 22                         | 18                      |
| 2003 | 1100           | 2.3  | 1.6 | 1.8    | 1.2 | 2.8 | 45                     | 20                         | 21                         | 14                      |
| 2004 | 1223           | 2.2  | 1.6 | 1.8    | 1.3 | 2.6 | 47                     | 23                         | 17                         | 13                      |
| 2005 | 1241           | 2.2  | 1.5 | 1.8    | 1.3 | 2.7 | 43                     | 24                         | 18                         | 14                      |
| 2006 | 1391           | 2.2  | 1.6 | 1.7    | 1.2 | 2.6 | 47                     | 21                         | 18                         | 13                      |
| 2007 | 1625           | 2.1  | 1.4 | 1.8    | 1.3 | 2.6 | 45                     | 24                         | 19                         | 12                      |

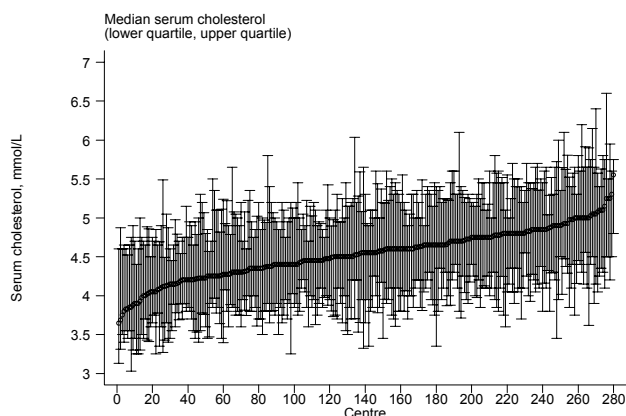
The median variation in median serum cholesterol levels and median serum triglyceride levels among HD centers were similar to previous years (Table 9.2.5 (a) and (c)). It is noted that the median of the proportion of patients with serum cholesterol level < 5.3 mmol/l in HD centers has gradually increased from 63% in 1998 to 77% in 2006 (Table 9.2.5 (b)). In addition, the median of the proportion of patients with serum triglyceride level < 2.1 mmol/l in HD centers has also gradually increased from 65% in 1998 to 71% in 2007 (Table 9.2.5 (d)).

**Table 9.2.5:** Variation in dyslipidaemia among HD centers 2007

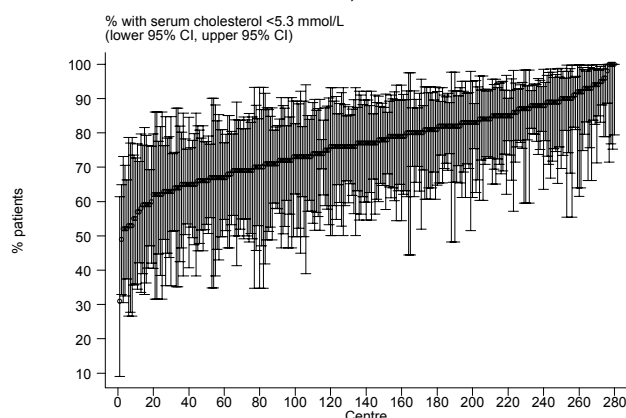
**(a)** Median serum cholesterol level among HD patients

| Year | No. of centres | Min | 5th Centile | LQ  | Median | UQ  | 95th Centile | Max |
|------|----------------|-----|-------------|-----|--------|-----|--------------|-----|
| 1998 | 31             | 4.2 | 4.4         | 4.7 | 5      | 5.3 | 5.5          | 5.5 |
| 1999 | 47             | 3.5 | 4.2         | 4.6 | 4.8    | 5.1 | 5.6          | 5.7 |
| 2000 | 76             | 4.1 | 4.3         | 4.7 | 4.9    | 5.2 | 5.6          | 5.9 |
| 2001 | 95             | 4.1 | 4.4         | 4.7 | 5      | 5.2 | 5.6          | 6.3 |
| 2002 | 121            | 4.3 | 4.6         | 4.7 | 4.9    | 5.1 | 5.4          | 6   |
| 2003 | 152            | 4.1 | 4.3         | 4.6 | 4.8    | 5   | 5.3          | 5.6 |
| 2004 | 182            | 3.7 | 4.1         | 4.5 | 4.7    | 4.9 | 5.3          | 6.2 |
| 2005 | 210            | 3.8 | 4.1         | 4.4 | 4.6    | 4.8 | 5.2          | 5.7 |
| 2006 | 264            | 3.4 | 3.9         | 4.3 | 4.6    | 4.8 | 5.2          | 5.7 |
| 2007 | 280            | 3.6 | 4           | 4.3 | 4.6    | 4.8 | 5            | 5.6 |

**Figure 9.2.5(a):** Variation in median serum cholesterol level among HD patients, HD centers 2007



**Figure 9.2.5(b):** Variation in proportion of patients with serum cholesterol < 5.3 mmol/L, HD centers 2007



**(b)** Proportion of patients with serum cholesterol < 5.3 mmol/L

| Year | No. of centres | Min | 5th Centile | LQ   | Median | UQ   | 95th Centile | Max |
|------|----------------|-----|-------------|------|--------|------|--------------|-----|
| 1998 | 31             | 30  | 30          | 51   | 63     | 72   | 90           | 100 |
| 1999 | 47             | 38  | 38          | 58   | 64     | 78   | 86           | 89  |
| 2000 | 76             | 27  | 36          | 51.5 | 61     | 68   | 86           | 94  |
| 2001 | 95             | 14  | 36          | 53   | 60     | 68   | 79           | 85  |
| 2002 | 121            | 28  | 45          | 57   | 64     | 71   | 79           | 93  |
| 2003 | 152            | 36  | 50          | 59   | 67.5   | 76   | 83           | 92  |
| 2004 | 182            | 31  | 50          | 62   | 70     | 79   | 90           | 94  |
| 2005 | 210            | 25  | 53          | 66   | 74     | 81   | 91           | 94  |
| 2006 | 264            | 40  | 53          | 69   | 75     | 83   | 93           | 100 |
| 2007 | 280            | 31  | 59          | 69   | 77     | 84.5 | 93           | 100 |

(c) Median serum triglyceride level among HD patients

| Year | No. of centres | Min | 5th Centile | LQ  | Median | UQ  | 95th Centile | Max |
|------|----------------|-----|-------------|-----|--------|-----|--------------|-----|
| 1998 | 29             | 1.4 | 1.5         | 1.6 | 1.8    | 2   | 2.1          | 2.3 |
| 1999 | 41             | 1.2 | 1.4         | 1.5 | 1.7    | 1.9 | 2.2          | 2.5 |
| 2000 | 59             | 1.2 | 1.4         | 1.5 | 1.8    | 2   | 2.6          | 3   |
| 2001 | 81             | 1.1 | 1.3         | 1.5 | 1.7    | 1.9 | 2.3          | 2.5 |
| 2002 | 98             | 1.1 | 1.4         | 1.6 | 1.8    | 2   | 2.5          | 3.2 |
| 2003 | 130            | 1.2 | 1.3         | 1.5 | 1.7    | 1.9 | 2.2          | 2.5 |
| 2004 | 158            | 1   | 1.3         | 1.5 | 1.7    | 1.8 | 2.3          | 2.8 |
| 2005 | 191            | 0.8 | 1.3         | 1.5 | 1.7    | 1.9 | 2.2          | 2.6 |
| 2006 | 252            | 0.9 | 1.2         | 1.5 | 1.6    | 1.8 | 2.2          | 4.5 |
| 2007 | 267            | 0.8 | 1.2         | 1.4 | 1.6    | 1.8 | 2.2          | 2.6 |

Figure 9.2.5(c): Variation in median serum triglyceride level among HD patients, HD centers 2007

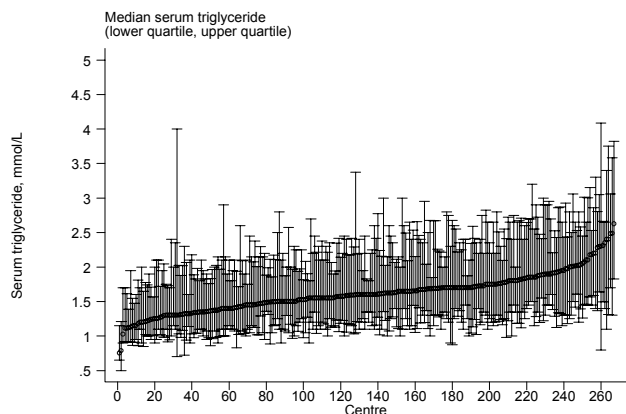
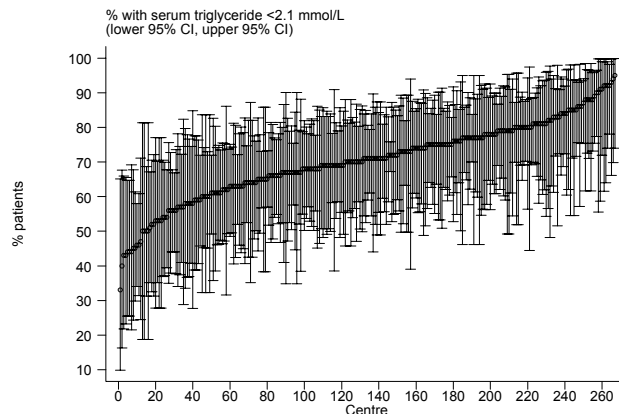


Figure 9.2.5(d): Variation in proportion of patients with serum triglyceride < 2.1 mmol/L, HD centers 2007



(d) Proportion of patients with serum triglyceride < 2.1 mmol/L

| Year | No. of centres | Min | 5th Centile | LQ   | Median | UQ | 95th Centile | Max |
|------|----------------|-----|-------------|------|--------|----|--------------|-----|
| 1998 | 29             | 44  | 50          | 58   | 63     | 70 | 82           | 83  |
| 1999 | 41             | 36  | 47          | 59   | 67     | 73 | 88           | 92  |
| 2000 | 59             | 23  | 27          | 56   | 65     | 73 | 83           | 86  |
| 2001 | 81             | 38  | 45          | 57   | 65     | 76 | 85           | 90  |
| 2002 | 98             | 0   | 43          | 54   | 64.5   | 72 | 80           | 94  |
| 2003 | 130            | 27  | 43          | 57   | 67     | 75 | 90           | 100 |
| 2004 | 158            | 21  | 47          | 60   | 69     | 78 | 85           | 94  |
| 2005 | 191            | 33  | 44          | 59   | 67     | 73 | 83           | 100 |
| 2006 | 252            | 0   | 49          | 63.5 | 70     | 76 | 90           | 100 |
| 2007 | 267            | 33  | 50          | 63   | 71     | 78 | 88           | 95  |



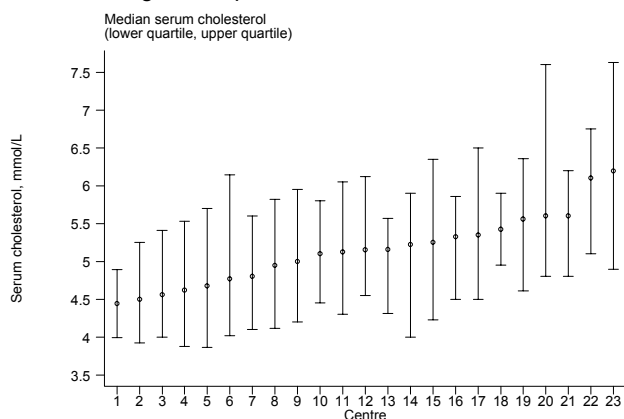
In 2007 the variation in median serum cholesterol levels and median serum triglyceride levels among CAPD centers were similar to previous years (Table 9.2.6 (a) and (c)). It is noted that the median of the proportion of patients with cholesterol level < 5.3 mmol/l in CAPD centers has gradually increased from 32% in 1998 to 54% in 2007 (Table 9.2.6 (b)). The median of the proportion of patients with serum triglyceride level < 2.1 mmol/l in CAPD centers has only increased slightly from 61% in 1998 to 64% in 2007 (Table 9.2.6 (d)).

**Table 9.2.6:** Variation in dyslipidaemia among CAPD centers 2007

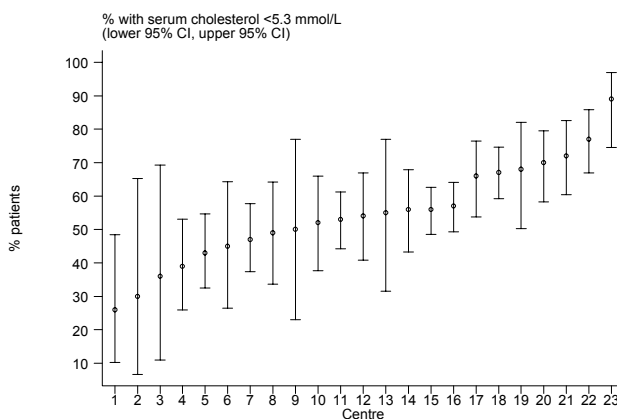
**(a) Median serum cholesterol level among CAPD patients**

| Year | No. of centres | Min | 5th Centile | LQ  | Median | UQ  | 95th Centile | Max |
|------|----------------|-----|-------------|-----|--------|-----|--------------|-----|
| 1998 | 6              | 4.8 | 4.8         | 5.6 | 5.8    | 6.1 | 6.2          | 6.2 |
| 1999 | 8              | 5.1 | 5.1         | 5.4 | 5.7    | 5.8 | 6            | 6   |
| 2000 | 10             | 5.2 | 5.2         | 5.4 | 5.6    | 5.9 | 6.4          | 6.4 |
| 2001 | 10             | 5   | 5           | 5.6 | 5.9    | 6.1 | 6.2          | 6.2 |
| 2002 | 15             | 4.9 | 4.9         | 5.4 | 5.5    | 5.7 | 6.2          | 6.2 |
| 2003 | 18             | 4.5 | 4.5         | 5   | 5.3    | 5.7 | 5.9          | 5.9 |
| 2004 | 19             | 4.6 | 4.6         | 4.9 | 5.3    | 5.5 | 6.2          | 6.2 |
| 2005 | 19             | 4.4 | 4.4         | 4.7 | 5      | 5.4 | 5.9          | 5.9 |
| 2006 | 21             | 4.4 | 4.6         | 4.8 | 5.1    | 5.4 | 6.1          | 6.2 |
| 2007 | 23             | 4.4 | 4.5         | 4.8 | 5.2    | 5.4 | 6.1          | 6.2 |

**Figure 9.2.6(a):** Variation in median serum cholesterol level among CAPD patients, CAPD centers 2007



**Figure 9.2.6(b):** Variation in proportion of patients with serum cholesterol < 5.3 mmol/L, CAPD centers 2007



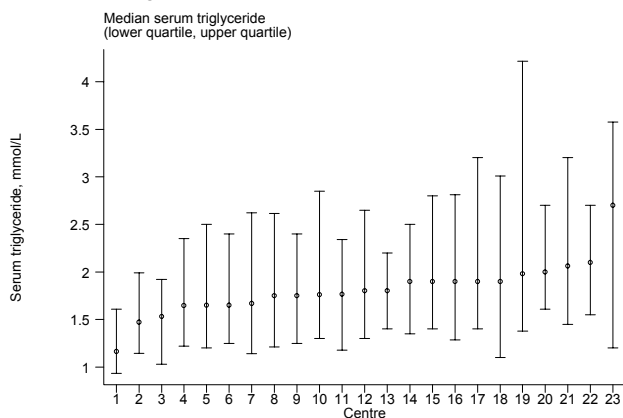
**(b) Proportion of patients with serum cholesterol < 5.3 mmol/L**

| Year | No. of centres | Min | 5th Centile | LQ   | Median | UQ | 95th Centile | Max |
|------|----------------|-----|-------------|------|--------|----|--------------|-----|
| 1998 | 6              | 24  | 24          | 27   | 32     | 37 | 53           | 53  |
| 1999 | 8              | 10  | 10          | 36.5 | 39.5   | 45 | 56           | 56  |
| 2000 | 10             | 11  | 11          | 18   | 31     | 46 | 54           | 54  |
| 2001 | 10             | 22  | 22          | 30   | 34.5   | 45 | 63           | 63  |
| 2002 | 15             | 19  | 19          | 33   | 42     | 45 | 80           | 80  |
| 2003 | 18             | 20  | 20          | 39   | 48.5   | 59 | 83           | 83  |
| 2004 | 19             | 10  | 10          | 40   | 49     | 60 | 71           | 71  |
| 2005 | 19             | 28  | 28          | 49   | 60     | 70 | 77           | 77  |
| 2006 | 21             | 18  | 29          | 48   | 59     | 66 | 75           | 80  |
| 2007 | 23             | 26  | 30          | 45   | 54     | 67 | 77           | 89  |

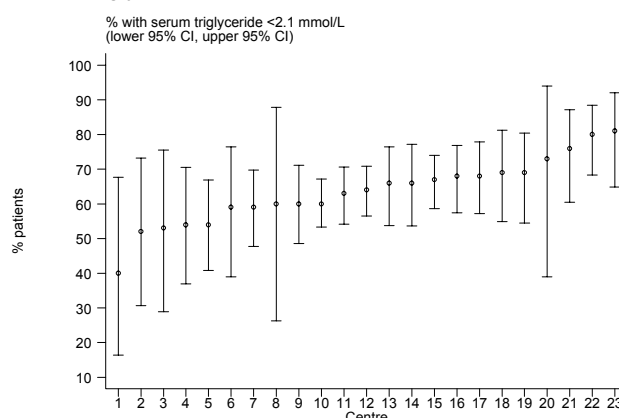
**Table 9.2.6:** Variation in dyslipidaemia among CAPD centers 2007  
**(c)** Median serum triglyceride level among CAPD patients

| Year | No. of centres | Min | 5th Centile | LQ  | Median | UQ  | 95th Centile | Max |
|------|----------------|-----|-------------|-----|--------|-----|--------------|-----|
| 1998 | 6              | 1.2 | 1.2         | 1.5 | 1.7    | 1.9 | 2.1          | 2.1 |
| 1999 | 8              | 1.6 | 1.6         | 1.9 | 2      | 2.1 | 2.6          | 2.6 |
| 2000 | 10             | 1.8 | 1.8         | 2   | 2.3    | 2.5 | 2.6          | 2.6 |
| 2001 | 10             | 1.5 | 1.5         | 1.9 | 2      | 2.1 | 3            | 3   |
| 2002 | 15             | 1.5 | 1.5         | 1.8 | 1.9    | 2   | 2.4          | 2.4 |
| 2003 | 18             | 1.2 | 1.2         | 1.7 | 1.8    | 2   | 2.3          | 2.3 |
| 2004 | 19             | 1.3 | 1.3         | 1.6 | 1.8    | 1.8 | 2.2          | 2.2 |
| 2005 | 19             | 1.3 | 1.3         | 1.6 | 1.9    | 2   | 2.2          | 2.2 |
| 2006 | 21             | 1.1 | 1.4         | 1.6 | 1.8    | 1.9 | 2            | 2.6 |
| 2007 | 23             | 1.2 | 1.5         | 1.7 | 1.8    | 1.9 | 2.1          | 2.7 |

**Figure 9.2.6(c):** Variation in median serum triglyceride level among CAPD patients, CAPD centers 2007



**Figure 9.2.6(d):** Variation in proportion of patients with serum triglyceride < 2.1 mmol/L, CAPD centers 2007



**(d)** Proportion of patients with serum triglyceride < 2.1 mmol/L

| Year | No. of centres | Min | 5th Centile | LQ   | Median | UQ   | 95th Centile | Max |
|------|----------------|-----|-------------|------|--------|------|--------------|-----|
| 1998 | 6              | 51  | 51          | 55   | 61     | 70   | 85           | 85  |
| 1999 | 8              | 37  | 37          | 53.5 | 56     | 60.5 | 64           | 64  |
| 2000 | 10             | 18  | 18          | 42   | 49     | 54   | 62           | 62  |
| 2001 | 10             | 27  | 27          | 50   | 53     | 58   | 68           | 68  |
| 2002 | 15             | 38  | 38          | 52   | 56     | 57   | 76           | 76  |
| 2003 | 18             | 48  | 48          | 55   | 59     | 62   | 92           | 92  |
| 2004 | 19             | 47  | 47          | 60   | 62     | 67   | 90           | 90  |
| 2005 | 19             | 42  | 42          | 55   | 60     | 69   | 89           | 89  |
| 2006 | 21             | 29  | 52          | 56   | 61     | 63   | 78           | 83  |
| 2007 | 23             | 40  | 52          | 59   | 64     | 69   | 80           | 81  |