# Survival Rates Following Transplantation

This chapter shows graft survival rates over time for kidney, pancreas and corneal transplants, and patient survival estimates for kidney, pancreas, cardiothoracic, liver, and intestinal transplants, performed in the UK. Separate estimates are presented for adult and paediatric patients (using organ specific age definitions) and for transplants from donors after brain death and donors after circulatory death.

In all cases, the Kaplan-Meier estimate of the survivor function was used to provide the survival rate and groups (years) were compared using the log-rank test. The analyses do not take account of risk factors which may change over time. Graft survival is defined as time from transplant to graft failure, censoring for death with a functioning graft and grafts still functioning at time of analysis. Patient survival is defined as time from transplant to patient death, censoring for patients still alive at time of analysis. Both analyses consider only first transplants.

## 11.1 Kidney graft and patient survival

### *11.1.1 Adult kidney recipients - donor after brain death (DBD)*

**Figure 11.1** shows long-term graft survival in adult (≥18 years) recipients for first kidney only transplant from donors after brain death. **Table 11.1** shows the graft survival estimates and confidence intervals for one, two, five and ten years post-transplant. There have been significant improvements in one-year survival over the time periods shown, ($p<0.01$). **Table 11.2** shows the patient survival estimates and confidence intervals for one, two, five and ten years post-transplant. There were no statistically significant changes in patient survival over time ($p>0.2$).

**Figure 11.1 Long-term graft survival after first adult kidney only transplant from donors after brain death, 1 January 2008 – 31 December 2020**

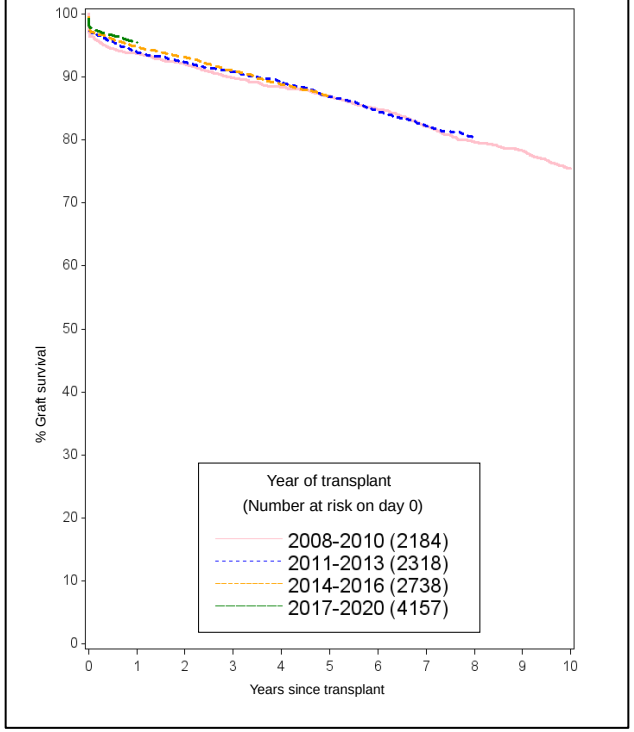


**Table 11.1 Graft survival after first adult kidney only transplant from a DBD**

| Year of transplant | No. at risk on day 0 | % Graft survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2010 | 2184 | 94 | (93-95) | 92 | (91-93) | 87 | (85-88) | 75 | (73-77) |
| 2011-2013 | 2318 | 94 | (93-95) | 92 | (91-93) | 87 | (85-88) | | |
| 2014-2016 | 2738 | 95 | (94-96) | 93 | (92-94) | 87 | (86-88) | | |
| 2017-2020 | 4157 | 95 | (95-96) | | | | | | |

**Table 11.2 Patient survival after first adult kidney only transplant from a DBD**

| Year of transplant | No. at risk on day 0 | % Patient survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2010 | 2185 | 96 | (95-97) | 95 | (94-95) | 90 | (89-91) | 76 | (74-78) |
| 2011-2013 | 2319 | 96 | (96-97) | 94 | (93-95) | 88 | (87-90) | | |
| 2014-2016 | 2739 | 97 | (96-98) | 95 | (94-96) | 89 | (87-90) | | |
| 2017-2020 | 4158 | 96 | (96-97) | | | | | | |

*11.1.2 Adult kidney recipients - donor after circulatory death (DCD)*

Long-term graft survival in adult recipients for kidney transplants from donors after circulatory death is shown in **Figure 11.2**. **Table 11.3** shows the graft survival estimates and confidence intervals for one, two, five and ten years post-transplant. There has been significant variation in one year survival over the time periods shown, p=0.0001. **Table 11.4** shows the patient survival estimates and confidence intervals for each time period analysed. There was a statistically significant increase in patient survival over time at one year post-transplant (p=0.02).

**Figure 11.2 Long-term graft survival after first adult kidney only transplant from donors after circulatory death, 1 January 2008 – 31 December 2020**

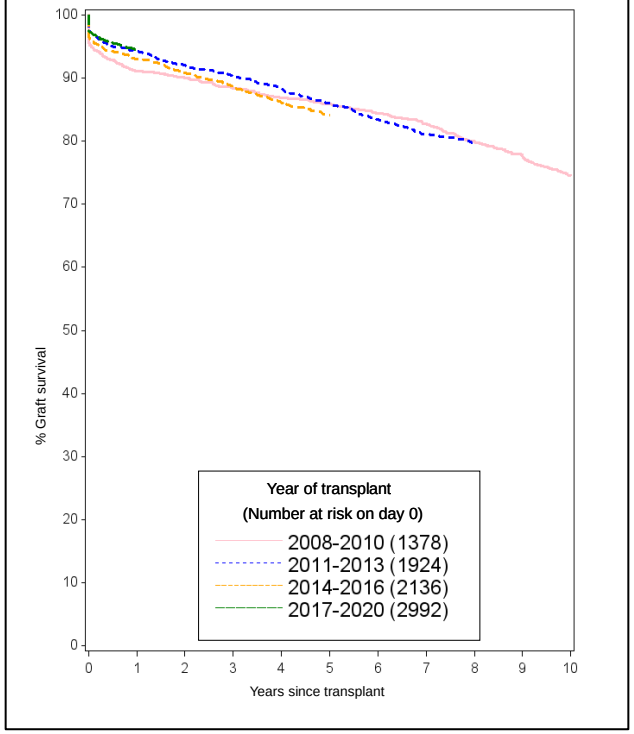


**Table 11.3 Graft survival after first adult kidney only transplant from a DCD**

| Year of transplant | No. at risk on day 0 | % Graft survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2010 | 1378 | 91 | (89-92) | 90 | (88-92) | 86 | (84-88) | 75 | (72-77) |
| 2011-2013 | 1924 | 94 | (93-95) | 92 | (91-93) | 86 | (84-88) | | |
| 2014-2016 | 2136 | 93 | (92-94) | 91 | (90-92) | 84 | (82-86) | | |
| 2017-2020 | 2992 | 94 | (94-95) | | | | | | |

**Table 11.4 Patient survival after first adult kidney only transplant from a DCD**

| Year of transplant | No. at risk on day 0 | % Patient survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2010 | 1378 | 95 | (94-96) | 94 | (92-95) | 87 | (85-89) | 72 | (70-75) |
| 2011-2013 | 1924 | 96 | (94-96) | 94 | (92-95) | 86 | (84-87) | | |
| 2014-2016 | 2137 | 97 | (96-98) | 95 | (94-96) | 86 | (84-87) | | |
| 2017-2020 | 2996 | 97 | (96-97) | | | | | | |

*11.1.3 Adult kidney recipients - living donor*

Long-term graft survival in adult recipients for living donor kidney transplants in the UK is shown in **Figure 11.3**. **Table 11.5** shows graft survival estimates and confidence intervals for each time period analysed. There has been a significant improvement in one- and two-year survival over the time periods shown (p<0.0001 and p=0.04, respectively). **Table 11.6** shows the patient survival estimates and confidence intervals for one, two, five and ten years post-transplant. There were no statistically significant changes in patient survival over time (p>0.14).

**Figure 11.3 Long-term graft survival after first adult living donor kidney only transplant in the UK, 1 January 2008 – 31 December 2020**

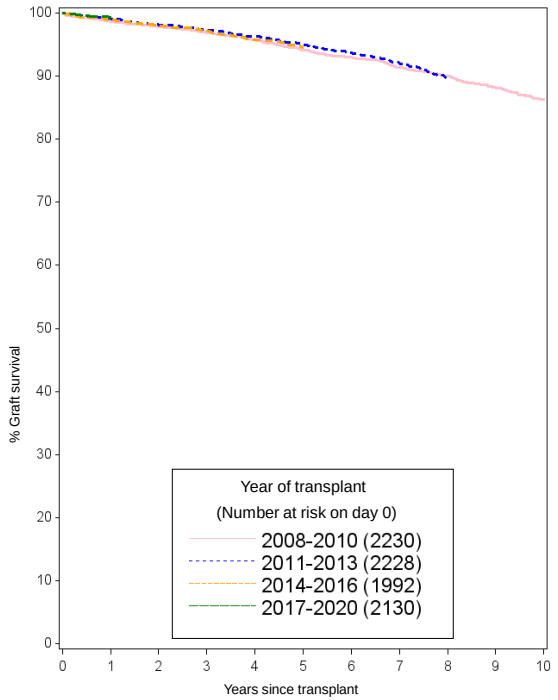


**Table 11.5 Graft survival after first adult living donor kidney transplant**

| Year of transplant | No. at risk on day 0 | % Graft survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2010 | 2230 | 97 | (96-97) | 96 | (95-96) | 92 | (91-93) | 83 | (81-84) |
| 2011-2013 | 2228 | 97 | (96-98) | 96 | (95-97) | 91 | (90-92) | | |
| 2014-2016 | 1991 | 98 | (97-99) | 97 | (96-98) | 93 | (92-94) | | |
| 2017-2020 | 2127 | 99 | (98-99) | | | | | | |

**Table 11.6 Patient survival after first adult living donor kidney transplant**

| Year of transplant | No. at risk on day 0 | % Patient survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2010 | 2230 | 99 | (98-99) | 98 | (97-98) | 94 | (93-95) | 86 | (85-88) |
| 2011-2013 | 2228 | 99 | (99-99) | 98 | (97-99) | 95 | (94-96) | | |
| 2014-2016 | 1992 | 99 | (98-99) | 98 | (97-99) | 95 | (93-95) | | |
| 2017-2020 | 2130 | 99 | (99-100) | | | | | | |

*11.1.4 Paediatric kidney recipients - donor after brain death (DBD)*

**Figure 11.4** shows long-term graft survival in paediatric (<18 years) recipients for first kidney only transplants from donors after brain death. Graft survival estimates and confidence intervals are shown for each time period analysed in **Table 11.7**. There were no statistically significant changes in graft survival over time (p>0.3). **Table 11.8** shows the patient survival estimates and confidence intervals for one, two, five and ten years post-transplant. There were no statistically significant changes in patient survival over time (p>0.4). There were insufficient paediatric recipients of first kidney only transplants from donors after circulatory death to permit reliable analysis.

**Figure 11.4 Long-term graft survival after first paediatric kidney only transplant from donors after brain death, 1 January 2008 – 31 December 2020**

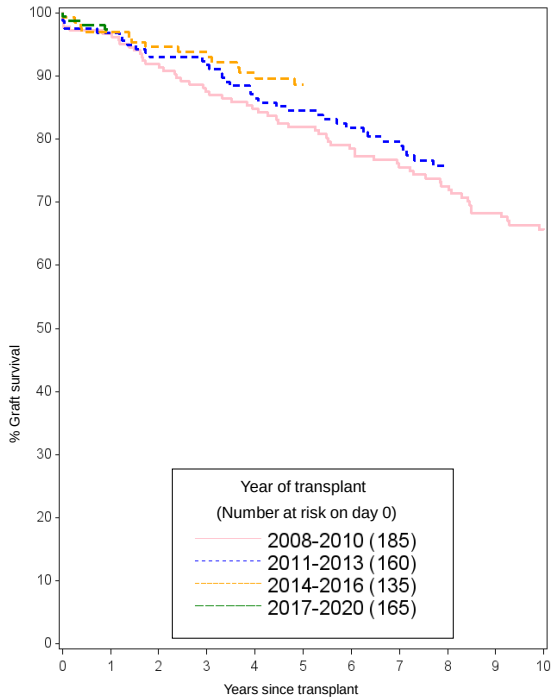


**Table 11.7 Graft survival after first paediatric kidney only transplant from a DBD**

| Year of transplant | No. at risk on day 0 | % Graft survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2010 | 185 | 97 | (93-99) | 92 | (87-95) | 82 | (76-87) | 66 | (58-72) |
| 2011-2013 | 160 | 97 | (93-99) | 93 | (88-96) | 84 | (78-89) | | |
| 2014-2016 | 135 | 97 | (92-99) | 95 | (89-97) | 89 | (82-93) | | |
| 2017-2020 | 165 | 97 | (93-99) | | | | | | |

**Table 11.8 Patient survival after first paediatric kidney only transplant from a DBD**

| Year of transplant | No. at risk on day 0 | % Patient survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2010 | 185 | 99 | (96-100) | 99 | (96-100) | 98 | (94-99) | 96 | (92-98) |
| 2011-2013 | 160 | 99 | (96-100) | 99 | (95-100) | 97 | (92-99) | | |
| 2014-2016 | 135 | 99 | (95-100) | 99 | (95-100) | 99 | (95-100) | | |
| 2017-2020 | 165 | 99 | (95-100) | | | | | | |

*11.1.5 Paediatric kidney recipients - living donor*

Long-term graft survival in paediatric recipients for living donor kidney transplants in the UK is shown in **Figure 11.5**. **Table 11.9** shows graft survival estimates and confidence intervals for each time period analysed. There were no statistically significant changes in graft survival over time (p>0.1). **Table 11.10** shows the patient survival estimates and confidence intervals for one, two, five and ten years post-transplant. There were no statistically significant changes in patient survival over time (p>0.2).

**Figure 11.5 Long-term graft survival after first paediatric living donor kidney only transplant in the UK, 1 January 2008 – 31 December 2020**

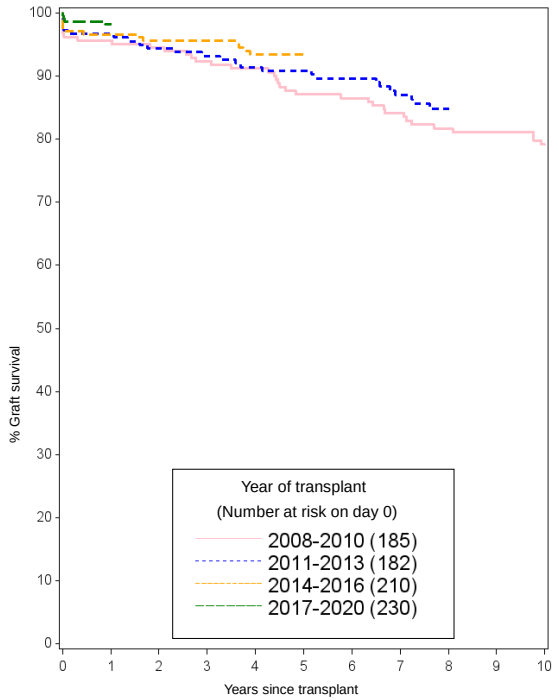


**Table 11.9 Graft survival after first paediatric living donor kidney transplant**

| Year of transplant | No. at risk on day 0 | % Graft survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2010 | 185 | 96 | (92-98) | 95 | (90-97) | 87 | (81-91) | 79 | (72-85) |
| 2011-2013 | 182 | 97 | (93-99) | 94 | (90-97) | 91 | (85-94) | | |
| 2014-2016 | 210 | 97 | (93-98) | 96 | (92-98) | 93 | (89-96) | | |
| 2017-2020 | 230 | 98 | (95-99) | | | | | | |

**Table 11.10 Patient survival after first paediatric living donor kidney transplant**

| Year of transplant | No. at risk on day 0 | % Patient survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2010 | 186 | 99 | (96-100) | 99 | (96-100) | 97 | (93-99) | 95 | (90-97) |
| 2011-2013 | 182 | 99 | (96-100) | 99 | (96-100) | 99 | (96-100) | | |
| 2014-2016 | 210 | 99 | (96-100) | 99 | (95-100) | 98 | (95-99) | | |
| 2017-2020 | 230 | 99 | (96-100) | | | | | | |

## 11.2 Pancreas graft and patient survival

*11.2.1 Simultaneous pancreas/kidney transplants - donor after brain death (DBD)*

**Figure 11.6** shows long-term graft survival in recipients receiving their first simultaneous pancreas/kidney (SPK) transplant performed from donors after brain death. Graft and patient survival estimates and confidence intervals are shown at one, two, five and ten years post-transplant in **Table 11.11** and **Table 11.12** respectively. Results relate to adults only as there are no paediatric pancreas transplant recipients. There has been a significant improvement in one-, two- and five-year graft survival over the time periods shown, (p=0.004, p=0.02, p=0.02, respectively). Differences in patient survival are not significant over time (p>0.1).

**Figure 11.6 Long-term graft survival after first SPK transplant from donors after brain death, 1 January 2008 – 31 December 2020**

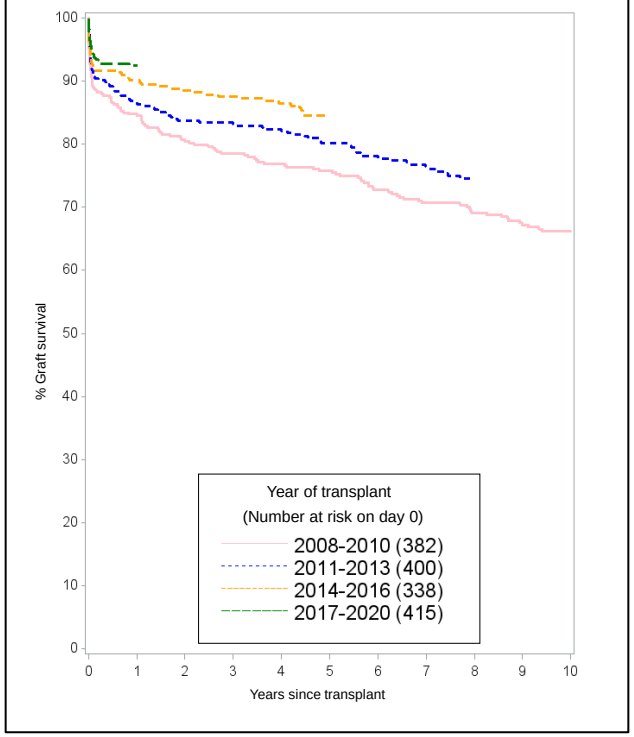


**Table 11.11 Graft survival after first SPK transplant from a DBD**

| Year of transplant | No. at risk on day 0 | % Graft survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2010 | 382 | 85 | (81-88) | 80 | (76-84) | 76 | (71-80) | 66 | (61-71) |
| 2011-2013 | 400 | 86 | (83-89) | 84 | (80-87) | 80 | (76-84) | | |
| 2014-2016 | 338 | 90 | (86-93) | 89 | (85-92) | 84 | (80-88) | | |
| 2017-2020 | 415 | 92 | (90-95) | | | | | | |

**Table 11.12 Patient survival after first SPK transplant from a DBD**

| Year of transplant | No. at risk on day 0 | % Patient survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2010 | 384 | 97 | (95-99) | 95 | (92-97) | 90 | (86-92) | 76 | (71-80) |
| 2011-2013 | 400 | 96 | (94-98) | 94 | (91-96) | 88 | (84-91) | | |
| 2014-2016 | 339 | 97 | (94-98) | 97 | (94-98) | 89 | (85-92) | | |
| 2017-2020 | 416 | 98 | (96-99) | | | | | | |

*11.2.2 Simultaneous pancreas/kidney transplants - donor after circulatory death (DCD)*

**Figure 11.7** shows pancreas graft survival in recipients receiving their first SPK transplant performed from donors after circulatory death. Graft and patient survival estimates and confidence intervals are shown at one, two, five and ten years in **Table 11.13** and **Table 11.14** respectively. Results are for adult patients only. There has been a significant improvement in one-year graft survival over the time periods shown, p=0.03. There has been a significant improvement in two-year patient survival over the time periods shown, p=0.03.

**Figure 11.7 Pancreas graft survival after first SPK transplant from donors after circulatory death, 1 January 2008 – 31 December 2020**

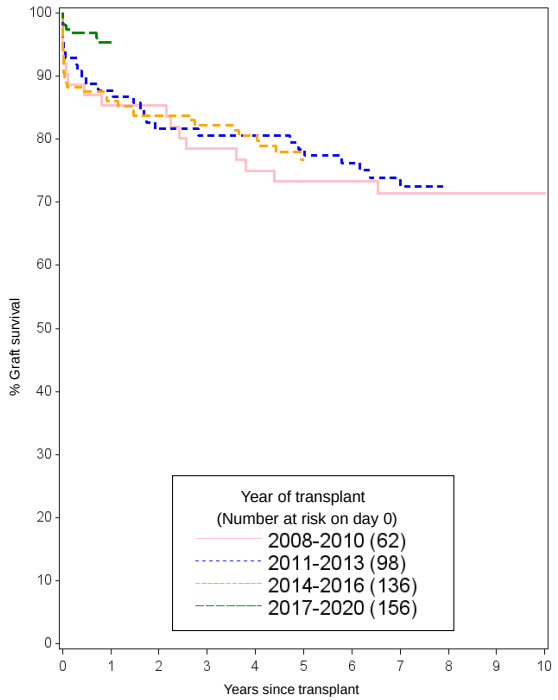


**Table 11.13 Graft survival after first SPK transplant from a DCD**

| Year of transplant | No. at risk on day 0 | % Graft survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2010 | 62 | 85 | (74-92) | 85 | (74-92) | 73 | (60-83) | 71 | (58-81) |
| 2011-2013 | 98 | 88 | (79-93) | 82 | (72-88) | 78 | (69-85) | | |
| 2014-2016 | 136 | 86 | (79-91) | 84 | (76-89) | 77 | (68-83) | | |
| 2017-2020 | 156 | 95 | (91-98) | | | | | | |

**Table 11.14 Patient survival after first SPK transplant from a DCD**

| Year of transplant | No. at risk on day 0 | % Patient survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2010 | 63 | 97 | (88-99) | 92 | (81-96) | 88 | (77-94) | 78 | (64-87) |
| 2011-2013 | 98 | 99 | (93-100) | 99 | (93-100) | 94 | (87-98) | | |
| 2014-2016 | 136 | 99 | (95-100) | 98 | (93-99) | 92 | (85-96) | | |
| 2017-2020 | 157 | 99 | (95-100) | | | | | | |

*11.2.3 Pancreas only transplants - donor after brain death (DBD)*

**Figure 11.8** shows long-term graft survival in recipients receiving their first pancreas only transplant performed from donors after brain death. Graft and patient survival estimates and confidence intervals are shown at one, two, five and ten years in **Table 11.15** and **Table 11.16** respectively. Results are for adult patients only. There is evidence of a change in one-, two- and five-year graft survival over time (p=0.03, p=0.01 and p=0.01 respectively). There were no statistically significant changes in patient survival over time (p>0.3).

**Figure 11.8 Long-term graft survival after pancreas only transplant from donors after brain death, 1 January 2008 – 31 December 2020**

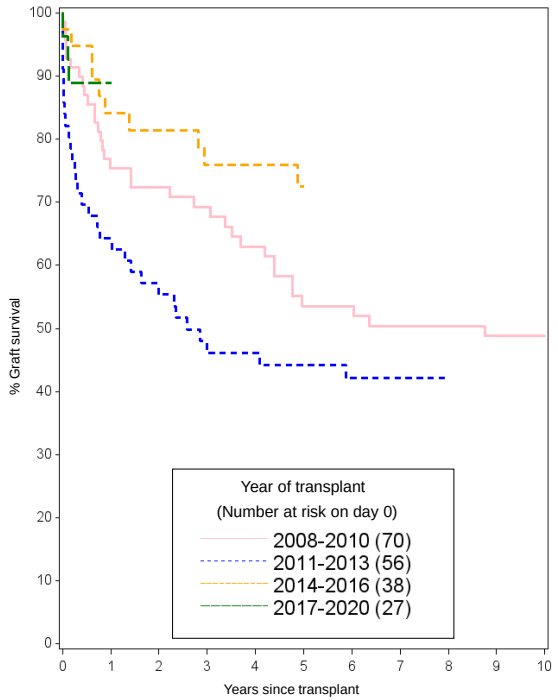


**Table 11.15 Graft survival after first pancreas only transplant from a DBD**

| Year of transplant | No. at risk on day 0 | % Graft survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2010 | 70 | 75 | (63-84) | 72 | (60-81) | 54 | (41-65) | 49 | (36-60) |
| 2011-2013 | 56 | 64 | (50-75) | 55 | (41-67) | 44 | (31-57) | | |
| 2014-2016 | 38 | 84 | (68-93) | 81 | (65-91) | 73 | (55-84) | | |
| 2017-2020 | 27 | 89 | (69-96) | | | | | | |

**Table 11.16 Patient survival after first pancreas only transplant from a DBD**

| Year of transplant | No. at risk on day 0 | % Patient survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2010 | 71 | 94 | (85-98) | 91 | (81-96) | 84 | (73-91) | 76 | (63-85) |
| 2011-2013 | 56 | 98 | (86-100) | 98 | (86-100) | 77 | (60-87) | | |
| 2014-2016 | 38 | 97 | (82-100) | 94 | (79-99) | 88 | (72-95) | | |
| 2017-2020 | 27 | 96 | (74-99) | | | | | | |

*11.2.4 Pancreas only transplants - donor after circulatory death (DCD)*

**Figure 11.9** shows pancreas graft survival in recipients receiving their first pancreas only transplant performed from donors after circulatory death. Graft and patient survival estimates and confidence intervals are shown at one, two, five and ten years in **Table 11.17** and **Table 11.18** respectively. Results are for adult patients only and are based on small numbers so should be interpreted with caution.

**Figure 11.9 Pancreas graft survival after pancreas only transplant from donors after circulatory death, 1 January 2008 – 31 December 2020**

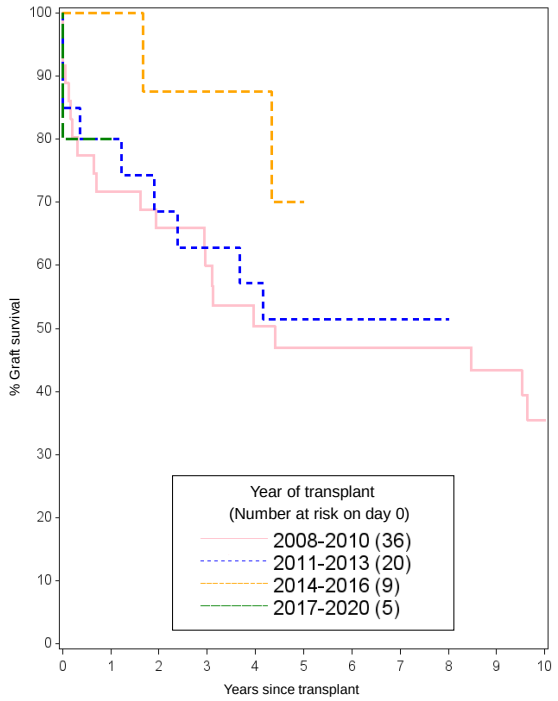


**Table 11.17 Graft survival after first pancreas only transplant from a DCD**

| Year of transplant | No. at risk on day 0 | % Graft survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2010 | 36 | 72 | (54-84) | 66 | (48-79) | 47 | (29-63) | 35 | (19-52) |
| 2011-2013 | 20 | 80 | (55-92) | 69 | (43-85) | 51 | (27-71) | | |
| 2014-2016 | 9 | 100 | - | 88 | (39-98) | 70 | (22-92) | | |
| 2017-2020 | 5 | 80 | (20-97) | | | | | | |

**Table 11.18 Patient survival after first pancreas only transplant from a DCD**

| Year of transplant | No. at risk on day 0 | % Patient survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2010 | 36 | 97 | (82-100) | 97 | (82-100) | 79 | (59-90) | 66 | (45-81) |
| 2011-2013 | 20 | 95 | (68-99) | 95 | (68-99) | 95 | (68-99) | | |
| 2014-2016 | 9 | 100 | - | 100 | - | 67 | (28-88) | | |
| 2017-2020 | 5 | 100 | - | | | | | | |

## 11.3 Cardiothoracic patient survival

*11.3.1 Adult heart recipients – donors after brain death (DBD)*

Long-term patient survival for adult (≥16 years) recipients after first heart only transplant performed from donors after brain death is shown in **Figure 11.10**. Super-urgent, urgent, and non-urgent patients are included. **Table 11.19** shows the patient survival estimates and confidence intervals for one, two, five and ten years post-transplant for each transplant era. There were no statistically significant differences in patient survival across eras (p>0.5).

**Figure 11.10 Long-term patient survival after first adult heart only transplant from donors after brain death, 1 January 2008 – 31 December 2019**

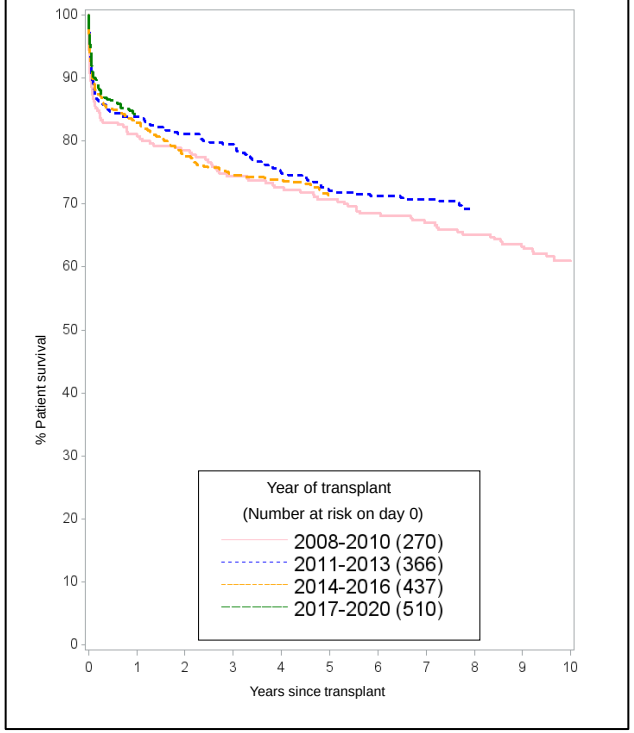


**Table 11.19 Patient survival after first adult heart only transplant from a DBD**

| Year of transplant | No. at risk on day 0 | % Patient survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2010 | 270 | 81 | (76-85) | 79 | (73-83) | 71 | (65-76) | 61 | (55-66) |
| 2011-2013 | 366 | 84 | (80-87) | 81 | (77-85) | 72 | (67-76) | | |
| 2014-2016 | 437 | 83 | (79-86) | 78 | (74-81) | 71 | (67-75) | | |
| 2017-2020 | 510 | 84 | (81-87) | | | | | | |

*11.3.2 Adult heart-lung block recipients – donors after brain death (DBD)*

Patient survival for adult recipients after first heart-lung block transplant from donors after brain death is shown in **Figure 11.11**. Patient survival estimates and confidence intervals for each time period analysed are shown in **Table 11.20**. There were no statistically significant differences in patient survival across eras (p>0.1).

**Figure 11.11 Long-term patient survival after first adult heart-lung block transplant from donors after brain death, 1 January 2008 – 31 December 2020**

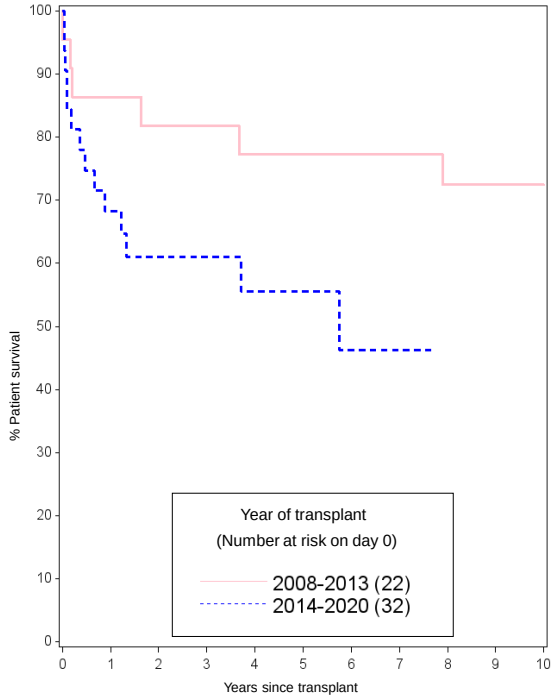


**Table 11.20 Patient survival after first adult heart-lung block transplant from a DBD**

| Year of transplant | No. at risk on day 0 | % Patient survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2013 | 22 | 86 | (63-95) | 82 | (59-93) | 77 | (54-90) | 72 | (49-87) |
| 2014-2020 | 32 | 68 | (49-82) | 61 | (42-76) | 56 | (35-72) | | |

*11.3.3 Adult lung recipients - donors after brain death (DBD)*

Patient survival for adult recipients after first lung only transplant from donors after brain death is shown in **Figure 11.12**, with survival estimates and confidence intervals shown in **Table 11.21**. Super-urgent, urgent, and non-urgent patients are included. There were no statistically significant differences in patient survival across eras (p>0.5).

**Figure 11.12 Long-term patient survival after first adult lung only transplant from donors after brain death, 1 January 2008 – 31 December 2020**

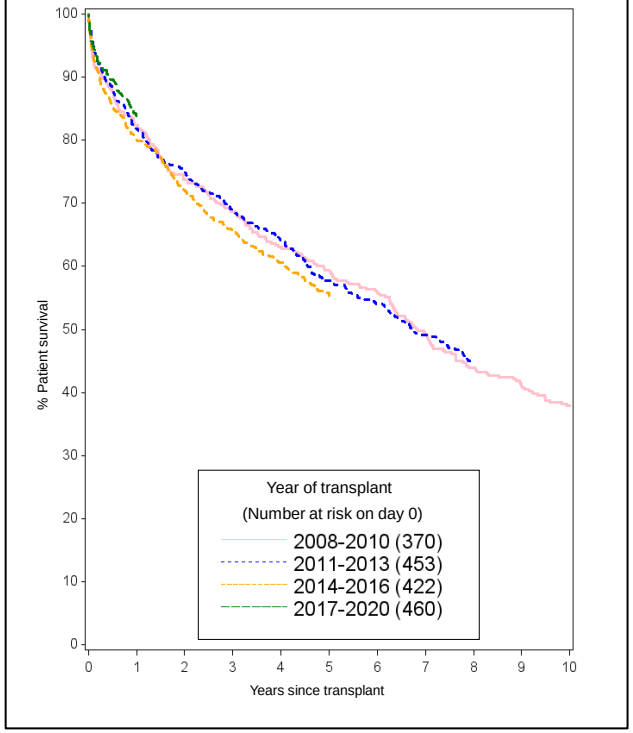


**Table 11.21 Patient survival after first adult lung only transplant from a DBD**

| Year of transplant | No. at risk on day 0 | % Patient survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2010 | 370 | 82 | (78-86) | 74 | (69-78) | 59 | (54-64) | 38 | (33-43) |
| 2011-2013 | 453 | 82 | (78-85) | 75 | (71-79) | 58 | (53-62) | | |
| 2014-2016 | 422 | 80 | (76-84) | 72 | (67-76) | 55 | (50-60) | | |
| 2017-2020 | 460 | 84 | (80-87) | | | | | | |

*11.3.4 Adult lung recipients - donors after circulatory death (DCD)*

Patient survival for adult recipients after first lung only transplant from donors after circulatory death is shown in **Figure 11.13**, by era, with survival estimates and confidence intervals shown in **Table 11.22**. Super-urgent, urgent, and non-urgent patients are included.

**Figure 11.13 Patient survival after first adult lung only transplant from donors after circulatory death, 1 January 2008 – 31 December 2020**

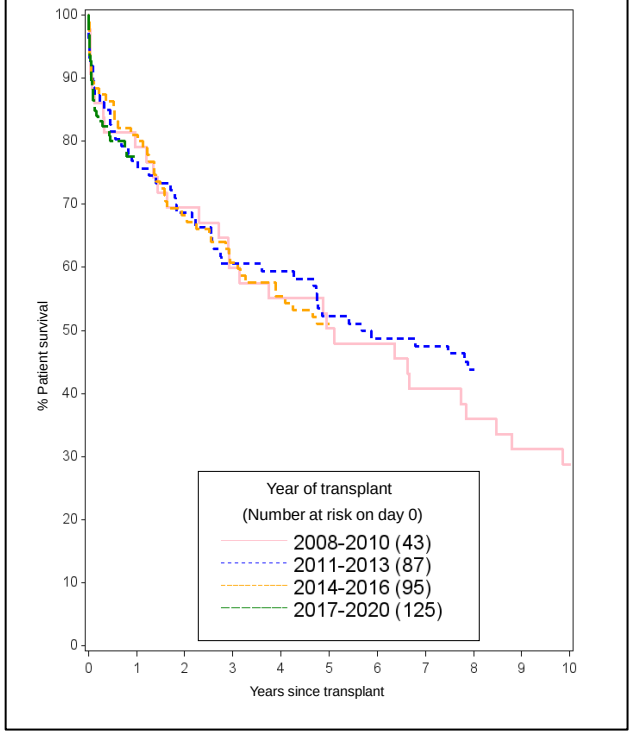


**Table 11.22 Patient survival after first adult lung only transplant from a DCD**

| Year of transplant | No. at risk on day 0 | % Patient survival (95% confidence interval) One year | | Two year | | Three year | |
|---|---|---|---|---|---|---|---|
| 2008-2010 | 43 | 79 | (64-89) | 69 | (53-81) | 50 | (35-64) |
| 2011-2013 | 87 | 77 | (66-84) | 69 | (58-77) | 52 | (41-62) |
| 2014-2016 | 95 | 81 | (72-88) | 68 | (58-77) | 51 | (41-61) |
| 2017-2020 | 125 | 78 | (69-84) | | | | |

*11.3.5 Paediatric heart recipients – donors after brain death (DBD)*

Long-term patient survival for paediatric recipients after first heart only transplant from donors after brain death is shown in **Figure 11.14**. Super-urgent, urgent and non-urgent patients are included. **Table 11.23** shows the patient survival estimates and confidence intervals for one, two, five, and ten years post-transplant. There were no statistically significant differences in patient survival across eras (p>0.8). The number of heart-lung transplant recipients was too small to analyse.

**Figure 11.14 Long-term patient survival after first paediatric heart only transplant from donors after brain death, 1 January 2008 – 31 December 2020**

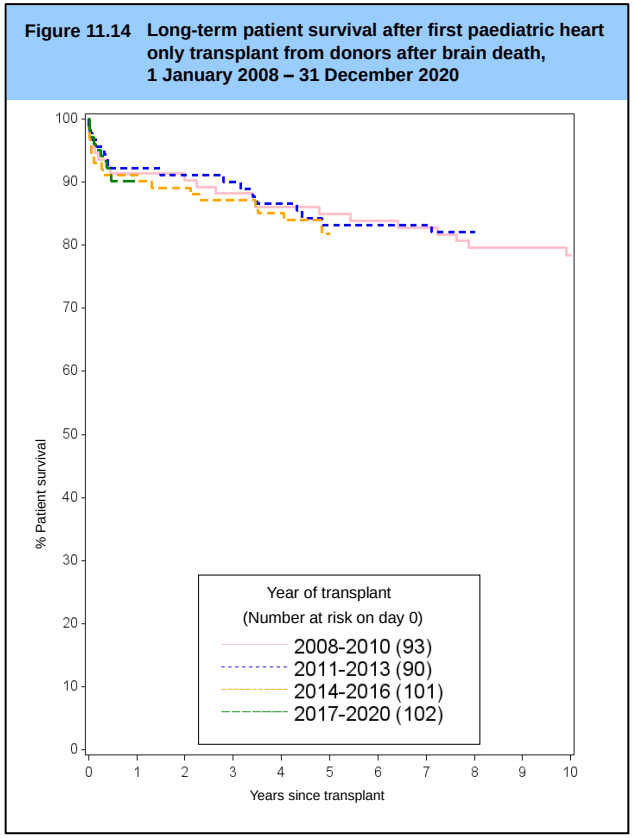


**Table 11.23 Patient survival after first paediatric heart only transplant from a DBD**

| Year of transplant | No. at risk on day 0 | % Patient survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2010 | 93 | 91 | (84-96) | 90 | (82-95) | 85 | (76-91) | 78 | (69-86) |
| 2011-2013 | 90 | 92 | (84-96) | 91 | (83-95) | 83 | (74-90) | | |
| 2014-2016 | 101 | 91 | (84-95) | 89 | (81-94) | 82 | (73-88) | | |
| 2017-2020 | 102 | 90 | (82-95) | | | | | | |

*11.3.6 Paediatric lung recipients - donors after brain death (DBD)*

Long-term patient survival for paediatric recipients after first lung only transplant from donors after brain death is shown in **Figure 11.15**. Super-urgent, urgent and non-urgent patients are included. **Table 11.24** shows the patient survival estimates and confidence intervals for one, two, five, and ten years post-transplant. There were no statistically significant differences in patient survival across eras (p>0.1).

**Figure 11.15 Long-term patient survival after first paediatric lung only transplant from donors after brain death, 1 January 2008 – 31 December 2020**

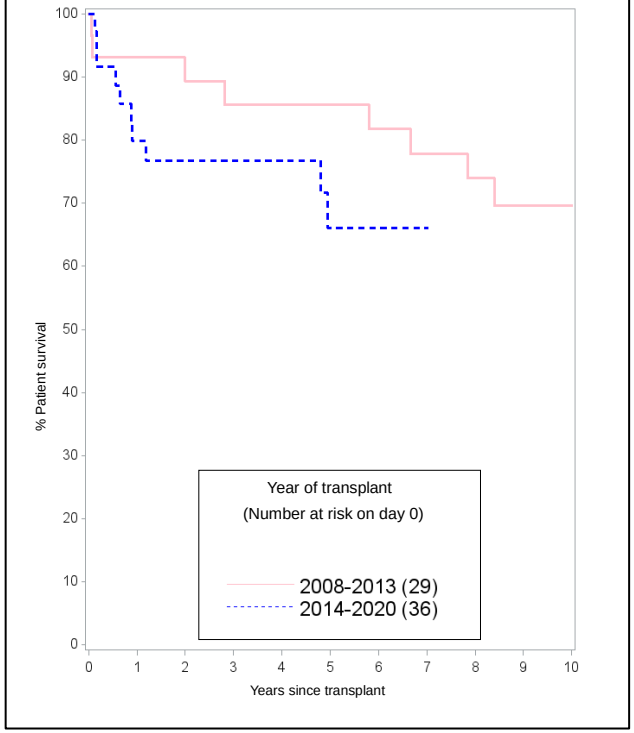


**Table 11.24 Patient survival after first paediatric lung only transplant from a DBD**

| Year of transplant | No. at risk on day 0 | % Patient survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2013 | 29 | 93 | (75-98) | 89 | (71-96) | 86 | (66-94) | 70 | (48-84) |
| 2014-2020 | 36 | 80 | (62-90) | 77 | (59-88) | 66 | (45-81) | | |

## 11.4 Liver patient survival

*11.4.1 Adult liver recipients - donor after brain death (DBD)*

Long-term patient survival for adult (≥17 years) recipients after first elective NHS Group 1 liver only transplants from donors after brain death is shown in **Figure 11.16**. **Table 11.25** shows patient survival estimates at one, two, five, and ten years post-transplant. There is evidence of a change in one-year patient survival over time (p=0.02) but no evidence of a change in two and five year patient survival (p≥0.2). Whole liver transplants are included as well as reduced and split liver transplants.

**Figure 11.16** **Long-term patient survival after first elective adult liver only transplant from donors after brain death, 1 January 2008 – 31 December 2020**

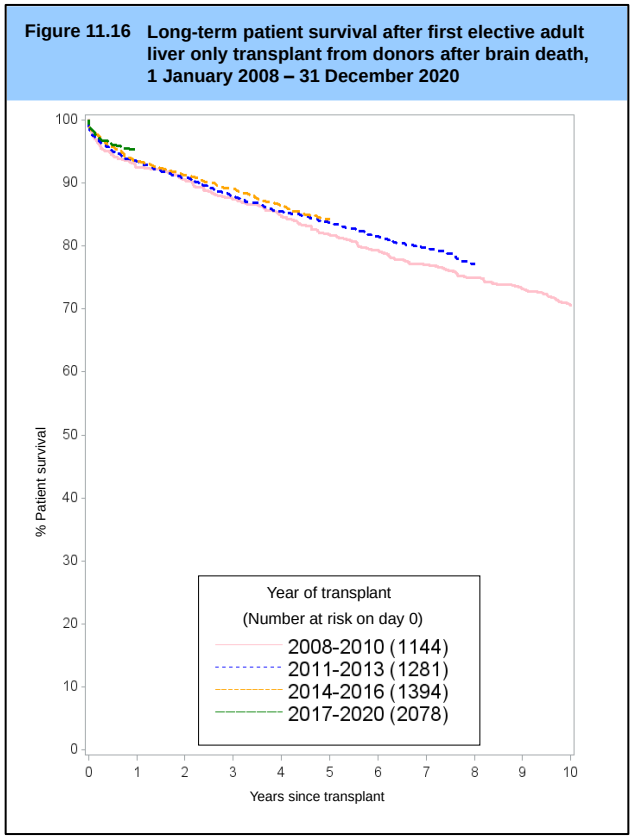


**Table 11.25** **Patient survival after first elective adult NHS Group 1 liver only transplant from donors after brain death**

| Year of transplant | No. at risk on day 0 | % Patient survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2010 | 1144 | 93 | (91-94) | 91 | (89-92) | 82 | (79-84) | 71 | (68-73) |
| 2011-2013 | 1281 | 93 | (92-95) | 91 | (89-92) | 84 | (82-86) | | |
| 2014-2016 | 1394 | 93 | (92-95) | 91 | (90-93) | 84 | (82-86) | | |
| 2017-2020 | 2078 | 95 | (94-96) | | | | | | |

*11.4.2 Adult liver recipients - donor after circulatory death (DCD)*

Patient survival for adult (≥17 years) recipients after first elective NHS Group 1 liver only transplants from donors after circulatory death is shown in **Figure 11.17**. **Table 11.26** shows patient survival estimates at one, two and five years post-transplant. There is evidence of a change in one, two- and five-year patient survival over time (p<0.001, p<0.0001, and p=0.02, respectively).

**Figure 11.17 Long-term patient survival after first elective adult liver only transplant from donors after circulatory death, 1 January 2008 – 31 December 2020**

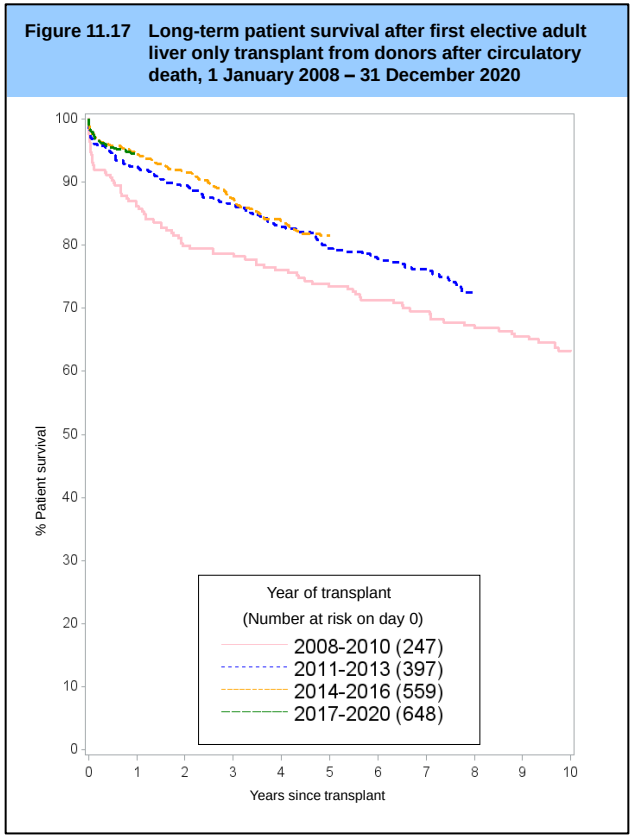


**Table 11.26 Patient survival after first elective adult NHS Group 1 liver only transplant from donors after circulatory death**

| Year of transplant | No. at risk on day 0 | % Patient survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2010 | 247 | 86 | (81-90) | 80 | (74-84) | 73 | (67-79) | 63 | (57-69) |
| 2011-2013 | 397 | 92 | (89-95) | 89 | (86-92) | 79 | (75-83) | | |
| 2014-2016 | 559 | 94 | (92-96) | 92 | (89-94) | 82 | (78-85) | | |
| 2017-2020 | 648 | 94 | (92-96) | | | | | | |

*11.4.3 Paediatric liver recipients - donor after brain death (DBD)*

**Figure 11.18** and **Table 11.27** show long-term patient survival estimates for first elective liver only transplants from donors after brain death in paediatric (<17 years) recipients. There have been no statistically significant changes in one, two or five year patient survival over the time period analysed (p>0.1). The number of paediatric transplants from donors after circulatory death was too small to estimate meaningful patient survival.

**Figure 11.18 Long-term patient survival after first elective paediatric liver only transplant from donors after brain death, 1 January 2008 – 31 December 2020**

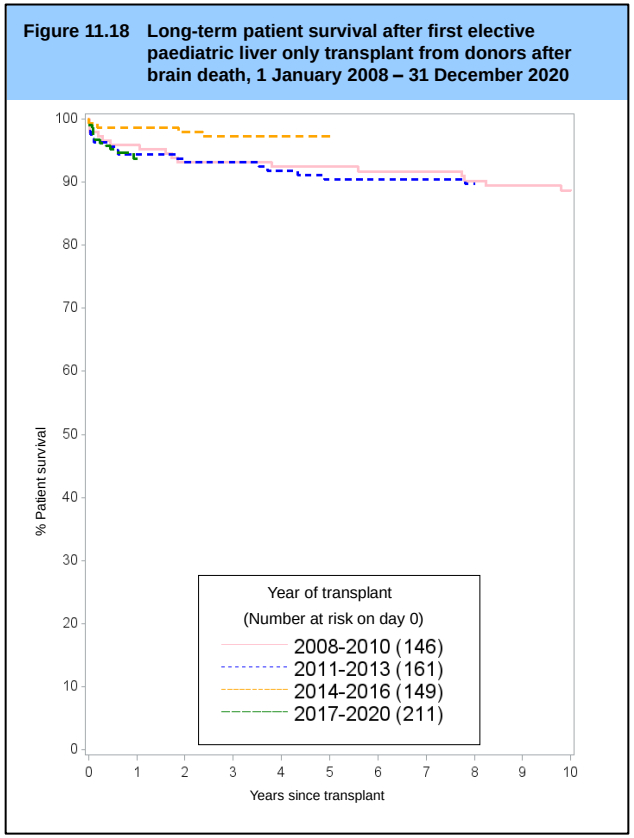


**Table 11.27 Patient survival after first elective paediatric liver only transplant from donors after brain death**

| Year of transplant | No. at risk on day 0 | % Patient survival (95% confidence interval) One year | | Two year | | Five year | | Ten year | |
|---|---|---|---|---|---|---|---|---|---|
| 2008-2010 | 146 | 96 | (91-98) | 93 | (88-96) | 92 | (87-96) | 89 | (82-93) |
| 2011-2013 | 161 | 94 | (90-97) | 93 | (88-96) | 90 | (85-94) | | |
| 2014-2016 | 149 | 99 | (95-100) | 98 | (94-99) | 97 | (93-99) | | |
| 2017-2020 | 211 | 94 | (89-96) | | | | | | |

## 11.5 Intestinal patient survival

**Figure 11.19** and **Table 11.28** show patient survival estimates for recipients receiving their first intestinal transplant, by recipient age group (adults aged ≥ 18 years) and transplant era. Results should be interpreted cautiously due to the small cohort and the heterogeneity of transplant types (both transplants that involve and do not involve the liver are being included).

**Figure 11.19 Patient survival after first intestinal graft in the UK, 1 January 2013 – 31 December 2020**

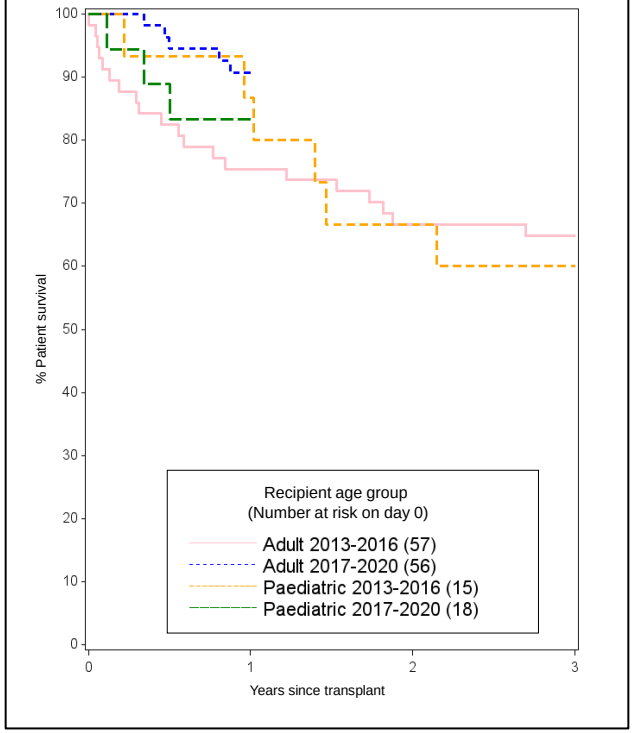


**Table 11.28 Patient survival after first intestinal transplant in the UK**

| Recipient age group | No. at risk on day 0 | % Patient survival (95% confidence interval) One year | | Two year | | Three year | |
|---|---|---|---|---|---|---|---|
| **Adult** | | | | | | | |
| 2013-2016 | 57 | 75 | (62-85) | 67 | (53-77) | 65 | (51-76) |
| 2017-2020 | 56 | 91 | (79-96) | | | | |
| **Paediatric** | | | | | | | |
| 2013-2016 | 15 | 87 | (56-96) | 67 | (38-85) | 60 | (32-80) |
| 2017-2020 | 18 | 83 | (57-94) | | | | |

## 11.6 Corneal graft survival

*11.6.1 Cornea grafts for keratoconus*

**Figure 11.20** shows graft survival estimates for first corneal transplant for keratoconus (KC) for grafts in 2008-2010, 2011-2013, 2014-2016 and 2017-2020. Graft survival estimates and confidence intervals are shown by transplant year at one, two and five years in **Table 11.29**.

**Figure 11.20 Graft survival after first corneal graft for KC in the UK, 1 January 2008 – 31 December 2020**

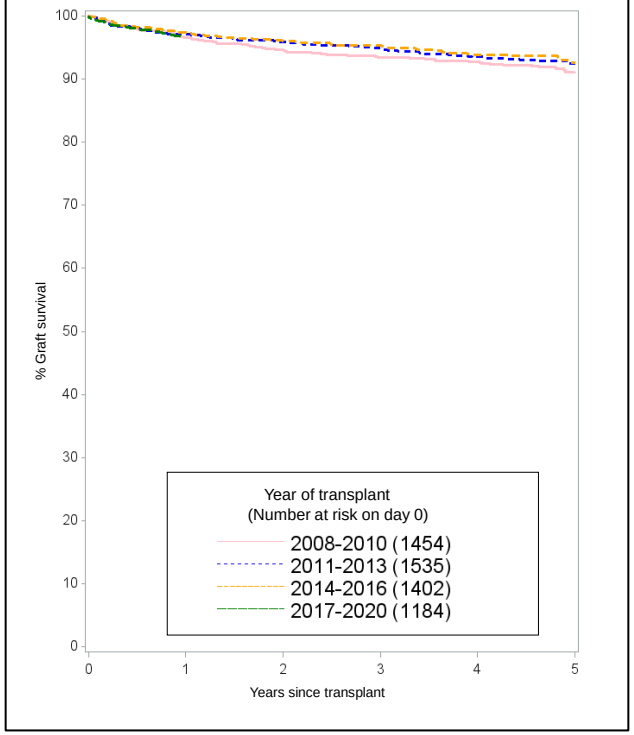


**Table 11.29 Graft survival after first corneal graft for KC in the UK**

| Year of transplant | No. at risk on day 0 | % Graft survival (95% confidence interval) One year | | Two year | | Five year | |
|---|---|---|---|---|---|---|---|
| 2008-2010 | 1454 | 97 | (96-97) | 95 | (93-96) | 91 | (89-93) |
| 2011-2013 | 1535 | 97 | (96-98) | 96 | (95-97) | 92 | (91-94) |
| 2014-2016 | 1402 | 97 | (96-98) | 96 | (95-97) | 93 | (91-94) |
| 2017-2020 | 1184 | 97 | (96-98) | | | | |

*11.6.2 Cornea grafts for Fuchs endothelial dystrophy*

**Figure 11.21** shows graft survival estimates for first corneal transplant for Fuchs endothelial dystrophy (FED) for grafts in 2008-2010, 2011-2013, 2014-2016 and 2017-2020. Graft survival estimates and confidence intervals are shown by transplant year at one, two and five years in **Table 11.30**.

**Figure 11.21 Graft survival after first corneal graft for FED in the UK, 1 January 2008 – 31 December 2020**

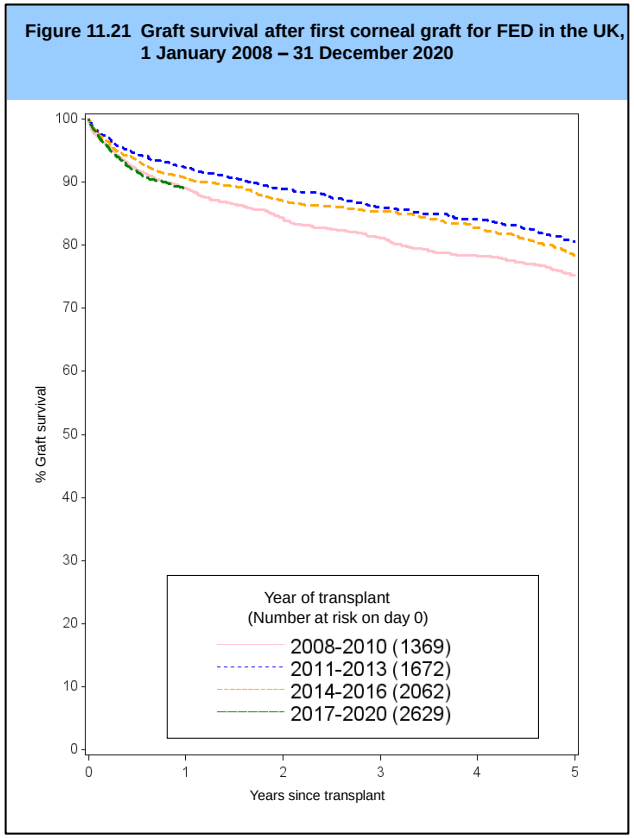


**Table 11.30 Graft survival after first corneal graft for FED in the UK**

| Year of transplant | No. at risk on day 0 | % Graft survival (95% confidence interval) One year | | Two year | | Five year | |
|---|---|---|---|---|---|---|---|
| 2008-2010 | 1369 | 89 | (87-91) | 84 | (82-86) | 75 | (72-78) |
| 2011-2013 | 1672 | 92 | (91-93) | 89 | (87-90) | 81 | (78-83) |
| 2014-2016 | 2062 | 91 | (89-92) | 87 | (85-88) | 78 | (76-81) |
| 2017-2020 | 2629 | 89 | (88-90) | | | | |

*11.6.3 Cornea grafts for pseudophakic bullous keratopathy*

**Figure 11.22** shows graft survival estimates for first corneal transplant for pseudophakic bullous keratopathy (PBK) for in 2008-2010, 2011-2013, 2014-2016 and 2017-2020. Graft survival estimates and confidence intervals are shown by transplant year at one, two and five years in **Table 11.31**.

**Figure 11.22 Graft survival after first corneal graft for PBK in the UK, 1 January 2008 – 31 December 2020**

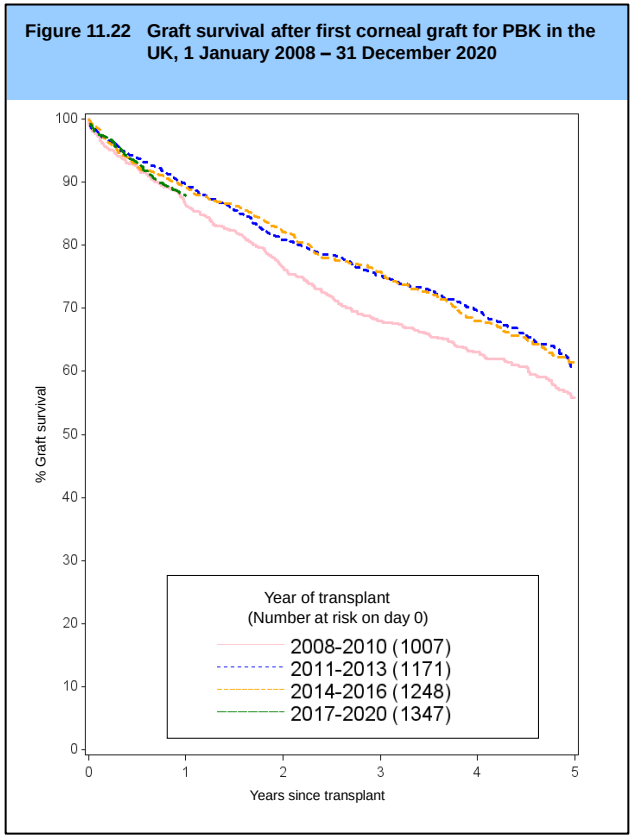


**Table 11.31 Graft survival after first corneal graft for PBK in the UK**

| Year of transplant | No. at risk on day 0 | % Graft survival (95% confidence interval) One year | | Two year | | Five year | |
|---|---|---|---|---|---|---|---|
| 2008-2010 | 1007 | 86 | (84-88) | 77 | (74-79) | 56 | (52-60) |
| 2011-2013 | 1171 | 90 | (88-91) | 81 | (78-83) | 60 | (56-64) |
| 2014-2016 | 1248 | 89 | (87-91) | 82 | (80-84) | 61 | (57-65) |
| 2017-2020 | 1347 | 88 | (86-90) | | | | |