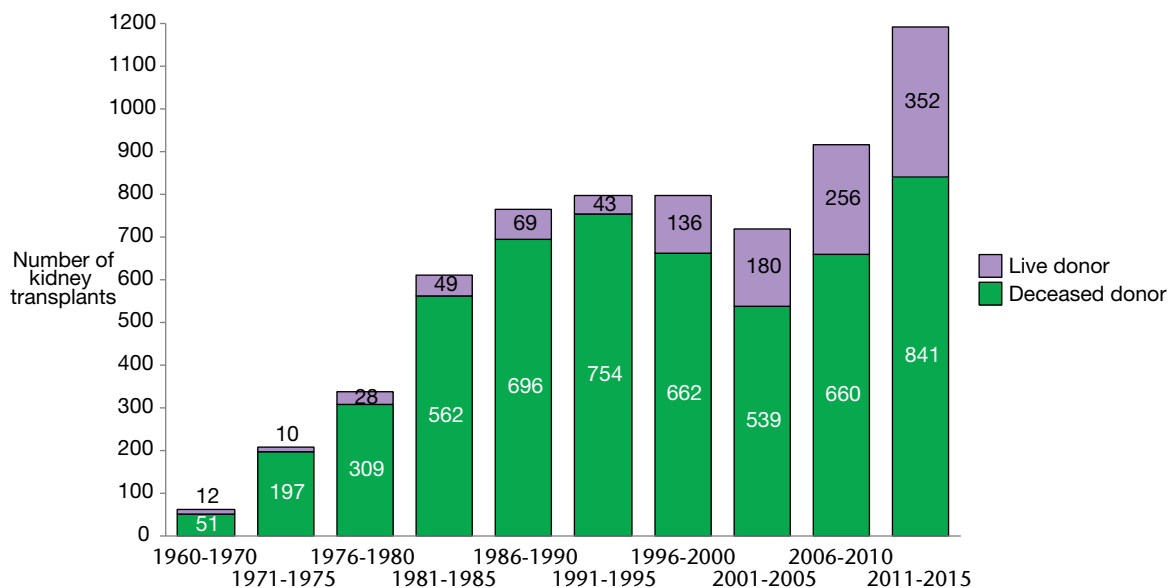


## SECTION F KIDNEY TRANSPLANTATION

### F1 Frequency of kidney transplantation in Scotland

#### F1.1 Frequency and donor type, kidney transplants performed in Scotland 1960-2015



Between 1960 and 31 December 2015, 6406 kidney transplants were performed in Scotland in 5419 patients with postcode of residence in Scotland at the time of transplantation.

The kidney donor was deceased for 5271 (82%) transplants, 1135 (18%) of transplanted kidneys were donated by live donors.

5389 first kidney transplants were performed, 835 second transplants, 157 third transplants and 25 fourth or subsequent kidney transplants.

195 individuals resident in Scotland have received a simultaneous kidney and pancreas transplant, 16 individuals have received a simultaneous kidney and liver transplant.

Kidney transplants performed outside of Scotland are excluded. Transplants performed in Scotland for patients not resident in Scotland are also excluded.

### F1.2 Frequency, transplant type and donor type, kidney transplants performed in Scotland 2006-2015

| Year of transplant | Deceased donor kidney alone |             | Live donor kidney |             | Kidney and pancreas |             | Kidney and Liver |            | Total kidney transplants |
|--------------------|-----------------------------|-------------|-------------------|-------------|---------------------|-------------|------------------|------------|--------------------------|
|                    | n                           | %           | n                 | %           | n                   | %           | n                | %          |                          |
| 2006               | 88                          | <b>68.8</b> | 29                | <b>22.7</b> | 10                  | <b>7.8</b>  | 1                | <b>0.8</b> | <b>128</b>               |
| 2007               | 102                         | <b>56.0</b> | 58                | <b>31.9</b> | 22                  | <b>12.1</b> | 0                | -          | <b>182</b>               |
| 2008               | 129                         | <b>61.1</b> | 67                | <b>31.8</b> | 13                  | <b>6.2</b>  | 2                | <b>0.9</b> | <b>211</b>               |
| 2009               | 146                         | <b>69.2</b> | 50                | <b>23.7</b> | 14                  | <b>6.6</b>  | 1                | <b>0.5</b> | <b>211</b>               |
| 2010               | 126                         | <b>68.5</b> | 51                | <b>27.7</b> | 7                   | <b>3.8</b>  | 0                | -          | <b>184</b>               |
| 2011               | 127                         | <b>65.5</b> | 54                | <b>27.8</b> | 12                  | <b>6.2</b>  | 1                | <b>0.5</b> | <b>194</b>               |
| 2012               | 146                         | <b>64.6</b> | 63                | <b>27.9</b> | 15                  | <b>6.6</b>  | 2                | <b>0.9</b> | <b>226</b>               |
| 2013               | 165                         | <b>62.3</b> | 84                | <b>31.7</b> | 16                  | <b>6.0</b>  | 0                | -          | <b>265</b>               |
| 2014               | 172                         | <b>65.6</b> | 74                | <b>28.2</b> | 15                  | <b>5.7</b>  | 1                | <b>0.4</b> | <b>262</b>               |
| 2015               | 157                         | <b>63.8</b> | 77                | <b>31.3</b> | 11                  | <b>4.5</b>  | 1                | <b>0.4</b> | <b>246</b>               |

### F1.3a Frequency and donor type of adult kidney transplants performed in Scotland 2006-2015 by transplanting centre

| Year | GLASGOW |             |     |             |    |             |    |             | Total      |
|------|---------|-------------|-----|-------------|----|-------------|----|-------------|------------|
|      | DBD     |             | DCD |             | DD |             | LD |             |            |
|      | n       | %           | n   | %           | n  | %           | n  | %           |            |
| 2006 | 0       |             | 0   |             | 50 | <b>80.6</b> | 12 | <b>19.4</b> | <b>62</b>  |
| 2007 | 1       | <b>1.3</b>  | 0   |             | 52 | <b>67.5</b> | 24 | <b>31.2</b> | <b>77</b>  |
| 2008 | 0       |             | 3   | <b>3.3</b>  | 51 | <b>55.4</b> | 38 | <b>41.3</b> | <b>92</b>  |
| 2009 | 5       | <b>5.5</b>  | 3   | <b>3.3</b>  | 65 | <b>71.4</b> | 18 | <b>19.8</b> | <b>91</b>  |
| 2010 | 40      | <b>47.6</b> | 11  | <b>13.1</b> | 14 | <b>16.7</b> | 19 | <b>22.6</b> | <b>84</b>  |
| 2011 | 53      | <b>54.6</b> | 14  | <b>14.4</b> | 2  | <b>2.1</b>  | 28 | <b>28.8</b> | <b>97</b>  |
| 2012 | 58      | <b>47.9</b> | 33  | <b>27.3</b> | 0  |             | 30 | <b>24.8</b> | <b>121</b> |
| 2013 | 55      | <b>39.0</b> | 41  | <b>29.1</b> | 0  |             | 45 | <b>31.9</b> | <b>141</b> |
| 2014 | 65      | <b>46.4</b> | 38  | <b>27.9</b> | 0  |             | 36 | <b>25.8</b> | <b>140</b> |
| 2015 | 59      | <b>44.4</b> | 34  | <b>25.6</b> | 0  |             | 40 | <b>30.1</b> | <b>133</b> |

DBD - Deceased after brain death; DCD - Deceased after circulatory death;  
DD - Deceased donor unspecified; LD - Living donor.

### F1.3b Frequency and donor type of adult kidney transplants performed in Scotland 2006-2015 by transplanting centre

| Year | RIE  |             |      |             |     |   |    |             | Total      |
|------|------|-------------|------|-------------|-----|---|----|-------------|------------|
|      | DBD* |             | DCD* |             | DD* |   | LD |             |            |
|      | n    | %           | n    | %           | n   | % | n  | %           |            |
| 2006 | 42   | <b>71.2</b> | 1    | <b>1.7</b>  | 0   | - | 16 | <b>24.2</b> | <b>59</b>  |
| 2007 | 56   | <b>56.6</b> | 12   | <b>12.1</b> | 0   | - | 31 | <b>31.3</b> | <b>99</b>  |
| 2008 | 64   | <b>61.0</b> | 19   | <b>18.1</b> | 0   | - | 22 | <b>21.0</b> | <b>105</b> |
| 2009 | 71   | <b>62.8</b> | 13   | <b>11.5</b> | 0   | - | 29 | <b>25.6</b> | <b>111</b> |
| 2010 | 49   | <b>52.1</b> | 17   | <b>18.1</b> | 0   | - | 28 | <b>29.8</b> | <b>94</b>  |
| 2011 | 52   | <b>55.3</b> | 17   | <b>18.1</b> | 0   | - | 25 | <b>26.6</b> | <b>94</b>  |
| 2012 | 45   | <b>45.5</b> | 25   | <b>25.3</b> | 0   | - | 29 | <b>29.3</b> | <b>99</b>  |
| 2013 | 48   | <b>41.0</b> | 33   | <b>28.2</b> | 0   | - | 36 | <b>30.8</b> | <b>117</b> |
| 2014 | 50   | <b>45.5</b> | 29   | <b>26.4</b> | 0   | - | 31 | <b>28.2</b> | <b>110</b> |
| 2015 | 45   | <b>42.1</b> | 27   | <b>25.2</b> | 0   | - | 35 | <b>32.7</b> | <b>107</b> |

\* Includes combined kidney + pancreas and kidney + liver transplants.

DBD - Deceased after brain death; DCD - Deceased after circulatory death;

DD - Deceased donor unspecified; LD - Living donor.

Since 2005 kidney transplantation for adult patients in Scotland has been undertaken in two units the Glasgow renal and transplant unit (GLAS) and the transplant unit of the Royal Infirmary of Edinburgh (RIE).

Kidney transplants for patients under the care of RHC are not shown in tables F1a and F1b.

**F1.4 Age of patients at the time of kidney transplantation**

| Year of transplant | First kidney transplants |          |      |             | Second and subsequent transplants |          |      |           |
|--------------------|--------------------------|----------|------|-------------|-----------------------------------|----------|------|-----------|
|                    | n                        | Mean Age | SD   | Age Range   | n                                 | Mean Age | SD   | Age Range |
| 1960-1970          | 59                       | 27.7     | 10.8 | 8.0 - 49.2  | 4                                 | 21.1     | 4.5  | 15.7-25.0 |
| 1971-1975          | 188                      | 34.0     | 12.3 | 10.1 - 64.8 | 18                                | 31.5     | 11.2 | 11.6-55.2 |
| 1976-1980          | 284                      | 35.8     | 11.8 | 12.0 - 67.0 | 53                                | 32.1     | 8.7  | 13.5-48.2 |
| 1981-1985          | 509                      | 38.5     | 14.9 | 2.3 - 77.6  | 102                               | 36.2     | 12.2 | 3.4-68.9  |
| 1986-1990          | 629                      | 40.5     | 15.8 | 0.3-75.2    | 136                               | 36.4     | 13.5 | 5.1-69.5  |
| 1991-1995          | 664                      | 42.5     | 16.1 | 2.1-76.2    | 133                               | 36.0     | 13.0 | 3.9-68.7  |
| 1996-2000          | 660                      | 41.5     | 15.2 | 4.0-78.4    | 139                               | 38.7     | 12.0 | 5.2-71.3  |
| 2001-2005          | 598                      | 42.9     | 15.2 | 4.2-78.1    | 121                               | 37.8     | 11.1 | 16.4-64.9 |
| 2006-2010          | 780                      | 44.9     | 15.5 | 2.4-78.2    | 136                               | 43.7     | 11.1 | 18.2-69.2 |
| 2011-2015          | 1018                     | 48.1     | 14.6 | 3.6-79.3    | 175                               | 43.7     | 11.8 | 14.4-75.5 |

**F1.5 Year of first kidney transplant and diagnosis group**

| Year of transplant | Glomerulo-nephritis |             | Interstitial |             | Multisystem |             | Diabetes |             | Unknown |             |
|--------------------|---------------------|-------------|--------------|-------------|-------------|-------------|----------|-------------|---------|-------------|
|                    | n                   | %           | n            | %           | n           | %           | n        | %           | n       | %           |
| 1960-1970*         | 26                  | <b>44.1</b> | 14           | <b>23.7</b> | 4           | <b>6.8</b>  | 0        | -           | 14      | <b>23.7</b> |
| 1971-1975          | 84                  | <b>44.7</b> | 64           | <b>34.0</b> | 16          | <b>8.5</b>  | 0        | -           | 24      | <b>12.8</b> |
| 1976-1980          | 108                 | <b>38.0</b> | 120          | <b>42.3</b> | 33          | <b>11.6</b> | 3        | <b>1.1</b>  | 20      | <b>7.0</b>  |
| 1981-1985          | 139                 | <b>27.3</b> | 225          | <b>44.2</b> | 57          | <b>11.2</b> | 32       | <b>6.3</b>  | 56      | <b>11.0</b> |
| 1986-1990          | 179                 | <b>28.5</b> | 232          | <b>36.9</b> | 93          | <b>14.8</b> | 45       | <b>7.2</b>  | 80      | <b>12.7</b> |
| 1991-1995          | 192                 | <b>28.9</b> | 241          | <b>36.3</b> | 95          | <b>14.3</b> | 72       | <b>10.8</b> | 64      | <b>9.6</b>  |
| 1996-2000          | 178                 | <b>27.0</b> | 256          | <b>38.8</b> | 80          | <b>12.1</b> | 69       | <b>10.5</b> | 77      | <b>11.7</b> |
| 2001-2005          | 148                 | <b>24.7</b> | 204          | <b>34.1</b> | 77          | <b>12.9</b> | 81       | <b>13.5</b> | 88      | <b>14.7</b> |
| 2006-2010          | 162                 | <b>20.8</b> | 318          | <b>40.8</b> | 100         | <b>12.8</b> | 97       | <b>12.1</b> | 103     | <b>13.2</b> |
| 2011-2015          | 257                 | <b>25.2</b> | 380          | <b>37.3</b> | 115         | <b>11.3</b> | 155      | <b>15.2</b> | 111     | <b>10.9</b> |

\* One patient who received a first kidney transplant between 1960-1970 has missing PRD

## F2 Transplanted Kidney Survival

### F2.1 Graft survival of first kidney transplants by year of transplantation 1960 - 2014\*

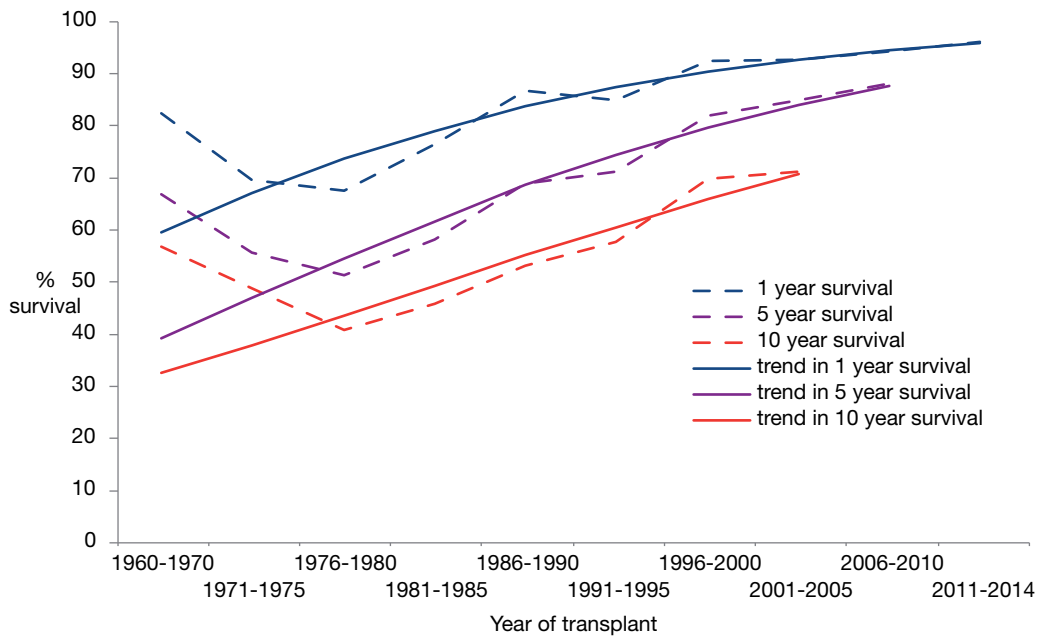
| Year of transplant | Grafts surviving 1 year |           | Grafts surviving 5 years |           | Grafts surviving 10 years |           |
|--------------------|-------------------------|-----------|--------------------------|-----------|---------------------------|-----------|
|                    | n                       | %         | n                        | %         | n                         | %         |
| 1960-1970          | 37                      | <b>82</b> | 22                       | <b>67</b> | 17                        | <b>57</b> |
| 1971-1975          | 107                     | <b>69</b> | 74                       | <b>56</b> | 58                        | <b>49</b> |
| 1976-1980          | 176                     | <b>67</b> | 129                      | <b>51</b> | 97                        | <b>41</b> |
| 1981-1985          | 371                     | <b>76</b> | 263                      | <b>58</b> | 186                       | <b>46</b> |
| 1986-1990          | 519                     | <b>87</b> | 380                      | <b>69</b> | 261                       | <b>53</b> |
| 1991-1995          | 536                     | <b>85</b> | 418                      | <b>71</b> | 303                       | <b>58</b> |
| 1996-2000          | 589                     | <b>92</b> | 498                      | <b>82</b> | 389                       | <b>70</b> |
| 2001-2005          | 540                     | <b>93</b> | 459                      | <b>85</b> | 351                       | <b>71</b> |
| 2006-2010          | 716                     | <b>94</b> | 629                      | <b>88</b> | /                         | /         |
| 2011               | 147                     | <b>93</b> | /                        | /         | /                         | /         |
| 2012               | 183                     | <b>97</b> | /                        | /         | /                         | /         |
| 2013               | 211                     | <b>97</b> | /                        | /         | /                         | /         |
| 2014               | 218                     | <b>96</b> | /                        | /         | /                         | /         |

\* Revised please see page xi.

Survival of first kidney transplants only, for transplants performed in Scotland, are shown in the table.

Grafts with insufficient follow-up and those that did not fail in patients dying within the relevant period have been excluded from the table.

**F2.2 Trends in first graft survival by year of transplantation 1960-2014\***



\* Revised please see page xi.

Trend in 1 year survival: year to year OR 1.06 (95% CI 1.06-1.07)

Trend in 5 year survival: year to year OR 1.06 (95% CI 1.05-1.07)

Trend in 10 year survival: year to year OR 1.05 (95% CI 1.04-1.06)

The trends in 1 year, 5 year and 10 year graft survival are all statistically significant. (Wald-statistic, df=1, p<0.001)

### F2.3 Graft survival in the glomerulonephritis and diabetic nephropathy PRD groups in those aged 45-64 at time of first kidney transplant 1991-2014\*

| Year of transplant | PRD Group            | 1 year survival |    | 5 year survival |    | 10 year survival |    |
|--------------------|----------------------|-----------------|----|-----------------|----|------------------|----|
|                    |                      | n               | %  | n               | %  | n                | %  |
| 1991-1995          | Glomerulonephritis   | 64              | 91 | 46              | 72 | 30               | 55 |
|                    | Diabetic nephropathy | 18              | 86 | 10              | 71 | 3                | 38 |
| 1996-2000          | Glomerulonephritis   | 56              | 88 | 47              | 77 | 35               | 64 |
|                    | Diabetic nephropathy | 21              | 91 | 16              | 76 | 12               | 71 |
| 2001-2005          | Glomerulonephritis   | 56              | 95 | 52              | 91 | 38               | 78 |
|                    | Diabetic nephropathy | 24              | 96 | 15              | 88 | 11               | 79 |
| 2006-2010          | Glomerulonephritis   | 61              | 90 | 53              | 84 | /                | /  |
|                    | Diabetic nephropathy | 31              | 91 | 27              | 87 | /                | /  |
| 2011-2014          | Glomerulonephritis   | 91              | 99 | /               | /  | /                | /  |
|                    | Diabetic nephropathy | 51              | 93 | /               | /  | /                | /  |

\* Revised please see page xi.

Grafts with insufficient follow-up and those that did not fail in patients dying within the relevant period have been excluded from the table.

| <b>F2.4 Graft survival by current Health board of residence 2005-2014*</b> |  |             |             |  |             |             |  |            |             |
|--|--|-------------|-------------|--|-------------|-------------|--|------------|-------------|
|  | Grafts surviving 1 year                      |             |             | Grafts surviving 2 years                     |             |             | Grafts surviving 5 years                     |            |             |
|  | Number of first kidney transplants 2005-2014 | n           | %           | Number of first kidney transplants 2005-2013 | n           | %           | Number of first kidney transplants 2005-2010 | n          | %           |
| A&A  | 111  | 105         | 94.6        | 96   | 89          | 92.7        | 56   | 50         | 89.3        |
| BORD   | 40   | 38          | 95.0        | 35   | 34          | 97.1        | 15   | 13         | 86.7        |
| D&G  | 49   | 47          | 95.9        | 36   | 34          | 94.4        | 23   | 21         | 91.3        |
| FIFE   | 115  | 106         | 92.2        | 103  | 90          | 87.4        | 63   | 51         | 81.0        |
| FV   | 86   | 82          | 95.3        | 74   | 68          | 91.9        | 36   | 32         | 88.9        |
| GG&C   | 389  | 367         | 94.3        | 323  | 298         | 92.3        | 174  | 152        | 87.4        |
| GRAM   | 177  | 170         | 96.0        | 153  | 143         | 93.5        | 90   | 79         | 87.8        |
| HIGH   | 111  | 107         | 96.4        | 98   | 91          | 92.9        | 69   | 62         | 89.9        |
| LAN  | 225  | 215         | 95.6        | 187  | 172         | 92.0        | 96   | 87         | 90.6        |
| LOTH   | 246  | 235         | 95.5        | 215  | 199         | 92.6        | 136  | 119        | 87.5        |
| ORKN   | 2  | 2           | 100.0       | 2  | 2           | 100.0       | 2  | 2          | 100.0       |
| SHET   | 4  | 4           | 100.0       | 4  | 4           | 100.0       | 3  | 3          | 100.0       |
| TAY  | 103  | 97          | 94.2        | 88   | 82          | 93.2        | 53   | 46         | 86.8        |
| WI   | 5  | 5           | 100.0       | 5  | 5           | 100.0       | 4  | 4          | 100.0       |
| <b>Scotland</b>  | <b>1663</b>                                  | <b>1580</b> | <b>95.0</b> | <b>1419</b>                                  | <b>1311</b> | <b>92.4</b> | <b>820</b>                                   | <b>721</b> | <b>87.9</b> |

\* Revised please see page xi.

Grafts with insufficient follow-up and those that did not fail in patients dying within the relevant period have been excluded from the table.

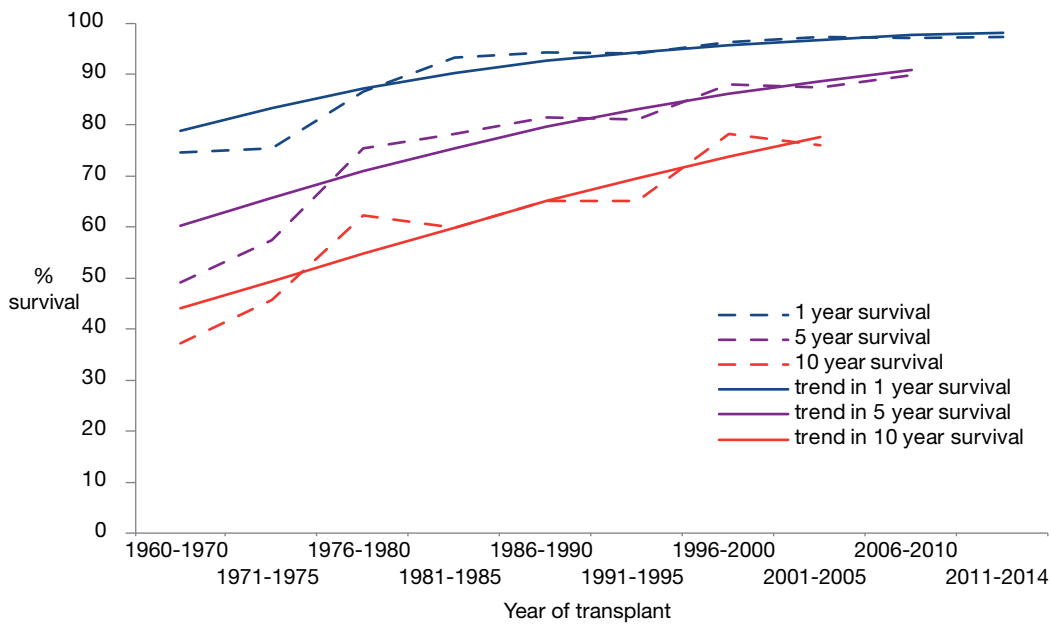


### F3 Patient survival after Kidney Transplantation

| <b>F3.1 Patient survival after first kidney transplant by year of transplantation 1960-2014</b> |                           |             |                            |             |                             |             |
|---|---------------------------|-------------|----------------------------|-------------|-----------------------------|-------------|
| Year of transplant  | Patients surviving 1 year |             | Patients surviving 5 years |             | Patients surviving 10 years |             |
|   | n                         | %           | n                          | %           | n                           | %           |
| 1960-1970   | 44                        | <b>74.6</b> | 29                         | <b>49.2</b> | 22                          | <b>37.3</b> |
| 1971-1975   | 142                       | <b>75.5</b> | 108                        | <b>57.4</b> | 86                          | <b>45.7</b> |
| 1976-1980   | 246                       | <b>86.6</b> | 214                        | <b>75.4</b> | 177                         | <b>62.3</b> |
| 1981-1985   | 475                       | <b>93.3</b> | 398                        | <b>78.2</b> | 305                         | <b>59.9</b> |
| 1986-1990   | 593                       | <b>94.3</b> | 513                        | <b>81.6</b> | 409                         | <b>65.0</b> |
| 1991-1995   | 624                       | <b>94.0</b> | 538                        | <b>81.0</b> | 432                         | <b>65.1</b> |
| 1996-2000   | 635                       | <b>96.2</b> | 581                        | <b>88.0</b> | 517                         | <b>78.3</b> |
| 2001-2005   | 582                       | <b>97.3</b> | 523                        | <b>87.5</b> | 455                         | <b>76.1</b> |
| 2006-2010   | 757                       | <b>97.1</b> | 701                        | <b>89.9</b> | /                           | /           |
| 2011  | 158                       | <b>97.5</b> | /                          | /           | /                           | /           |
| 2012  | 188                       | <b>96.4</b> | /                          | /           | /                           | /           |
| 2013  | 216                       | <b>96.4</b> | /                          | /           | /                           | /           |
| 2014  | 227                       | <b>98.3</b> | /                          | /           | /                           | /           |

Patient survival is reported from the time of first kidney transplant for transplants performed in Scotland. Patients with insufficient follow-up are excluded.

### F3.2 Trends in patient survival by year of first kidney transplantation 1960-2014



Trend in 1 year survival: year to year OR 1.06 (95% CI 1.05-1.07)

Trend in 5 year survival: year to year OR 1.05 (95% CI 1.04-1.06)

Trend in 10 year survival: year to year OR 1.04 (95% CI 1.04-1.05)

The trends in 1 year, 5 year and 10 year graft survival are all statistically significant.  
(Wald-statistic, df=1, p<0.001)

## F4 Transplant Kidney Function

### F4.1 Transplanted kidney function at one year in adult recipients after first kidney transplant performed 2005-2014

| Year | Transplants performed | Surviving patients with functioning graft at 1 year |             | Patients with creatinine result | Serum creatinine (micromole/L) |          | eGFR (ml/min) |           |
|------|-----------------------|---|-------------|---------------------------------|--------------------------------|----------|---------------|-----------|
|      |                       | n   | %           |                                 | n                              | Median   | IQR           | Median    |
| 2005 | 109                   | 101   | <b>92.7</b> | 98                              | 131                            | 106-159  | 51.2          | 39.3-62.7 |
| 2006 | 97                    | 92  | <b>94.8</b> | 89                              | 132                            | 108-161  | 49.7          | 39.1-59.6 |
| 2007 | 147                   | 132   | <b>89.8</b> | 131                             | 118                            | 100-143  | 55.0          | 43.9-64.9 |
| 2008 | 167                   | 154   | <b>92.2</b> | 153                             | 118                            | 102-145  | 55.2          | 42.4-66.9 |
| 2009 | 171                   | 153   | <b>89.5</b> | 145                             | 123                            | 95-152   | 54.4          | 40.2-68.6 |
| 2010 | 151                   | 140   | <b>92.7</b> | 118                             | 111                            | 93-137   | 58.8          | 45.7-73.9 |
| 2011 | 158                   | 144   | <b>91.1</b> | 129                             | 119                            | 102-152  | 52.6          | 42.1-67.4 |
| 2012 | 188                   | 176   | <b>93.6</b> | 165                             | 119                            | 94-144   | 55.5          | 45.2-73.3 |
| 2013 | 217                   | 205   | <b>94.5</b> | 169                             | 111                            | 88-135   | 58.4          | 46.8-73.0 |
| 2014 | 219                   | 206   | <b>94.1</b> | 186                             | 119                            | 95 - 151 | 54.4          | 41.4-67.5 |

Patients dying within the first year post transplant are excluded.

Patients aged under 18 years at the time of transplantation are excluded.

Kidney transplants performed outside of Scotland are excluded. Transplants performed in Scotland for patients not resident in Scotland are also excluded.

### F4.2 Transplanted kidney function one year in adult recipients after first kidney transplant performed 2005-2014 by primary renal diagnosis group

| Recipient primary renal diagnosis group | Transplants performed | Surviving patients with functioning graft at 1 year |             | Patients with creatinine result | Serum creatinine (micromole/L) |         | eGFR (ml/min) |           |
|---|-----------------------|---|-------------|---------------------------------|--------------------------------|---------|---------------|-----------|
|   |                       | n   | %           |                                 | n                              | Median  | IQR           | Median    |
| Glomerulonephritis                      | 380                   | 351   | <b>92.4</b> | 313                             | 127                            | 105-164 | 51.2          | 39.8-65.4 |
| Interstitial                            | 601                   | 566   | <b>94.2</b> | 521                             | 117                            | 95-144  | 54.0          | 41.5-67.1 |
| Multisystem                             | 205                   | 185   | <b>90.2</b> | 168                             | 118                            | 98-142  | 56.2          | 45.4-67.8 |
| Diabetic nephropathy*                   | 238                   | 220   | <b>92.4</b> | 215                             | 112                            | 91-139  | 59.8          | 46.0-73.0 |
| Unknown                                 | 200                   | 181   | <b>90.5</b> | 166                             | 118                            | 101-147 | 55.4          | 44.3-67.7 |

\* Includes patients receiving simultaneous kidney and pancreas transplant

#### F4.3 Transplanted kidney function one year in adult recipients after first kidney transplant performed 2010-2014 by donor type

| Donor type     | Transplants performed | Surviving patients with functioning graft at 1 year |             | Patients with creatinine result | Serum creatinine (micromole/L) |         | eGFR (ml/min) |           |
|----------------|-----------------------|---|-------------|---------------------------------|--------------------------------|---------|---------------|-----------|
|                |                       | n   | %           |                                 | n                              | Median  | IQR           | Median    |
| Deceased - DBD | 422                   | 387   | <b>91.7</b> | 347                             | 117                            | 91-144  | 55            | 42.6-72.7 |
| Deceased - DCD | 238                   | 219   | <b>92.0</b> | 201                             | 121                            | 100-158 | 51.5          | 38.5-66.0 |
| Live donor     | 266                   | 255   | <b>95.9</b> | 214                             | 111                            | 93-132  | 59            | 49-73     |

7 patients with Deceased Donor (DD) unspecified transplants within the time period are excluded.

#### F4.4 Transplanted kidney function one year in adult recipients after first kidney transplant performed 2006-2014 by transplanting unit

| Transplant renal unit | Transplants performed | Surviving patients with functioning graft at 1 year |             | Patients with creatinine result | Serum creatinine (micromole/L) |        | eGFR (ml/min) |           |
|-----------------------|-----------------------|---|-------------|---------------------------------|--------------------------------|--------|---------------|-----------|
|                       |                       | n   | %           |                                 | n                              | Median | IQR           | Median    |
| GLAS                  | 752                   | 693   | <b>92.2</b> | 608                             | 117                            | 96-143 | 55.6          | 43.2-70.1 |
| RIE                   | 762                   | 707   | <b>92.8</b> | 675                             | 119                            | 98-148 | 54.2          | 42.3-67.1 |

## F5 Transplant Complications

A detailed survey of outcomes of all 245 kidney and kidney pancreas transplants performed in Scotland in 2015 was undertaken in June 2016.

The aim was to determine the national rate of transplant complications.

All patients had a minimum of six months of follow-up following receipt of their transplant in 2015.

| <b>F5.1 Clinician reported incidence of treated rejection episodes in recipients of renal transplant 2015 by June 2016</b> |                       |           |                      |           |              |           |
|--|-----------------------|-----------|----------------------|-----------|--------------|-----------|
|  | 6-12 months follow-up |           | >12 months follow-up |           | All Patients |           |
| Number of patients   | 153                   |           | 87                   |           | 240          |           |
| Median follow-up at census (days)  | 248                   |           | 429                  |           | 307          |           |
| IQR  | (211-300)             |           | (398-471)            |           | (232-405)    |           |
| Rejection Type   | n                     | %         | n                    | %         | n            | %         |
| Definite *   | 17                    | 11        | 9                    | 9         | 25           | 10        |
| Possible**   | 8                     | 5         | 6                    | 8         | 14           | 6         |
| Acute anti-body mediated (ABMR)  | 3                     | 2         | 3                    | 3         | 6            | 2         |
| Acute cellular (ACMR)  | 16                    | 10        | 10                   | 11        | 26           | 10        |
| Mixed  | 3                     | 2         | 1                    | 1         | 4            | 2         |
| No biopsy  | 3                     | 2         | 1                    | 1         | 4            | 2         |
| <b>Total treated rejection episodes</b>  | <b>25</b>             | <b>16</b> | <b>15</b>            | <b>17</b> | <b>40</b>    | <b>16</b> |

\* Biopsy confirmed acute rejection.

\*\* Episodes treated as rejection without kidney biopsy or with equivocal biopsy findings.

## F5.2 Clinician reported incidence of infection episodes in recipients of renal transplant 2015 by June 2016

|                                       | 6-12 months follow-up |          | >12 months follow-up |          | All Patients |          |
|---------------------------------------|-----------------------|----------|----------------------|----------|--------------|----------|
| Number of patients                    | 153                   |          | 87                   |          | 240          |          |
| Median follow-up at census (days)     | 248                   |          | 429                  |          | 307          |          |
| IQR                                   | (211-300)             |          | (398-471)            |          | (232-405)    |          |
| Infection                             | n                     | %        | n                    | %        | n            | %        |
| None                                  | 93                    | 60       | 55                   | 62       | 148          | 60       |
| BKVN (biopsy proven)                  | 5                     | 3        | 6                    | 8        | 11           | 5        |
| BK Viraemia                           | 7                     | 4        | 3                    | 4        | 10           | 4        |
| Pneumocystis jirovecii pneumonia      | 0                     | -        | 3                    | 4        | 3            | 1.2      |
| Other serious infection* (n patients) | 39                    | 25       | 16                   | 18       | 45           | 18       |
| (n patients with >1 infection)        | 7                     | -        | 0                    | -        | 7            | -        |
| <b>CMV disease **</b>                 | <b>6</b>              | <b>4</b> | <b>6</b>             | <b>8</b> | <b>12</b>    | <b>5</b> |
| CMV Disease ** by baseline status     | -                     | -        | -                    | -        | -            | -        |
| D- /R- ***(n=56)                      | 1                     | 2        | 1                    | 2        | 2            | 4        |
| D+ /R- (n=55)                         | 4                     | 7        | 2                    | 4        | 4            | 7        |
| D- /R+ (n=69)                         | 0                     | -        | 1                    | 1        | 1            | 1        |
| D+ /R+ (n=61)                         | 1                     | 2        | 2                    | 3        | 3            | 5        |
| <b>CMV viraemia</b>                   | <b>12</b>             | <b>8</b> | <b>7</b>             | <b>9</b> | <b>19</b>    | <b>8</b> |
| CMV Viraemia by baseline status       | -                     | -        | -                    | -        | -            | -        |
| D- /R- (n=56)                         | 1                     | 2        | 0                    | -        | 1            | 2        |
| D+ /R- (n=55)                         | 4                     | 7        | 2                    | 4        | 6            | 11       |
| D- /R+ (n=69)                         | 4                     | 6        | 3                    | 4        | 7            | 10       |
| D+ /R+ (n=61)                         | 3                     | 5        | 1                    | 2        | 4            | 7        |
| D- / R unknown (n=1)                  | -                     | -        | 1                    | -        | 1            | -        |

\* Other serious infection refers to an infection requiring hospital admission.

\*\* Cytomegalo Virus (CMV) disease defined as an episode of viraemia with associated signs of disease (e.g. fever, leucopenia, GI upset, deranged LFTs) treated with antiviral therapy.

\*\*\* D- / R-: Donor CMV IgG negative at time of transplant/ Recipient CMV IgG negative at time of transplant.

### F5.3 Clinician reported incidence of infection episodes in recipients of renal transplant 2015 by June 2016

|                                   | 6-12 months follow-up |   | >12 months follow-up |    | All Patients |   |
|-----------------------------------|-----------------------|---|----------------------|----|--------------|---|
| Number of patients                | 153                   |   | 87                   |    | 240          |   |
| Median follow-up at census (days) | 248                   |   | 429                  |    | 307          |   |
| IQR                               | (211-300)             |   | (398-471)            |    | (232-405)    |   |
| Complication                      | n                     | % | n                    | %  | n            | % |
| NODAT *                           | 5                     | 3 | 10                   | 13 | 16           | 7 |
| Acute Coronary Syndrome **        | 3                     | 2 | 4                    | 4  | 7            | 3 |
| DVT/ PTE ***                      | 7                     | 4 | 2                    | -  | 9            | 4 |
| <b>Malignancy</b>                 | -                     | - | -                    | -  | -            | - |
| Skin cancer                       | 1                     | 1 | 2                    | 3  | 3            | 1 |
| Non-skin cancer                   | 1                     | 1 | 2                    | 3  | 3            | 1 |

\*NODAT - New Onset of Diabetes mellitus After Transplant

\*\*Acute Coronary Syndrome (<7 days post-op) treated by percutaneous angioplasty (n=6) or coronary artery bypass grafting (n=1)

\*\*\* Deep Vein Thrombosis/ Pulmonary Thrombo-embolus.

## F6 Listing for kidney transplantation

### F6.1 Percentage and prevalence per 100000 population of RRT patients with functioning kidney transplant or on transplant waiting list 31 December 2015 by NHS Board area of residence

|                 | All RRT patients<br>31/12/2015 | Patients with kidney transplant |           | Transplant or transplant listed |           | NHS Board population | Prevalence per 100000 population |
|-----------------|--------------------------------|---------------------------------|-----------|---------------------------------|-----------|----------------------|----------------------------------|
|                 |                                | n                               | %         | n                               | %         |                      |                                  |
| A&A             | 379                            | 195                             | 51        | 254                             | 67        | 370590               | 68.5                             |
| BORD            | 104                            | 61                              | 59        | 74                              | 71        | 114030               | 64.9                             |
| D&G             | 134                            | 71                              | 53        | 95                              | 71        | 149670               | 63.5                             |
| FIFE            | 346                            | 170                             | 49        | 203                             | 59        | 368080               | 55.2                             |
| FV              | 265                            | 156                             | 59        | 196                             | 74        | 302650               | 64.8                             |
| GG&C            | 1160                           | 686                             | 59        | 856                             | 74        | 1149890              | 74.4                             |
| GRAM            | 518                            | 287                             | 55        | 345                             | 67        | 587820               | 58.7                             |
| HIGH            | 299                            | 185                             | 62        | 222                             | 74        | 321000               | 69.2                             |
| LAN             | 622                            | 370                             | 59        | 474                             | 76        | 654490               | 72.4                             |
| LOTH            | 637                            | 371                             | 58        | 450                             | 71        | 867800               | 51.9                             |
| ORKN            | 17                             | 6                               | 35        | 8                               | 47        | 21670                | 36.9                             |
| SHET            | 15                             | 6                               | 40        | 8                               | 53        | 23200                | 34.5                             |
| TAY             | 395                            | 198                             | 50        | 246                             | 62        | 415040               | 59.3                             |
| WI              | 26                             | 9                               | 35        | 14                              | 54        | 27070                | 51.7                             |
| <b>Scotland</b> | <b>4917</b>                    | <b>2771</b>                     | <b>56</b> | <b>3445</b>                     | <b>70</b> | <b>5373000</b>       | <b>64.1</b>                      |

The percentage of patients in each NHS Board area treated by all forms of RRT (PD, HD, Transplant) who are either on the transplant waiting list or have a functioning transplant are shown.

Patients who were on the transplant waiting list but had suspended rather than active status are included.

Two patients live outside of Scotland and were receiving treatment within Scottish renal units on 31 December 2015.



## F6.2 Frequency of first kidney transplants and time from start of RRT to activation on transplant waiting list, by NHS Board area of residence at transplantation 2011-2015

|                 | n           | Pre-emptive transplants |                | LD Tx in first year of RRT* | Patients with listing date** | Prevalence per 100000 population |                   |
|-----------------|-------------|-------------------------|----------------|-----------------------------|------------------------------|----------------------------------|-------------------|
|                 |             | Total Number            | Number from DD |                             |                              | Median                           | IQR               |
| A&A             | 64          | 14                      | 7              | 11                          | 51                           | 86                               | -130 - 552        |
| BORD            | 28          | 5                       | 2              | 5                           | 22                           | 136                              | -89 - 329         |
| D&G             | 28          | 6                       | 2              | 8                           | 23                           | 56                               | -160 - 239        |
| FIFE            | 63          | 10                      | 3              | 8                           | 55                           | 86                               | -123 - 339        |
| FV              | 73          | 16                      | 7              | 14                          | 54                           | 128                              | -26 - 357         |
| GG&C            | 262         | 57                      | 23             | 48                          | 227                          | 65                               | -167 -305         |
| GRAM            | 99          | 12                      | 4              | 11                          | 89                           | 58                               | -70 - 278         |
| HIGH            | 51          | 10                      | 4              | 10                          | 42                           | -5                               | -98 - 250         |
| LAN             | 157         | 23                      | 9              | 26                          | 140                          | 253                              | -63- 432          |
| LOTH            | 123         | 17                      | 9              | 19                          | 108                          | 170                              | -73 - 410         |
| ORKN            | 1           | 0                       | -              | 0                           | 1                            | -                                | -                 |
| SHET            | 1           | 0                       | -              | 0                           | 1                            | -                                | -                 |
| TAY             | 65          | 15                      | 4              | 16                          | 49                           | 144                              | -101 - 344        |
| WI              | 2           | 0                       | -              | 0                           | 2                            | -                                | -                 |
| <b>Scotland</b> | <b>1017</b> | <b>185</b>              | <b>74</b>      | <b>176</b>                  | <b>864</b>                   | <b>107</b>                       | <b>-108 - 364</b> |

\*Includes pre-emptive LD transplants

\*\* Patients receiving LD pre-emptive transplants excluded

\*\*\* Truncated to -182 days

185 patients received a pre-emptive transplant in 2011-2015, 111 from a live donor (LD), 74 from a deceased donor (DD).

A further 65 patients received a LD transplant within one year of starting RRT.

Renal Association guidelines suggest that patients with progressive deterioration in renal function who are suitable for transplantation should be placed

on the national transplant list within six months (-182 days) of their anticipated dialysis start date. Patients listed from transplantation for longer than six months prior to starting RRT have their duration of listing truncated to six months for the analysis.

### F6.3 Time from start of RRT to activation on transplant waiting list patients starting RRT 2010-2014, by NHS Board area of residence at start of RRT

|                 | Number starting RRT 2010-2014 | Patients active on Tx waiting list by 31 Dec 2015* |             | Days from start of RRT to listing** |                   |
|-----------------|-------------------------------|--|-------------|-------------------------------------|-------------------|
|                 |                               | n  | %           | Median                              | IQR               |
| A&A             | 215                           | 66   | 30.7        | 86                                  | -60 - 415         |
| BORD            | 47                            | 21   | 44.7        | 103                                 | -62 - 416         |
| D&G             | 78                            | 29   | 37.2        | 32                                  | -182 - 192        |
| FIFE            | 231                           | 50   | 21.6        | 136                                 | -182 - 337        |
| FV              | 161                           | 52   | 32.3        | 60                                  | -71 - 358         |
| GG&C            | 604                           | 233  | 38.6        | 16                                  | -182 - 204        |
| GRAM            | 269                           | 92   | 34.2        | 53                                  | -89 - 318         |
| HIGH            | 121                           | 47   | 38.8        | -35                                 | -182 - 133        |
| LAN             | 343                           | 146  | 42.6        | 208                                 | -86 - 399         |
| LOTH            | 307                           | 94   | 30.6        | 92                                  | -97 - 322         |
| ORKN            | 9                             | 2  | 22.2        | 114                                 | -                 |
| SHET            | 8                             | 2  | 25.0        | 253                                 | -                 |
| TAY             | 223                           | 57   | 25.6        | 84                                  | -101 - 340        |
| WI              | 16                            | 5  | 31.3        | 119                                 | 33 - 296          |
| <b>Scotland</b> | <b>2632</b>                   | <b>896</b>   | <b>34.0</b> | <b>63</b>                           | <b>-125 - 323</b> |

\* Patients active on transplant waiting list at any time up until 31 December 2015.

\*\*Truncated to -182 days

Renal Association guidelines suggest that patients with progressive deterioration in renal function who are suitable for transplantation should be placed on the national transplant list within six months (-182 days) of their anticipated dialysis start date. Patients listed from transplantation for longer than six months prior to starting RRT have their duration of listing truncated to six months for the analysis.