Portuguese Registry of Dialysis and Transplantation 2017

Gabinete do Registo da Doença Renal Crónica
da
Sociedade Portuguesa de Nefrologia
GABINETE DE REGISTO DA SPN

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Abbreviations

- CKD – Chronic Kidney Disease
- HD - Haemodialysis
- PD - Peritoneal Dialysis
- KTr - Kidney Transplant
- PMP - Per Million Population
- RRT - Renal Replacement Therapy
- Pts – patients
- Nº - number

- VA – Vascular Access
- AVFistula – Arteriovenous fistula
- Cat. – Catheter
- CVC – Central Vein Catheter
- EDTA – European Dialysis and Transplantation Association
Brief appointment of the Portuguese Registry of Dialysis and Transplantation

- **1984**: national registry for Chronic Renal Insufficiency was created by Prof. Dr. Jacinto Simões, President of the Portuguese Society of Nephrology
- From 1984 till end of eighties the registry follows casuistic EDTA model
- From the end of eighties till 1996 permanent registry with data on incidence, prevalence, mortality and other clinical data
- **1997 to 2007**, aggregated data on incidences, prevalence and mortality with 100% of clinics and hospitals reporting
- **Since 2007**, analysis of new clinical data on several aspects of CKD 5 treatment: incidence, prevalence, analysis by sexes and country regions, median age and age groups, etiology of CKD, gross mortality rates, vascular access, virology status, etc. Hundred percent response rate
- **2010**, online registry

**Head of Registry:**
- **1984 – 1990**: Dr. João Ribeiro Santos
- **1991 – 1992**: Dr. Pedro Ponce
- **1993**: Dr. João Ribeiro Santos
- **1994 – 1996**: Dr. Francisco Remédio
- **1997 – 2007**: Dr. João Pinto dos Santos
- **2007 - ...**: Fernando Macário
Portuguese Registry of Dialysis and Transplantation 2017

- Questionnaires for Hemodialysis (HD),
  Peritoneal Dialysis (PD) and Kidney Transplantation

- 123 Hemodialysis Centers
- 25 Peritoneal Dialysis Units
- 8 adult and 1 pediatric kidney transplantation centers
- 100% response rate

Portuguese Society of Nephrology, 2017 – Fernando Macário
We're a little concerned about your potassium levels.

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http://kidneyKorner.com/AK/Comics.html

EPIDEMIOLOGY OF RRT IN PORTUGAL
New patients starting dialysis or submitted to renal transplantation during 2017 \((n=2372)\)
Patients treated by dialysis or with functioning kidney transplant

31st December 2017

Total number of pts – 20259
Prevalence - 1965,1 pmp
Número de KTx pt / NºD pt = 0,59 (0,58 in 2016)

Mean age HD + PD = 67,1 years
Incident patients accepted for RRT per million population during 2017

Portuguese Society of Nephrology, 2017 – Fernando Macário
Incident patients accepted for dialysis

HD and PD per million population 2007 - 2017

Portuguese Society of Nephrology, 2017 – Fernando Macário
Incident patients accepted for dialysis
HD and PD per million population by age group during 2017
Prevalent patients on RRT by modality

per million population 31st December 2017

1965.07

1235.84

1162.51

73.33

729.23

Portuguese Society of Nephrology, 2017 – Fernando Macário
Prevalence of CKD patients treated by dialysis per million population by age group in 2017

Global < 65 years 65 to 80 years > 80 years

- HD + DP
- HD
- DP

Portuguese Society of Nephrology, 2017 – Fernando Macário
Incident and prevalent pediatric patients on dialysis

*HD and PD per million population 2017*

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**Incidence**
- HD + PD: 5.00
- HD: 1.50
- PD: 3.50

**Prevalence**
- HD + PD: 10.50
- HD: 3.50
- PD: 7.00

Portuguese Society of Nephrology, 2017 – Fernando Macário
Patients on dialysis and annual growth
*per million population end of each year 1997 - 2017*

*Graph showing the number of patients on dialysis and the annual growth rate per million population end of each year from 1997 to 2017.*
Prevalent patients on dialysis

*per million population end of each year 1997 - 2017*
Prevalent patients on RRT

*per million population end of each year 1997 - 2017*
PD vs HD
Incident patients starting PD vs HD
1997 - 2017

Portuguese Society of Nephrology, 2017 – Fernando Macário
Prevalent patients on PD vs HD

1997 - 2017
Percentage of dialysis patients treated by PD

Incident and prevalent pts 1997 - 2017

Portuguese Society of Nephrology, 2017 – Fernando Macário
Gender distribution in each modality
31st December 2017

- HD: 7122 Men, 4822 Women
- PD: 408 Men, 308 Women
- Kidney tx: 4672 Men, 2774 Women

* 153 missing data
Prevalence by gender, all RRT

per million population 31st December 2017

Man: 2499.5
Women: 1456.4
Primary renal disease of patients accepted for dialysis

HD and PD during 2017

- Diabetes: 32.2%
- Hypertension: 15.0%
- Chronic Gln: 10.8%
- Policystic Disease: 5.4%
- Hipoplasia/Displasia: 0.6%
- Other Known: 19.4%
- Unknown: 16.5%
- Other Known: 19.4%
- Not available = 6

Portuguese Society of Nephrology, 2017 – Fernando Macário
Primary renal disease of prevalent patients

HD and PD, 31st December 2017

- Diabetes: 28.0%
- Hypertension: 13.3%
- Chronic Gln: 12.8%
- Policystic Disease: 6.2%
- Hipoplasia/Displasia: 0.7%
- Other Known: 19.9%
- Unknown: 19.1%
- Other Known: 19.9%

N = 12548
Not available = 193
I don't care what day it is.
Four hours is four hours.
New patients accepted for hemodialysis
1997 - 2017
Incident patients accepted for hemodialysis

per million population 2007 - 2017
All patients accepted for hemodialysis

*Incident and returning from other modalities 1997 - 2017*

Portuguese Society of Nephrology, 2017 – Fernando Macário
Patients accepted for hemodialysis

“Incident” and “Incident plus returning from other modalities”, pmp, 2014-2017

- **2014**: 214,15
- **2015**: 202,99
- **2016**: 212,97
- **2017**: 204,96

**Incidence of HD**

**HD as first treatment**
Incident patients accepted for hemodialysis
Day 0 and day 91, 2011-2017
Patients accepted for hemodialysis

by age group, during 2017

Patients count

< 18 years old (0,1%)
18 to 65 years old (33,9%)
65 to 80 years old (42,4%)
>80 years old (23,6%)

N = 2113
Patients treated by hemodialysis

by age group, 31st December 2017

- < 18 years old (0.06%)
- 18 to 65 years old (37.48%)
- 65 to 80 years old (40.6%)
- >80 years old (21.86%)

N = 11985
Incident and prevalent patients treated by hemodialysis

per million population by age group, 2017

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Incidence</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>204,96</td>
<td>1162,51</td>
</tr>
<tr>
<td>&lt; 65 years</td>
<td>88,41</td>
<td>553,18</td>
</tr>
<tr>
<td>65 to 80 years</td>
<td>579,77</td>
<td>3152,13</td>
</tr>
<tr>
<td>&gt; 80 years</td>
<td>788,41</td>
<td>4139,60</td>
</tr>
</tbody>
</table>

Portuguese Society of Nephrology, 2017 – Fernando Macário
Patients treated by hemodialysis

31st of December each year, 1997 – 2017
Distribution of hemodialysis patients by type of dialysis facility

31st of December 2017

10859; 90.6%

1126; 9.4%

In Hospital

In center
Hemodialysis patients treated in Hospital (%) 
31st of December each year (2009 – 2017)

Patients %

Incident pts (%) Prevalent pts (%)

2009: 13.8 10.6
2010: 14.5 10.3
2011: 16.7 10.2
2012: 19.4 10.7
2013: 17.7 10.7
2014: 19.2 10.4
2015: 16.5 8.5
2016: 15.7 9.01
2017: 15.8 9.4

Portuguese Society of Nephrology, 2017 – Fernando Macário
Hemodialysis growth 2017 vs 2016 (%)

31st of December each year
Patients treated by hemodialysis
distribution by techniques in each age group, 31st of December 2017

N = 11985; low flux 2.4% (2.6% in 2016); 62.5% older than >65 years; 21.9% older >80 years (21.3% in 2016)
Patients treated by hemodialysis

* Due to water shortage in Portugal many patients were switched from HDF to high flux HD by the end of 2017 and later returned to HDF.
Patients treated by hemodialysis
distribution by techniques by region and facility type, 31\textsuperscript{st} Dec. 2017

- North: 1961 patients
- Centre: 1369 patients
- South: 1299 patients
- Lisbon: 1670 patients
- Azores: 170 patients
- Madeira: 197 patients
- Global: 6496 patients
- In Hospital: 414 patients
- In Center: 6082 patients

- Low Flux (blue)
- High Flux (green)
- Hemodiafiltration (red)

\textit{N = 11985 by end of December 2017}
Mean Age of patients treated by hemodialysis
31st of December 2007 – 2017
Mean Age of patients treated by hemodialysis

by country region, 31st of December 2007 – 2017

<table>
<thead>
<tr>
<th>Year</th>
<th>Islands</th>
<th>Lisbon</th>
<th>North</th>
<th>South</th>
<th>Centre</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>59,3</td>
<td>62,3</td>
<td>63,3</td>
<td>65</td>
<td>65,5</td>
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<tr>
<td>2008</td>
<td>60,8</td>
<td>62,7</td>
<td>63,7</td>
<td>66,2</td>
<td>66</td>
</tr>
<tr>
<td>2009</td>
<td>61,9</td>
<td>62,4</td>
<td>64,8</td>
<td>67</td>
<td>68</td>
</tr>
<tr>
<td>2010</td>
<td>61,9</td>
<td>64,5</td>
<td>65,8</td>
<td>67,3</td>
<td>68,2</td>
</tr>
<tr>
<td>2011</td>
<td>62,4</td>
<td>65,2</td>
<td>66,3</td>
<td>66,7</td>
<td>68</td>
</tr>
<tr>
<td>2012</td>
<td>60,3</td>
<td>65,2</td>
<td>66,7</td>
<td>68</td>
<td>68,7</td>
</tr>
<tr>
<td>2013</td>
<td>62,4</td>
<td>65,1</td>
<td>66,8</td>
<td>67,9</td>
<td>69,1</td>
</tr>
<tr>
<td>2014</td>
<td>62,6</td>
<td>65,8</td>
<td>66,8</td>
<td>68</td>
<td>69,5</td>
</tr>
<tr>
<td>2015</td>
<td>62,4</td>
<td>66,2</td>
<td>67,2</td>
<td>69,1</td>
<td>69,5</td>
</tr>
<tr>
<td>2016</td>
<td>63,6</td>
<td>66,7</td>
<td>67,4</td>
<td>68,5</td>
<td>69,7</td>
</tr>
<tr>
<td>2017</td>
<td>65,0</td>
<td>66,5</td>
<td>67,7</td>
<td>69,0</td>
<td>69,9</td>
</tr>
</tbody>
</table>
Mean Age of patients treated by hemodialysis

Hemodialysis “in Center”, 31st of December 2017

National mean age = 68,15y
Average of units = 68,4y
Standard deviation = 2,75y
Median = 68,4y
Primary renal disease of Incident patients accepted for hemodialysis during 2017

- Diabetes: 33.4%
- Hypertension: 15.8%
- Chronic Gln: 9.8%
- Policystic Disease: 4.9%
- Hipoplasia/Displasia: 0.4%
- Other Known: 19.6%
- Unknown: 16.1%
- Other Known: 19.6%

N = 2113

Portuguese Society of Nephrology, 2017 – Fernando Macário
Primary renal disease of prevalent hemodialysis patients

31st December 2017

- Diabetes: 28.7%
- Hypertension: 13.7%
- Chronic Gln: 12.1%
- Policystic Disease: 5.9%
- Hipoplasia/Displasia: 0.6%
- Other Known: 19.9%
- Unknown: 19.2%
- Other Known: 19.9%
- Unknown: 19.2%

N = 11949
36 not available
Diabetes as primary renal disease in HD patients
Incident and prevalent (%) 2007 - 2017

Portuguese Society of Nephrology, 2017 – Fernando Macário
Viral status in HD prevalent patients

31\textsuperscript{st} December 2017

- Neg: 94.17%
- Hbs Ag +: 1.18%
- HCV Ab +: 3.15%
- HIV Ab +: 1.50%

N = 11985

Portuguese Society of Nephrology, 2017 – Fernando Macário
Hepatitis C viral status in HD prevalent pts

31st December 2016 - 2017

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCV Ab+ / RNA +</td>
<td>197</td>
<td>149</td>
</tr>
<tr>
<td>HCV Ab+ / RNA neg</td>
<td>205</td>
<td>128</td>
</tr>
<tr>
<td>Seroconv to RNA neg</td>
<td>120</td>
<td>119</td>
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<tr>
<td>Incident HCV +</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>
Previous follow-up by nephrology (> 3 months)
HD patients, 31st of December 2007 – 2017

<table>
<thead>
<tr>
<th>Year</th>
<th>No</th>
<th>Yes</th>
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</thead>
<tbody>
<tr>
<td>2007</td>
<td>617</td>
<td>1447</td>
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<tr>
<td>2008</td>
<td>816</td>
<td>1464</td>
</tr>
<tr>
<td>2009</td>
<td>702</td>
<td>1483</td>
</tr>
<tr>
<td>2010</td>
<td>737</td>
<td>1522</td>
</tr>
<tr>
<td>2011</td>
<td>694</td>
<td>1410</td>
</tr>
<tr>
<td>2012</td>
<td>737</td>
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<td>2013</td>
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<td>1477</td>
</tr>
<tr>
<td>2014</td>
<td>655</td>
<td>1541</td>
</tr>
<tr>
<td>2015</td>
<td>509</td>
<td>1597</td>
</tr>
<tr>
<td>2016</td>
<td>537</td>
<td>1629</td>
</tr>
<tr>
<td>2017</td>
<td>473</td>
<td>1640</td>
</tr>
</tbody>
</table>

Total No: 6,626
Total Yes: 14,360

Percentage of Yes: 22.9%
Previous follow-up by nephrology (> 3 months)
HD patients, *by country region and facility type* - 31<sup>st</sup> of December 2017

<table>
<thead>
<tr>
<th>Region</th>
<th>NO</th>
<th>YES</th>
<th>0%</th>
<th>20%</th>
<th>40%</th>
<th>60%</th>
<th>80%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norte</td>
<td>114</td>
<td>521</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Centro</td>
<td>81</td>
<td>304</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lisboa</td>
<td>172</td>
<td>473</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sul</td>
<td>91</td>
<td>281</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Açores</td>
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<td>28</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Madeira</td>
<td>13</td>
<td>33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global</td>
<td>484</td>
<td>1629</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hosp</td>
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<td>199</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perif</td>
<td>349</td>
<td>1430</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*NO:* Previous follow-up by nephrology (≤ 3 months)
*YES:* Previous follow-up by nephrology (> 3 months)
Vascular access of HD incident patients
during 2017

N = 2130
17 duplicated

Portuguese Society of Nephrology, 2017 – Fernando Macário
### Vascular access of HD incident patients

**2008 – 2017**

<table>
<thead>
<tr>
<th>Year</th>
<th>Non-tunneled cat.</th>
<th>Tunneled cat.</th>
<th>Graft</th>
<th>AVFistula</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>296</td>
<td>864</td>
<td>109</td>
<td>990</td>
</tr>
<tr>
<td>2009</td>
<td>282</td>
<td>940</td>
<td>111</td>
<td>895</td>
</tr>
<tr>
<td>2010</td>
<td>219</td>
<td>1034</td>
<td>117</td>
<td>931</td>
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<tr>
<td>2011</td>
<td>188</td>
<td>1033</td>
<td>71</td>
<td>844</td>
</tr>
<tr>
<td>2012</td>
<td>163</td>
<td>1007</td>
<td>61</td>
<td>844</td>
</tr>
<tr>
<td>2013</td>
<td>143</td>
<td>1101</td>
<td>61</td>
<td>870</td>
</tr>
<tr>
<td>2014</td>
<td>163</td>
<td>1088</td>
<td>60</td>
<td>912</td>
</tr>
<tr>
<td>2015</td>
<td>81</td>
<td>1068</td>
<td>74</td>
<td>872</td>
</tr>
<tr>
<td>2016</td>
<td>103</td>
<td>1093</td>
<td>59</td>
<td>940</td>
</tr>
<tr>
<td>2017</td>
<td>117</td>
<td>1094</td>
<td>57</td>
<td>862</td>
</tr>
</tbody>
</table>

Portuguese Society of Nephrology, 2017 – Fernando Macário
Catheter rate (%) in the first HD session of incident patients

2008 – 2017
Vascular access of HD incident patients
by country region and facility type - 31st of December 2017

Non-tunneled Cat. 34 19 43 16 5 0 117 74 43
Tunneled Catheter 262 240 370 178 9 35 1094 171 923
Graft 5 3 19 29 1 0 57 6 51
AVFistula 335 131 222 148 15 11 862 83 779

Portuguese Society of Nephrology, 2017 – Fernando Macário

N = 2130
17 duplicated
Vascular access of HD prevalent patients

31st December 2017

- AVFistula: 73.3%
- Graft: 10.2%
- Tunneled catheter: 16.5%
- Non-tunneled cat.: 0.1%

N = 11979

Portuguese Society of Nephrology, 2017 – Fernando Macário
Vascular access of HD prevalent patients
by country region and facility type, 31st of December 2017

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>North</th>
<th>Centre</th>
<th>Lisbon</th>
<th>South</th>
<th>Azores</th>
<th>Madeira</th>
<th>Global</th>
<th>In Hospital</th>
<th>In Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-tunneled Cat.</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>10</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Tunneled Catheter</td>
<td>467</td>
<td>427</td>
<td>662</td>
<td>289</td>
<td>20</td>
<td>106</td>
<td>1971</td>
<td>345</td>
<td>1626</td>
</tr>
<tr>
<td>Graft</td>
<td>95</td>
<td>185</td>
<td>514</td>
<td>398</td>
<td>12</td>
<td>12</td>
<td>1216</td>
<td>91</td>
<td>1125</td>
</tr>
<tr>
<td>AVFistula</td>
<td>2920</td>
<td>1677</td>
<td>2589</td>
<td>1337</td>
<td>134</td>
<td>125</td>
<td>8782</td>
<td>686</td>
<td>8096</td>
</tr>
</tbody>
</table>

N = 11979
6 not available
Vascular access of HD prevalent patients

Percentage by country region and facility type, 31st of December 2017

N = 11979
6 not available
Vascular access of HD prevalent patients
31st December, 2007 - 2017

Portuguese Society of Nephrology, 2017 – Fernando Macário
Vascular access of prevalent patients (%)  
31st December, 2007 - 2017
AV Fistula rate of prevalent patients (%)

31st December, 2007 - 2017
Graft rate of prevalent patients (%)
31st December, 2007 - 2017

% of patients

12.3 12.8 13.1 13.5 13.5 12.8 12.4 11.7 11.0 10.6 10.2
Catheter rate of prevalent patients (%)
31st December, 2007 - 2017

Portuguese Society of Nephrology, 2017 – Fernando Macário
Catheter rate of prevalent patients (%) 
31\textsuperscript{st} December 2017

- 36 centers above 20% cat rate
- 24 centers below 10% cat rate
- National rate = 16.5%
- Average of units = 18.9%
- Standard deviation = 13.1%
- Median = 16.5%
Catheter rate of prevalent patients (%)

*In Hospital HD patients, 31st December 2017*

- 20 centers above 20% cat rate
- 4 centers below 10% cat rate
- National rate = 31.1%
- Average of units = 31.6%
- Standard deviation = 19.6%
- Median = 33.3%
Catheter rate of prevalent patients (%)

In Center HD patients - 2017

16 centers above 20% cat rate
20 centers below 10% cat rate
National rate = 15,0%
Average of units = 15,0%
Standard deviation = 6,6%
Median = 14,3%
Mortality - hemodialysis

...and this dish is totally potassium-free!
Deaths in hemodialysis

by age group in 2017

* 83.03% of 1550 patients that died in 2017 were more than 65 years old and 43.03% more than 80 years

* 7.8% of deaths occurred during the first 90 days after starting dialysis

* Mortality in the first 90 days was 5.05%
Death causes in HD patients during 2017

- Cardiovascular: 24.5%
- Sudden death: 9.5%
- Infection (related with VA): 2.3%
- Infection (not related with VA): 23.0%
- Malignancy: 11.1%
- Cachexia: 8.2%
- Others known: 13.8%
- Unknown: 7.6%
- Others known: 13.8%

N=1550
Deaths in hemodialysis
2007 - 2017

* Sudden death and cachexia were not reported until 2010

Portuguese Society of Nephrology, 2017 – Fernando Macário
Deaths in hemodialysis
2007 - 2017

Not available
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%


- Not available
- Others Known
- Cachexia
- Malignancy
- Infection (not related to VA)
- Infection (related to VA)
- Sudden death
- Cardiovascular

* Sudden death and cachexia were not reported until 2010
Cardiovascular and Infection deaths in hemodialysis (%)  
2007 - 2017
Cardiovascular and Infection deaths in hemodialysis (%)  
2007 - 2017
Cardiovascular (+sudden death) and Infection deaths in hemodialysis (%)
2007 - 2017

* Sudden death was not reported until 2010
Death causes during the first 90 days of HD 2017

- Cardiovascular: 5.9%
- Sudden death: 4.2%
- Infection (related with VA): 17.8%
- Infection (not related with VA): 15.3%
- Malignancy: 12.7%
- Cachexia: 6.8%
- Others known: 6.8%
- Unknown: 30.5%

N=118
Patients movement in 2017

Number of pts

Out to Transpl: 408
Out to PD: 55
Recovery: 48
Stop HD: 96
In from PD: 106
In from Transpl: 118

Out = 607; In = 224
### HD patients movement in 2017

<table>
<thead>
<tr>
<th>Event</th>
<th>IN</th>
<th>OUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>First treatment</td>
<td>2113</td>
<td>1550</td>
</tr>
<tr>
<td>Transplant failure</td>
<td>118</td>
<td>408</td>
</tr>
<tr>
<td>PD into HD</td>
<td>106</td>
<td>65</td>
</tr>
<tr>
<td>Stop treat. or recovery</td>
<td></td>
<td>144</td>
</tr>
</tbody>
</table>

### National Crude Mortality Rate in HD = 13,03%

(90d mortality = 5,05%)
### Mortality rates – hemodialysis

#### 2017

<table>
<thead>
<tr>
<th>Hemodialysis</th>
<th>Rate</th>
<th>90 day mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>In hospital</td>
<td>19.13%</td>
<td>9.41%</td>
</tr>
<tr>
<td>In center</td>
<td>12.42%</td>
<td>4.17%</td>
</tr>
</tbody>
</table>

National crude mortality rate = **13.03%**

(90 day mortality = 5.05%)
Crude mortality rate in hemodialysis

2007 - 2017
Crude mortality rate in hemodialysis
2007 - 2017

Gross mortality rate (%)


All patients

Portuguese Society of Nephrology, 2017 – Fernando Macário
Crude mortality rate in hemodialysis

_in hospital treated patients, 2007 - 2017_

Portuguese Society of Nephrology, 2017 – Fernando Macário
Crude mortality rate in hemodialysis

_in center treated patients, 2007 - 2017_

Gross mortality rate (%)
Crude mortality rate

*Impact of deaths until day 90, 2017*

5.05% died until d90

4.17% died until d90

9.41% died until d90
## Crude mortality rates – hemodialysis

*since d1 and d91 by country region, 2017*

<table>
<thead>
<tr>
<th>Region</th>
<th>Mean Age</th>
<th>Mortality since d1</th>
<th>Mortality since d91</th>
<th>Deaths until d90 (% of incident)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>67,9</td>
<td>13,03%</td>
<td>12,04%</td>
<td>5,05%</td>
</tr>
<tr>
<td>North</td>
<td>67,7</td>
<td>13,22%</td>
<td>12,21%</td>
<td>4,91%</td>
</tr>
<tr>
<td>Center</td>
<td>69,9</td>
<td>15,60%</td>
<td>14,55%</td>
<td>5,41%</td>
</tr>
<tr>
<td>South</td>
<td>69,0</td>
<td>10,96%</td>
<td>10,11%</td>
<td>4,24%</td>
</tr>
<tr>
<td>Lisbon</td>
<td>66,5</td>
<td>12,54%</td>
<td>11,50%</td>
<td>5,64%</td>
</tr>
<tr>
<td>Azores</td>
<td>63,6</td>
<td>11,90%</td>
<td>11,31%</td>
<td>2,70%</td>
</tr>
<tr>
<td>Madeira</td>
<td>65,9</td>
<td>11,37%</td>
<td>10,44%</td>
<td>4,00%</td>
</tr>
</tbody>
</table>
Waiting list for renal transplantation

Hemodialysis patients, 2017

Portuguese Society of Nephrology, 2017 – Fernando Macário
Waiting list for renal transplantation

HD patients, Active and temporary contraindication - 2017

Portuguese Society of Nephrology, 2017 – Fernando Macário
New patients starting peritoneal dialysis
1997 - 2017
Incident patients accepted for peritoneal dialysis

*per million population 2007 - 2017*
Patients treated by peritoneal dialysis

*Count at 31st of December each year, 1997 – 2017*
Primary renal disease of patients accepted for peritoneal dialysis during 2017

- Diabetes: 21.3%
- Hypertension: 7.6%
- Chronic GN: 20.4%
- Polycystic Disease: 10.7%
- Hipoplasí/Displasia: 2.7%
- Other Known: 17.3%
- Unknown: 20.0%
- Other Known: 17.3%

N = 228
No answer: 3
Primary renal disease of prevalent peritoneal dialysis patients

31st December 2017

- Diabetes 16.4%
- Hypertension 7.0%
- Chronic GN 24.9%
- Polycystic Disease 9.8%
- Hipoplasia/Displasia 2.6%
- Other Known 20.5%
- Unknown 18.7%
- Other Known 20.5%

N = 755
n.avail. 1pt
Patients treated by peritoneal dialysis

*Manual vs automated, 31st of December 2017*

**N = 756 ; APD: 41.8%; Age > 65 years: 26.9%; Age > 80 years: 3.8%**
Patients treated by peritoneal dialysis

Manual vs automated, 31\textsuperscript{st} December 2007 - 2017

N\textsubscript{2017} = 756; CAPD:440; APD/Others:316
Automated Peritoneal Dialysis usage (%)  
31st December 2007 - 2017
Patients treated by peritoneal dialysis
by region, 31st of December 1997 to 2017

Gabinete de Registo da SPN, 2016 – Fernando Macário
Portuguese Society of Nephrology, 2017 – Fernando Macário

N = 756 (2017)
Previous follow-up by nephrology (> 3 months)  
PD patients, 31st of December 2007 – 2017

N = 228
Mean Age of patients treated by peritoneal dialysis

31st of December 2007 – 2017

Mean age (years)
Viral status in PD prevalent patients

31st December 2017

- 95.90% Neg
- 1.32% HbsAg +
- 1.59% AntiVHC +
- 1.19% AntiHIV +

N = 756
## PD patients movement in 2017

<table>
<thead>
<tr>
<th></th>
<th>IN</th>
<th>OUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>New patients</td>
<td>228</td>
<td>44</td>
</tr>
<tr>
<td>KTr failure</td>
<td>14</td>
<td>71</td>
</tr>
<tr>
<td>HD to PD</td>
<td>37</td>
<td>126</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Crude Mortality Rate in PD = 5.16 %</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*(90 d mortality = 2.5%)*
Crude mortality rate in peritoneal dialysis

2007 - 2017

Gross mortality rate (%)
Reasons for PD withdraw
2017

Infection: 35.3%
UF failure/Inadequacy: 30.3%
Mechanical problems: 10.1%
Non compliance: 9.2%
Others: 15.1%

N = 119

Portuguese Society of Nephrology, 2017 – Fernando Macário
Peritonitis episodes

2017

N = 246
0.29 episodes / patients - 2017

Portuguese Society of Nephrology, 2017 – Fernando Macário
Death causes in PD patients

31st December 2014 - 2017

N = 44

7 patients died until day 90; 3.0% of incident patients and 15.9% of all deaths

- CardioVasc: 43.2%
- Sudden death: 11.4%
- Infection (PD related): 6.8%
- Infection (Not PD related): 22.7%
- Neoplasia: 2.3%
- Cachexia: 11.4%
- Others Known: 2.3%

Portuguese Society of Nephrology, 2017 – Fernando Macário
PD patients in waiting list for renal transplantation
Active and excluded for *transplantation*,
31st December 2014 - 2017

![Bar chart showing the number of PD patients in waiting list for renal transplantation, 2014-2017.](chart.png)

Portuguese Society of Nephrology, 2017 – Fernando Macário
PD patients in waiting list for renal transplantation
Active, temporary contraindication and excluded for transplantation
31st December 2014 - 2017

Portuguese Society of Nephrology, 2017 – Fernando Macário
RENAL TRANSPLANTATION
Renal Transplants performed
1980-2017

Total = 12659

Years

Renal Transplant counts per year

Portuguese Society of Nephrology, 2017 – Fernando Macário
Renal transplantation activity characterization

2017

31 pre-emptive (3 receptors <18A)
Portuguese Transplant Centers Activity
2017

N = 450 tx deceased donor and 77 (14,6%) live donor; 34 multi-organ transplants (total = 527)
Renal transplantation: living vs deceased donor

*pts with functioning Ktx, 31st December 2017*

- Living donor: 9.3%
- Deceased donor: 90.7%

N = 7518

Portuguese Society of Nephrology, 2017 – Fernando Macário
Prevalent Renal Transplanted Patients

*Previous renal replacement therapy, 2015-2017*

![Graph showing prevalent renal transplanted patients by therapy type and year (2015-2017). The graph shows the number of patients under hemodialysis, peritoneal dialysis, and pre-emptive therapy over the years.]
Renal Transplants Performed
per million population, 2007 - 2017
Primary renal disease of renal transplanted patients during 2017

- Chronic GN: 29.4%
- Hipoplasia/Displasia: 21.6%
- Policystic Disease: 14.9%
- Hypertension: 10.0%
- Other Known: 22.7%
- Diabetes: 1.4%

N = 519
8 not available

Portuguese Society of Nephrology, 2017 – Fernando Macário
Patients with functioning graft and annual growth

31st December 1997 - 2017

Portuguese Society of Nephrology, 2017 – Fernando Macário
Prevalence of CKD patients with functioning graft
cumulative per million population end of each year 1997 - 2017

N = 7242
Renal transplantation activity
1980 - 2017

2017: 104 patients died with functioning graft; 120 transferred to HD / 8 transferred to PD

Portuguese Society of Nephrology, 2017 – Fernando Macário
ENCONTRO RENAL

22 - 24 MARÇO 2018

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