**UKKA**

UK Kidney Association
UK Renal Registry

# UK Renal Registry
# 25th Annual Report

## Data to 31/12/2021

Chronic kidney disease

Incidence of KRT

Prevalence of KRT

Transplant

In-centre haemodialysis

Peritoneal dialysis

Home haemodialysis

Paediatrics

# UK Renal Registry 25th Annual Report

## Data to 31/12/2021

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## Summary of the UKRR 25th Annual Report – adults

UK Renal Registry (2023) UK Renal Registry Summary of Annual Report – analyses of adult data to the end of 2021, Bristol, UK.
Available from https://ukkidney.org/audit-research/annual-report

## Summary of the UKRR 25th Annual Report – children and young people

UK Renal Registry (2023) UK Renal Registry Summary of Annual report – analyses of paediatric data to the end of 2020, Bristol, UK.
Available from https://ukkidney.org/audit-research/annual-report

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# Foreword

*Professor James Medcalf*
*Medical director, The UK Kidney Association*

Welcome to another UK Renal Registry Annual Report. This report covers the second year of the COVID-19 pandemic (2021) – and a still much disrupted healthcare system. The number of new patients starting kidney replacement therapy (KRT incidence) increased by 7.3%, but for a second year fewer people started KRT with a kidney transplant (likely because of ongoing disruption to transplant pathways). There was also a rise in the proportion of people who started KRT without the minimum 90 days preparation time with kidney services (now more than 18% of those starting KRT) a sign of wider NHS disruption.

Importantly other aspects of care improved – for example amongst all people who started haemodialysis a greater proportion had definitive access this year – despite more of those people presenting to kidney services with less than 90 days preparation. Compared to pre-pandemic a higher proportion are still starting with a home-therapy, and whilst prevalence of ESKD still increased by 1.5% – it is still slower than before the COVID-19 pandemic.

Writing about the future is always a risk – and the changes we were expecting to the regional commissioning of specialised renal services did not occur as originally anticipated on the 1st April 2023. We do however have a new National Clinical Director (NCD), and a Clinical Reference Group (CRG) which has been reinvigorated and is adopting much of the work of the Renal Services Transformation Programme (now concluded). NHS England, the NCD, the CRG, and the Regional Commission Networks remain very supportive of all our efforts to have timely access to data to help make decisions. We agree – and know many renal units would welcome access to timely comparative information too.

Tempting fate – but one of the things which does appear increasingly likely are renal centres moving to a daily 'UKRDC' feed. Several of the large system suppliers are at advanced stages of development for these feeds which will significantly speed up the flow of information to the UKRR. We at the UKRR have been developing an error graphical interface to help centres catch problems with their local data. In the same interface we have an expanding portfolio of visualisations which are running on the near real-time information. If you would like to know more about these developments we will be available to demonstrate at UK Kidney week or please contact us.

I am always conscious that without the support of the individual renal centres in the UK we would be unable to do very much of the work which we do. Just as last year – if you think we could do better – please let us know. Otherwise – thank you again for your continued support.

Professor James Medcalf
Medical director, The UK Kidney Association, May 2023

# Contents

## Appendices available from **ukkidney.org/audit-research/annual-report**

Appendix A        Definitions and methodologies used in the 25th Annual Report – data to the end of 2021

Appendix B        Integrated Care System (ICS) and health board (HB) adult incidence and prevalence numbers, rates and standardised ratios – data to the end of 2021

# Introduction: The UK Renal Registry's 25th Annual Report

The UK Renal Registry (UKRR) collects and reports data annually on approximately 70,000 kidney patients on kidney replacement therapy (KRT) in the UK. The annual report is an audit of the care provided to these patients at each of the 68 adult and 13 paediatric centres against national standards, in particular, the UK Kidney Association's guidelines – ukkidney.org/health-professionals/guidelines/guidelines-commentaries.

The 25th Annual Report includes patients who started KRT in 2021, as well as all patients who were on KRT at the end of 2021. The chapters are split by treatment modality (transplant, in-centre haemodialysis, peritoneal dialysis and home haemodialysis), as well as by adults and children. The online appendices cover the methodologies, including how data are collected and coded (appendix A) and include basic analyses at Integrated Care System and health board level (appendix B) – ukkidney.org/audit-research/annual-report. Plain English summaries of the annual report have been developed in partnership with the UK Kidney Association's Patient Council and all graphs used in the report are available for use in presentations – ukkidney.org/audit-research/annual-report.

## How to interpret centre analyses and outlying centres

The UKRR advises caution when comparing centre-specific attainment of clinical audit measures, because for many of these analyses no adjustment can be made for the range of factors known to influence the measured variable. The UKRR does not test for significant differences between centres – arbitrary 95% and 99% confidence intervals are created from the data to illustrate variability between centres and highlight outlying centres. Centre comparisons will become more meaningful when more comorbidity data (via linkages) and advanced CKD data are included to understand differences in the transition of patients onto both RRT and conservative non-dialysis pathways. Despite these shortcomings, identifiable centre-specific analyses on the survival of KRT patients are published in the annual report. Although the UKRR has no statutory powers, the UKRR senior management team communicates survival outlier status with kidney centres prior to publication. Centres are asked to report their outlying status internally at trust level and to follow-up with robust mortality and morbidity meetings. They are also asked to provide evidence that the clinical governance department and chief executive of the trust housing the service have been informed. In the event that no such evidence is provided, the chief executive officer or medical director of the UKRR informs the president of the UK Kidney Association, who then takes action to ensure that the findings are properly investigated.

*Chapter 1*

# Adults with chronic kidney disease (CKD) and estimated glomerular filtration rate (eGFR) <30mL/min/1.73m$^2$ in the UK at the end of 2021

# Contents

# Introduction

This is the third year the UKRR has published data in the annual report about patients with chronic kidney disease (CKD) outside the context of kidney replacement therapy (KRT) or acute kidney injury (AKI). The primary aim of this chapter is to present the demographic and clinical features of patients receiving treatment for CKD stages G4 and 5 at UK kidney centres at the end of 2021 (figure 1.1). A '2021 prevalent CKD population' is described, comprising individuals who:

- were reported by an adult kidney centre as receiving treatment for CKD at the end of 2021, and

- had an eGFR of <30mL/min/1.73m$^2$ on their last recorded creatinine measurement.
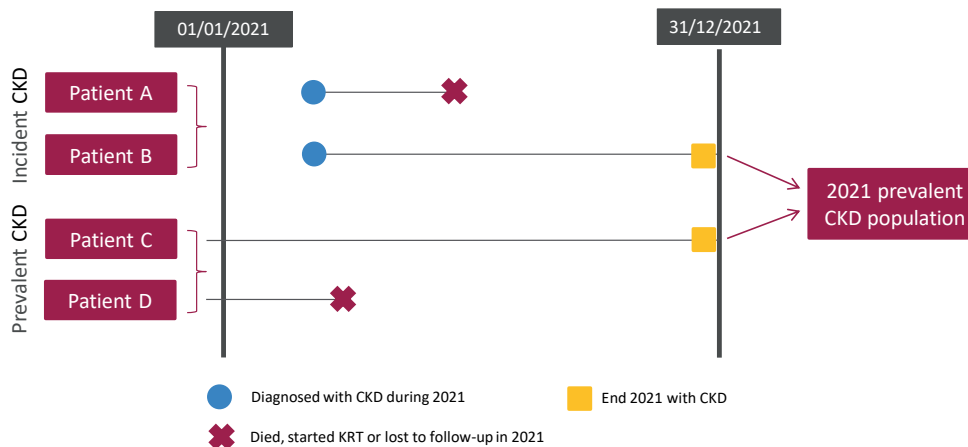


**Figure 1.1** Pathways adult patients could follow to be included in the UK 2021 prevalent CKD population

Auditable aspects of care for this population are highlighted and described. For the purpose of this chapter, individuals are categorised as having CKD stage G5 (estimated glomerular filtration rate [eGFR] <15 mL/min/1.73m$^2$) or CKD stage G4 (eGFR 15–29mL/min/1.73m$^2$). The eGFR was calculated with CKD-EPI 2009 equation without racial adjustment using their last recorded creatinine from the last 2 years. Further categorisation, e.g. by eGFR trend or albuminuria is not possible using UKRR data.

Information about completeness of primary renal disease (PRD) data are presented. Whilst PRD data are known to be incomplete, no triangulation was performed using other datasets available to the UKRR, e.g. Hospital Episode Statistics (HES). The UKRR is developing approaches to combine CKD and AKI reporting systems with HES and will publish these elsewhere. Data relating to survival and initiation of KRT/conservative care (CC) are also being prepared separately.

It is important to highlight that the individuals described in this chapter represent a sub-population of those with CKD in the UK. Many individuals with diagnosed CKD receive care without referral to a kidney centre, particularly those with earlier stages. Furthermore, not all kidney centres are yet submitting CKD data to the UKRR. For this reason, it is not appropriate to generalise findings from this chapter to the wider CKD population, even to those cared for in kidney centres.

Consequently, this CKD chapter asks simple questions:

- Which individuals with CKD are currently reported to the UKRR?

- What data are captured and which aspects of CKD care can be audited using them?

# Rationale for analyses

Since 2016, kidney centres in England and Wales have been asked by the National Clinical Reference Group to report individuals with CKD under their care to the UKRR. In 2021 the UKRR received data from 18 units of the 54 adult centres in England and Wales (one less than in 2020).

Reliable estimates of CKD prevalence in secondary care are required to inform CKD management and policy planning. The presented analyses will be performed annually to help clinicians and policy makers in this task and will be expanded as data quality and quantity improve. The UK Kidney Association guidelines (ukkidney. org/health-professionals/guidelines/guidelines-commentaries) provide audit measures relevant to the care of patients with CKD, and where data permit, their attainment by UK kidney centres in 2021 is reported in this chapter (table 1.1). Some audit measures cannot be reported because the completeness of the required data items is too low. Audit measures in guidelines that have been archived are not included. For consistency with other chapters, table 1.1 is provided to outline the addressed UK Kidney Association audit measures. However, data completeness is poor even for the analyses presented, necessitating caution in interpretation. Further detail about the completeness of data returned to the UKRR is available through the UKRR (data portal ukkidney.org/audit-research/data-portals).

**Table 1.1** The UK Kidney Association audit measures relevant to CKD that are reported in this chapter

| The UK Kidney Association guideline | Audit criteria | Related analysis/analyses |
|---|---|---|
| Commentary on the Kidney Disease Improving Global Outcomes (KDIGO) guideline on the diagnosis, evaluation, prevention and treatment of CKD mineral bone disorder (2018) | Percentage of adult CKD G5 patients with serum calcium above the normal reference range 2.2–2.5 mmol/L | Figure 1.3 |
| Cardiovascular disease in CKD (2008) | Blood pressure in CKD stages G1–4 should be managed according to National Institute for Health and Care Excellence (NICE) guidance: <140/90 mmHg in patients without significant proteinuria and <130/80 mmHg in those with proteinuria or with diabetes | Table 1.4 (partly addressed) |
| Anaemia of CKD (updated 2020) | Proportion of CKD patients with eGFR <30mL/min/1.73m² (using CKD-EPI equation) and a 6 monthly haemoglobin level measurement | Figure 1.4 |
| | Proportion of CKD stage G4–5 patients with haemoglobin 100–120 g/L | Figures 1.5–1.6 |
| Commentary on the National Institute for Health and Care Excellence (NICE) guideline on KRT and conservative management (2020) | The number of patients with stage G5 CKD who were reported as being under conservative care | Table 1.2 |

For definitions and methods relating to this chapter see appendix A. The number preceding the centre name in each caterpillar plot indicates the percentage of missing data for that centre.

Adults with CKD in the UK at the end of 2021

# Key findings

- Data about patients with CKD stages G4 and 5 who were not on KRT was reported by just 18 of the UK's adult kidney centres.

- The 2021 prevalent CKD population comprised 21,334 patients, with a median age of 77.2 years, compared to a median age of 59.7 years for those on KRT.

- CKD prevalence was 1,176 per million population (pmp) overall, but ranged from 154 to 2,463 pmp between centres. There were also substantial differences in the ages and distribution of disease stages between centres. Such large variation suggests discrepancies in the definitions used for processes of care or reporting of people with CKD between centres.

- The data reported in this chapter highlight the need for improved capture and reporting of CKD data to enable national quality assurance. Concordance with audit measures for the CKD not on KRT population cannot be addressed until this is achieved.

# Analyses

## Stage and demographics of adult CKD patients

For the 18 adult kidney centres, the number of prevalent patients with CKD and eGFR ≤30 mL/min/1.73m$^2$ was calculated as a proportion of the estimated centre catchment population (details in appendix A). Only a few centres reported patients with kidney failure as undergoing conservative care (CC). It is not clear whether a CC code means the same thing at all centres and for each patient. In particular, it is unclear which CC codes represent planned KRT for the eventuality of kidney failure, and which represent active treatment for an individual who might otherwise have started KRT. As such, people coded as receiving CC are included throughout this chapter.

**Table 1.2** Number of adult patients prevalent to CKD stages G4 and 5 on 31/12/2021, including those on conservative care (CC) by stage and centre; completeness of proteinuria; number of CKD and and KRT patients as a proportion of the adult catchment population

| Centre | N with CKD | N on CC | Total | % stage G4 | % stage G5 | % with protienuria data (either PCR or ACR) | Estimated catchment population (millions) | CKD 2021 crude rate (pmp) | KRT 2021 crude rate (pmp) |
|---|---|---|---|---|---|---|---|---|---|
| Bham[1] | 828 | 25 | 853 | 69.4 | 30.6 | 0.0 | 2.05 | 415 | 1,611 |
| Camb | 144 | 0 | 144 | 62.5 | 37.5 | 0.7 | 0.94 | 154 | 1,739 |
| Carlis | 439 | 60 | 499 | 82.6 | 17.4 | 60.7 | 0.26 | 1,954 | 1,194 |
| Covnt | 1,581 | 0 | 1,581 | 87.7 | 12.3 | 4.0 | 0.80 | 1,987 | 1,407 |
| Derby | 1,099 | 0 | 1,099 | 82.1 | 17.9 | 0.0 | 0.56 | 1,957 | 1,227 |
| EssexMS[2] | 493 | 0 | 493 | 82.8 | 17.2 | 52.5 | 0.99 | 496 | 896 |
| Glouc | 1,101 | 0 | 1,101 | 85.8 | 14.2 | 0.1 | 0.51 | 2,158 | 1,070 |
| L Guys | 951 | 0 | 951 | 71.7 | 28.3 | 48.9 | 1.01 | 945 | 2,307 |
| L Kings | 391 | 0 | 391 | 35.3 | 64.7 | 22.3 | 0.93 | 419 | 1,428 |
| L Rfree | 1,708 | 219 | 1,927 | 73.4 | 26.6 | 57.9 | 1.33 | 1,451 | 1,792 |
| Leic | 3,756 | 0 | 3,756 | 82.5 | 17.5 | 44.8 | 2.09 | 1,800 | 1,265 |
| Middlbr | 495 | 0 | 495 | 66.1 | 33.9 | 0.0 | 0.81 | 613 | 1,183 |
| Oxford | 1,903 | 0 | 1,903 | 76.7 | 23.3 | 0.0 | 1.45 | 1,316 | 1,385 |
| Plymth | 988 | 1 | 989 | 84.5 | 15.5 | 35.1 | 0.40 | 2,463 | 1,365 |
| Ports | 2,003 | 2 | 2,005 | 73.7 | 26.3 | 41.6 | 1.75 | 1,145 | 1,109 |
| Salford | 480 | 1 | 481 | 92.5 | 7.5 | 63.0 | 1.15 | 417 | 1,054 |
| Swanse | 1,815 | 25 | 1,840 | 84.8 | 15.2 | 0.0 | 0.76 | 2,426 | 1,125 |
| Truro | 764 | 62 | 826 | 82.9 | 17.1 | 46.1 | 0.36 | 2,306 | 1,287 |
| **Total** | **20,939** | **395** | **21,334** | **79.0** | **21.0** | **27.4** | **18.14** | **1,176** | **1,386** |

[1]The catchment population and 2021crude rate for KRT reflect the combined Bham population (QEH and Heartlands kidney centres), but CKD patients were only reported for QEH
[2]The catchment population and 2021 crude rate for KRT reflect the combined population for middle-south Essex (Basildon, Chelmsford and Southend renal centres) though CKD patients were only reported for Southend
CC - conservative care
PCR - protein creatinine ratio
ACR - albumin creatinine ratio

The proportion of patients with CKD and eGFR ≤30 mL/min/1.73m$^2$ from each ethnic group is shown for patients with ethnicity data – the proportion of centre patients with no ethnicity is shown separately. The completeness of PRD data varies greatly between centres, making interpretation difficult. PRD completeness is shown for each centre overall and by CKD stage.

**Table 1.3** Demographics and completeness of primary renal disease (PRD) data of adult patients prevalent to CKD stages G4 and 5 on 31/12/2021 by centre

| Centre | N with CKD | Median age (yrs) | % male | Ethnicity | | | | | PRD completeness | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | % White | % Asian | % Black | % Other | % missing | % all stages | % stage G4 | % stage G5 |
| Bham | 853 | 68.3 | 58.6 | 57.5 | 25.7 | 13.6 | 3.2 | 12.9 | 11.3 | 3.5 | 28.7 |
| Camb | 144 | 73.3 | 56.3 | 95.6 | 2.2 | 0.7 | 1.5 | 6.3 | 45.1 | 34.4 | 63.0 |
| Carlis | 499 | 77.7 | 54.9 | 99.4 | 0.3 | 0.3 | 0.0 | 32.1 | 17.8 | 14.6 | 33.3 |
| Covnt | 1,581 | 79.6 | 55.6 | 88.7 | 9.1 | 2.2 | 0.0 | 7.8 | 81.5 | 80.8 | 86.6 |
| Derby | 1,099 | 77.7 | 55.1 | 90.4 | 6.4 | 2.4 | 0.7 | 14.4 | 93.6 | 92.9 | 97.0 |
| EssexMS | 493 | 79.2 | 55.8 | 93.4 | 2.5 | 1.6 | 2.5 | 1.0 | 24.3 | 19.1 | 49.4 |
| Glouc | 1,101 | 79.5 | 58.6 | 95.2 | 2.1 | 1.5 | 1.2 | 6.1 | 49.8 | 47.6 | 62.8 |
| L Guys | 951 | 71.0 | 58.0 | 59.2 | 8.0 | 28.3 | 4.5 | 26.0 | 50.8 | 44.7 | 66.2 |
| L Kings | 391 | 66.2 | 58.1 | 44.7 | 9.0 | 44.1 | 2.3 | 20.5 | 19.7 | 8.0 | 26.1 |
| L Rfree | 1,927 | 75.5 | 54.9 | 58.0 | 18.1 | 13.6 | 10.3 | 19.6 | 46.2 | 42.2 | 57.1 |
| Leic | 3,756 | 78.3 | 54.4 | 80.7 | 15.6 | 2.3 | 1.3 | 26.4 | 58.8 | 57.0 | 67.1 |
| Middlbr | 495 | 72.0 | 56.6 | 94.6 | 4.9 | 0.0 | 0.5 | 21.6 | 21.0 | 15.0 | 32.7 |
| Oxford | 1,903 | 76.2 | 57.6 | 87.4 | 5.3 | 3.2 | 4.2 | 75.0 | 13.9 | 10.6 | 24.6 |
| Plymth | 989 | 80.0 | 51.6 | 98.6 | 0.4 | 0.1 | 0.8 | 4.0 | 17.0 | 15.6 | 24.8 |
| Ports | 2,005 | 76.0 | 57.7 | 98.1 | 1.0 | 0.5 | 0.4 | 40.6 | 15.0 | 10.8 | 26.7 |
| Salford | 481 | 75.1 | 59.9 | 85.4 | 11.0 | 2.1 | 1.6 | 9.1 | 13.3 | 13.7 | 8.3 |
| Swanse | 1,840 | 79.2 | 56.0 | 98.3 | 0.8 | 0.3 | 0.6 | 40.7 | 30.2 | 27.1 | 47.5 |
| Truro | 826 | 80.2 | 55.4 | 98.3 | 0.6 | 0.4 | 0.7 | 0.4 | 20.6 | 14.9 | 48.2 |
| **Total** | **21,334** | **77.2** | **56.0** | **84.1** | **8.5** | **5.2** | **2.2** | **25.9** | **39.9** | **37.7** | **48.3** |
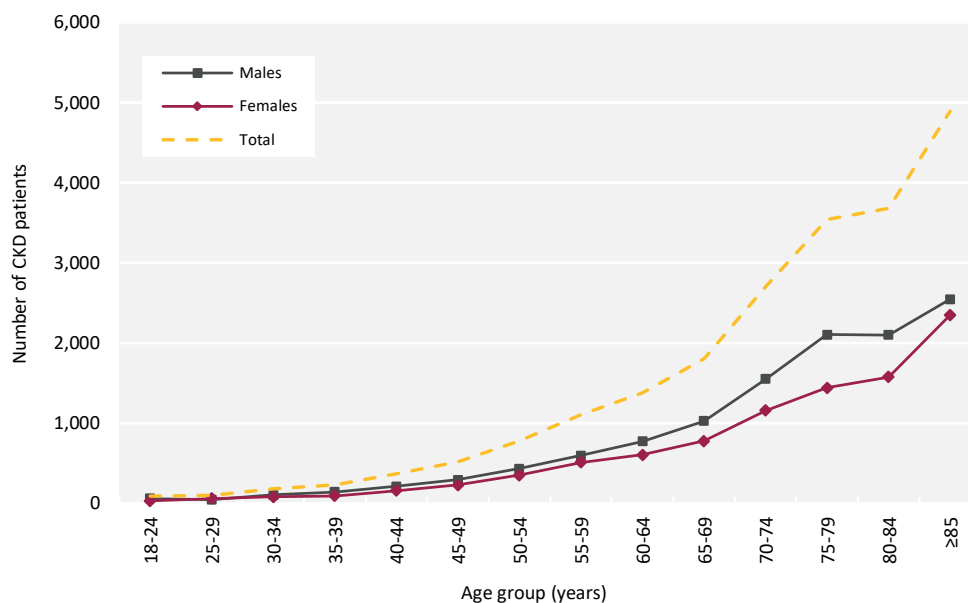


**Figure 1.2** Number of adult patients prevalent to CKD stages G4 and 5 on 31/12/2021 by age group and sex

# Blood pressure in adult CKD patients

Only 7 centres submitted sufficient blood pressure data for analysis (Bham, Derby, Glouc, L Rfree, Plymth, Ports, Swansea).

**Table 1.4** Blood pressures in adult patients prevalent to CKD stages G4 and 5 on 31/12/2021 by stage

| | All stages | | | | Stage G4 | | | | Stage G5 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | N (% complete) | Median SBP | Median DBP | N (%) <140/90[1] | N (% complete) | Median SBP | Median DBP | N (%) <140/90[1] | N (% complete) | Median SBP | Median DBP | N (%) <140/90[1] |
| **All** | 4524 (46.1) | 142 | 75 | 1909 (42.2) | 3198 (41.4) | 142 | 75 | 1398 (43.7) | 1326 (63.5) | 144 | 76 | 511 (38.5) |
| **Age group (yrs)** | | | | | | | | | | | | |
| 18-29 | 56 (66.7) | 133 | 85 | 32 (57.1) | 38 (63.3) | 132 | 84.5 | 23 (60.5) | 18 (75) | 134.5 | 85 | 9 (50) |
| 30-39 | 113 (64.6) | 133 | 84 | 69 (61.1) | 85 (63) | 133 | 83 | 55 (64.7) | 28 (70) | 132 | 84.5 | 14 (50) |
| 40-49 | 264 (62.6) | 139 | 84 | 121 (45.8) | 170 (56.7) | 138 | 83 | 83 (48.8) | 94 (77) | 142 | 84 | 38 (40.4) |
| 50-59 | 498 (58.8) | 141 | 82 | 212 (42.6) | 326 (54.2) | 140 | 81 | 146 (44.8) | 172 (70.2) | 143 | 82 | 66 (38.4) |
| 60-64 | 329 (52.3) | 143 | 78 | 137 (41.6) | 214 (45.6) | 143.5 | 78 | 92 (43) | 115 (71.9) | 143 | 77 | 45 (39.1) |
| 65-69 | 412 (51.9) | 145 | 77 | 163 (39.6) | 294 (48.7) | 143 | 77 | 120 (40.8) | 118 (62.1) | 146 | 76.5 | 43 (36.4) |
| 70-74 | 647 (50.3) | 142 | 74 | 273 (42.2) | 473 (45.9) | 142 | 75 | 202 (42.7) | 174 (67.7) | 144.5 | 74 | 71 (40.8) |
| 75-79 | 746 (44.3) | 142 | 73 | 326 (43.7) | 538 (39.2) | 141 | 73 | 238 (44.2) | 208 (66.7) | 142 | 72.5 | 88 (42.3) |
| 80-84 | 717 (42.8) | 145 | 72 | 279 (38.9) | 527 (38.8) | 144 | 71 | 211 (40) | 190 (59.9) | 150 | 73 | 68 (35.8) |
| ≥85 | 742 (33.5) | 145 | 70 | 297 (40) | 533 (29.7) | 143 | 70 | 228 (42.8) | 209 (49.6) | 149 | 72 | 69 (33) |
| **Sex** | | | | | | | | | | | | |
| Male | 2618 (47.6) | 142 | 75 | 1130 (43.2) | 1857 (42.9) | 141 | 75 | 821 (44.2) | 761 (64.5) | 144 | 76 | 309 (40.6) |
| Female | 1906 (44.2) | 143 | 76 | 779 (40.9) | 1341 (39.4) | 142 | 76 | 577 (43) | 565 (62.2) | 145 | 77 | 202 (35.8) |

[1]% <140/90 mmHg of patients with complete blood pressure data
DBP – diastolic blood pressure; SBP – systolic blood pressure (both measured in mmHg)

# Biochemistry parameters in adult CKD patients

The UK Kidney Association guideline on CKD mineral bone disease contains only one audit measure, which is the percentage of patients with adjusted calcium above the target range.
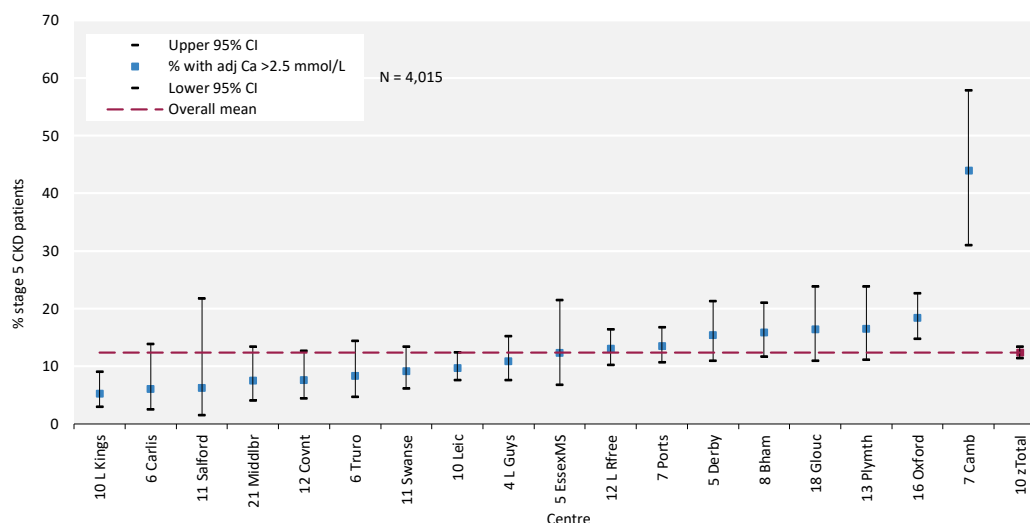


**Figure 1.3** Percentage of adult patients prevalent to CKD stage G5 on 31/12/2021 with adjusted serum calcium (Ca) >2.5 mmol/L by centre

CI - confidence interval

# Anaemia in adult CKD patients

The percentage of patients with haemoglobin (Hb) 100–120 g/L is presented overall and by CKD stage.
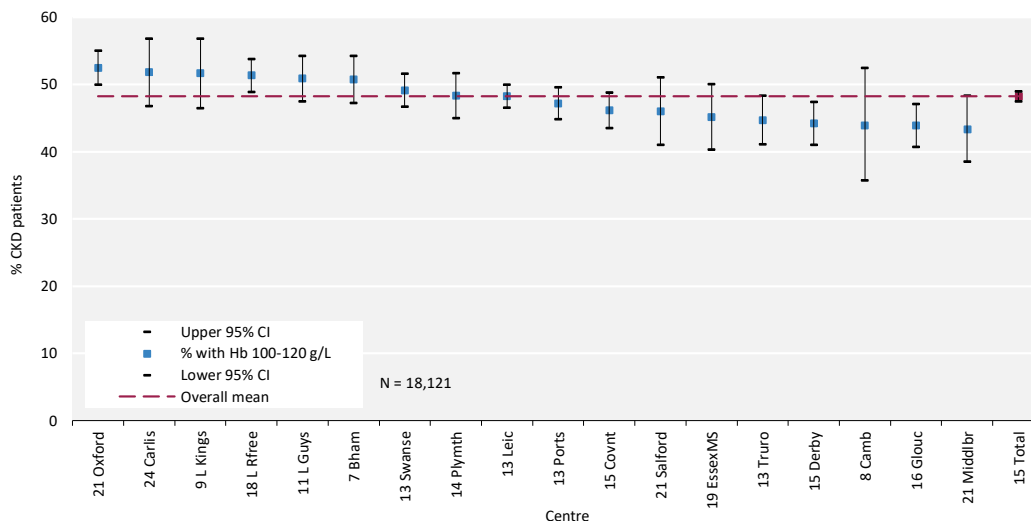


**Figure 1.4** Percentage of adult patients prevalent to CKD stages G4 and 5 on 31/12/2020 with haemoglobin (Hb) 100–120 g/L by centre

CI - confidence interval
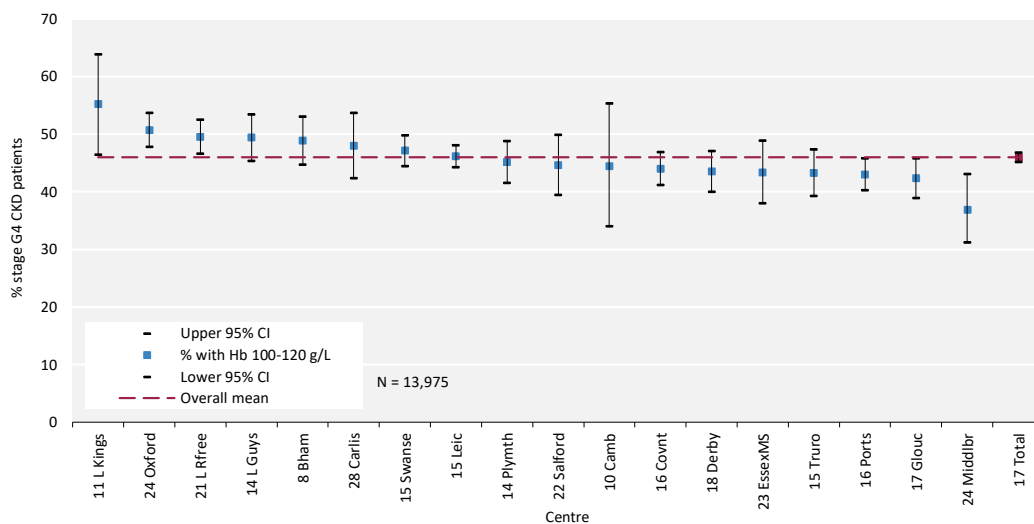


**Figure 1.5** Percentage of adult patients prevalent to CKD stage G4 on 31/12/2021 with haemoglobin (Hb) 100–120 g/L by centre

CI - confidence interval
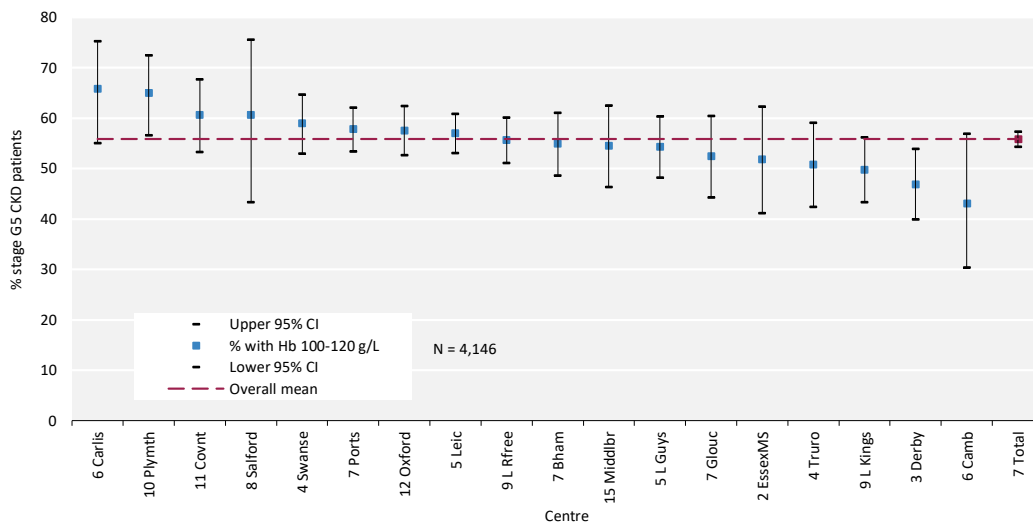
**Figure 1.6** Percentage of adult patients prevalent to CKD stage G5 on 31/12/2021 with haemoglobin (Hb) 100-120 g/L by centre

CI - confidence interval

*Chapter 2*

# Adults starting kidney replacement therapy (KRT) for end-stage kidney disease (ESKD) in the UK in 2021

# Contents

# Introduction

This chapter describes the population of patients who developed end-stage kidney disease (ESKD) and started kidney replacement therapy (KRT) in the UK in 2021 (figure 2.1). This includes patients starting dialysis therapies – haemodialysis (HD) and peritoneal dialysis (PD) – and patients who received a pre-emptive kidney transplant (Tx). Patients with a failed Tx who returned to dialysis are not included. Patients who received dialysis for acute kidney injury (AKI), as coded by their reporting kidney centre, were only included if their dialysis was subsequently recoded as being for ESKD, when they failed to recover native kidney function. Recoding is automatically applied at 90 days for individuals still on KRT (unless advised otherwise by the kidney centre – see appendix A for details), but can be applied earlier by reporting centres that identify ESKD before day 90. Individuals who commenced dialysis for AKI and subsequently recovered kidney function, died or withdrew from dialysis within the first 90 days of treatment are not included in this chapter (although they are shown in figure 2.1). Patients who died, or withdrew from dialysis after being coded as ESKD are included in this chapter, but patients who recovered kidney function are not included if they recovered before 90 days on dialysis.
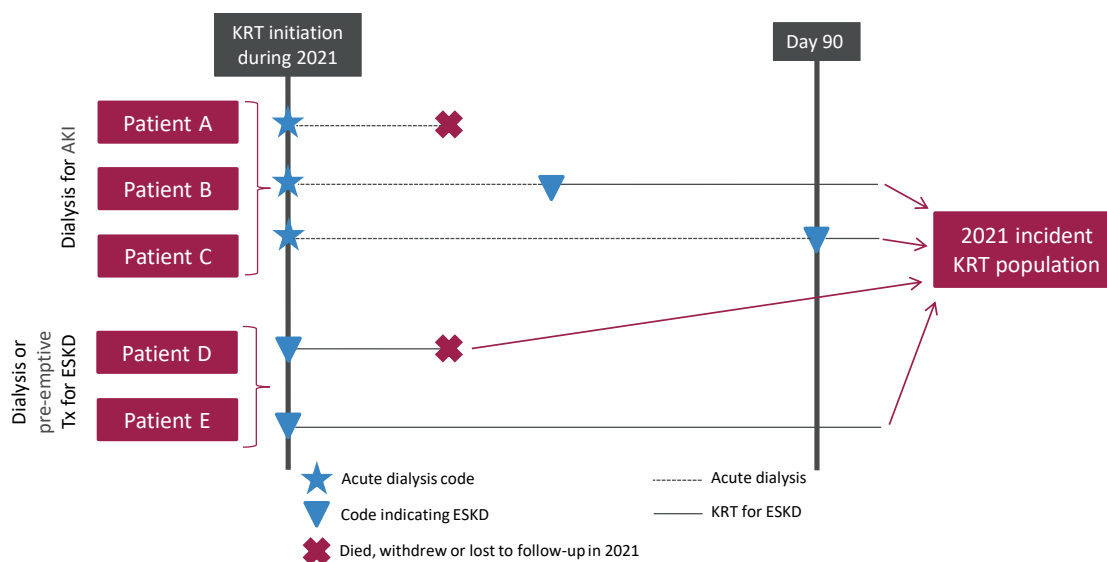


**Figure 2.1** Example histories for patients starting KRT, illustrating the use of timeline codes to define dialysis as being 'acute' or for ESKD

Patients who recovered kidney function before 90 days on dialysis are not included in this chapter, whether they were coded as AKI or ESKD

Patients who followed patterns B–E received KRT for ESKD and are counted as 'incident to KRT' throughout this report Patients who followed pattern A are not counted as 'incident to KRT' and do not feature in this chapter

Survival and cause of death analyses were undertaken on historic incident cohorts to allow sufficient follow-up time and numbers of patients. Dialysis access data were collected separately to the main UKRR quarterly data returns via the 2021 Multisite Dialysis Access Audit. As of the 23rd annual report, fewer data items were collected to reduce the burden on centres and, in future years, the audit will be stopped entirely in centres that provide the data in their regular data returns to the UKRR.

This chapter addresses the following key aspects of the care of patients incident to KRT for which there are UK Kidney Association guidelines (table 2.1):

- **Modality selection, pre-emptive transplantation and Tx wait-listing:** the percentage of patients starting on each KRT modality, including a home therapy – home HD (HHD) or PD – or a kidney Tx, as well as the percentage of patients pre-emptively listed for a Tx, are reported in this chapter.

- **Late presentation:** a patient first seen by kidney services within 90 days of starting KRT for ESKD is defined as a 'late presentation' (in this report 'late presentation' is used interchangeably with 'late referral').

- **Complications associated with ESKD:** these include anaemia and mineral bone disorders.

- **Type of dialysis access:** definitive access – either a surgically created arteriovenous fistula (AVF) or arteriovenous graft (AVG), or a PD catheter. Alternatively, more temporary access can be provided through a central venous catheter – either a tunnelled line (TL) or a non-tunnelled line (NTL).

# Rationale for analyses

The analyses begin with a description of the 2021 incident adult KRT population, including the incident number on KRT per million population (pmp). The inclusion of centre-specific reports on the survival of KRT patients reflects the need for transparency following the Francis and Keogh enquiries and the ongoing Care Quality Commission inspections of patient care and outcomes at a number of hospital trusts. Survival analyses have been adjusted for age, sex and comorbidity using kidney centre data. Comorbidity data have been augmented using Hospital Episode Statistics (HES) for English kidney centres and Patient Episode Database for Wales (PEDW) for Welsh kidney centres.

The UK Kidney Association guidelines (ukkidney.org/health-professionals/guidelines/guidelines-commentaries) provide audit measures relevant to the care of patients incident to KRT and, where data permit, their attainment by UK kidney centres in 2021 is reported in this chapter (table 2.1). Audit measures in guidelines that have been archived are not included.

Some audit measures – for example, the target for glycated haemoglobin (HbA1c) in those on hypoglycaemia-inducing treatment – cannot be reported because the completeness of the required data is too low. Further detail about the completeness of data returned to the UK Renal Registry (UKRR) is available through the UKRR data portal (ukkidney.org/audit-research/data-portals). Audit measures that cannot be reported because the required data items were not collected by the UKRR are omitted.

For definitions and methods relating to this chapter see appendix A. Centres were exluded from caterpillar plots and cells were blanked in tables where data completeness for a biochemical variable fell <70% and/or the number of patients reported was <10. The number preceding the centre name in each caterpillar plot indicates the percentage of missing data for that centre, unless specified to the contrary.

Exeter was unable to submit patient level data for 2021. Aggregate numbers by modality were provided, enabling inclusion in Tables 2.2 and 2.3. Exeter is excluded from all other analyses.

**Table 2.1** The UK Kidney Association audit measures relevant to KRT incidence that are reported in this chapter

| The UK Kidney Association guideline | Audit criteria | Related analysis/analyses |
|---|---|---|
| Planning, initiating and withdrawing KRT (2014) | Proportion of patients commencing PD or HHD | Table 2.3 |
| | Proportion of patients remaining on initial treatment modality 3 and 12 months post initiation of KRT | Tables 2.6–2.8, figures 2.6–2.7 |
| | Percentage of patients commencing KRT referred <3 months and <12 months before date of starting KRT | Tables 2.9–2.12, figure 2.8 |
| | Proportion of patients on UK Tx waiting list at KRT initiation | Table 2.3 |
| | Proportion of KRT patients transplanted pre-emptively from living and deceased donors | Table 2.3, figure 2.5 (partly addressed) |
| | Estimated glomerular filtration rate (eGFR) at start of KRT and at time of pre-emptive Tx | Figure 2.9 |
| | Proportion of planned initiations with established access or pre-emptive Tx | Table 2.16, figure 2.16 |
| | Number of patients withdrawing from dialysis as a proportion of all deaths on dialysis | Table 2.21 |
| Anaemia (2020) | Proportion of patients initiating KRT with haemoglobin <100 g/L not on erythropoiesis stimulating agent (ESA) | Table 2.13, figure 2.10-2.11 (ESA not included) |
| Chronic kidney disease (CKD) mineral bone disorder (2018) | Percentage of KRT patients with serum calcium above the normal reference range of 2.2–2.5 mmol/L | Table 2.14, figure 2.12 |
| Vascular access (2015) | >60% of all patients with established ESKD commencing planned HD should receive dialysis via a functioning AVF or AVG | Table 2.16, figure 2.17 |
| Peritoneal access (2009) | >80% of catheters should be patent at 1 year (censoring for death and elective modality change) | Figure 2.7 shows the KRT modality of PD patients at 1 year |

AVF – arteriovenous fistula; AVG – arteriovenous graft

# Key findings

- 8,175 adult patients started KRT for ESKD in the UK in 2021, an increase of 7.3% from 2020.

- KRT incidence in adults was 154pmp.

- The median age of incident KRT patients was 63.7 years, but this was dependent on ethnicity (White 65.6 years, Asian 61.8 years and Black 57.8years).

- 63.9% of incident KRT patients were male.

- Diabetes remained the most common identifiable primary renal disease (PRD) and continues to account for an increasing proportion of patients starting KRT (31.3%).

- By 90 days after KRT start 5.2% of patients had died or stopped treatment.

- In 2021 21% of patients started KRT on PD, compared to 21.8% in 2020. This is still a higher proportion than previous years.

- In 2021 only 5.8% of patients started KRT with a transplant, lower than previous years and likely due to ongoing COVID related disruption.

- The mean eGFR at the start of KRT was 7.0 mL/min/1.73m$^2$ (HD 6.9 mL/min/1.73m$^2$, PD 7.4 mL/min/1.73m$^2$ and pre-emptive Tx 10.5 mL/min/1.73m$^2$) compared to 7.2 mL/min/1.73m2 in 2020.

- Late presentation was 18.2% which is higher than previous years and 16.4% in 2020.

- Of the 7,004 incident dialysis patients with dialysis access data, 50.2% started dialysis with definitive access (23.3% PD and 26.9% HD with an AVF or AVG), 32.3% with a TL and 17.5% with an NTL.

- A higher proportion of patients started haemodialysis with definitive access this year at 35.1% compared to 26.8% in 2020 and despite an increase in late presentation.

- Short-term (90 day) age-adjusted survival of incident KRT patients in a combined 2 year cohort (2019–2020) was 96.4%, which was slightly lower than the analysis of the 2018–2019 cohort.

- 1 year after 90 day age-adjusted survival for incident KRT patients in a combined 2 year cohort (2019–2020) was 90.4% (compared to 90.6% in the previous analysis of the 2018–2019 cohort).

- There were 8 outlying centres in the funnel plot showing 1 year after 90 day case-mix-adjusted survival for incident KRT patients in a combined 4 year cohort (2017–2020): 3 centres below the lower 95% limit and 5 centres above the upper 95% limit. It is expected that 3 centres would be outside the limits by chance.

- There was no cause of death data available for 40.1% of deaths in the first 90 days of KRT. For those with data, the leading causes of death in the first 90 days were cardiac disease (23.9%) and infection (20.3%).

# Analyses

## Changes to the incident adult KRT population

For the 68 adult kidney centres, the number of incident patients on KRT was calculated as a proportion of the estimated centre catchment population (calculated as detailed in appendix A).

**Table 2.2** Number of incident adult KRT patients by year and by centre; number of KRT patients as a proportion of the adult catchment population

| Centre | N on KRT | | | | | Estimated catchment population (millions) | 2021 crude rate (pmp) |
|---|---|---|---|---|---|---|---|
| | 2017 | 2018 | 2019 | 2020 | 2021 | | |
| ENGLAND | | | | | | | |
| Bham | 385 | 370 | 372 | 332 | 352 | 2.05 | 171 |
| Bradfd | 82 | 71 | 106 | 83 | 80 | 0.49 | 163 |
| Brightn | 154 | 176 | 153 | 143 | 130 | 1.08 | 121 |
| Bristol | 157 | 166 | 165 | 131 | 157 | 1.22 | 128 |
| Camb | 94 | 121 | 135 | 136 | 150 | 0.94 | 160 |
| Carlis | 41 | 33 | 40 | 34 | 45 | 0.26 | 176 |
| Carsh | 229 | 244 | 229 | 296 | 294 | 1.63 | 180 |
| Colchr | 45 | 38 | 40 | 39 | 35 | 0.29 | 120 |
| Covnt | 120 | 128 | 141 | 141 | 150 | 0.80 | 189 |
| Derby | 89 | 84 | 90 | 72 | 88 | 0.56 | 157 |
| Donc | 56 | 52 | 53 | 47 | 44 | 0.38 | 117 |
| Dorset | 103 | 106 | 91 | 88 | 79 | 0.73 | 108 |
| Dudley | 58 | 53 | 56 | 61 | 60 | 0.34 | 174 |
| EssexMS | 142 | 125 | 149 | 127 | 134 | 0.99 | 135 |
| Exeter* | 140 | 132 | 157 | 105 | 157 | 0.95 | 165 |
| Glouc | 82 | 71 | 63 | 86 | 81 | 0.51 | 159 |
| Hull | 106 | 105 | 105 | 106 | 94 | 0.80 | 117 |
| Ipswi | 53 | 58 | 57 | 44 | 61 | 0.31 | 195 |
| Kent | 140 | 137 | 154 | 141 | 180 | 1.07 | 168 |
| L Barts | 342 | 344 | 311 | 320 | 253 | 1.59 | 159 |
| L Guys | 167 | 181 | 208 | 162 | 196 | 1.01 | 195 |
| L Kings | 170 | 150 | 186 | 159 | 219 | 0.93 | 234 |
| L Rfree | 236 | 244 | 265 | 232 | 283 | 1.33 | 213 |
| L St.G | 92 | 84 | 101 | 84 | 92 | 0.67 | 138 |
| L West | 408 | 392 | 392 | 364 | 418 | 1.96 | 213 |
| Leeds | 176 | 181 | 162 | 152 | 168 | 1.37 | 122 |
| Leic | 291 | 313 | 367 | 337 | 307 | 2.09 | 147 |
| Liv Ain | 55 | 66 | 57 | 53 | 63 | 0.43 | 146 |
| Liv Roy | 136 | 103 | 107 | 97 | 103 | 0.81 | 127 |
| M RI | 225 | 189 | 209 | 172 | 205 | 1.33 | 154 |
| Middlbr | 117 | 118 | 110 | 97 | 110 | 0.81 | 136 |
| Newc | 145 | 136 | 114 | 125 | 129 | 0.95 | 135 |
| Norwch | 80 | 83 | 105 | 96 | 96 | 0.69 | 139 |
| Nottm | 134 | 125 | 128 | 121 | 127 | 0.93 | 137 |
| Oxford | 217 | 216 | 203 | 203 | 193 | 1.45 | 133 |
| Plymth | 91 | 64 | 62 | 59 | 85 | 0.40 | 212 |
| Ports | 219 | 222 | 224 | 219 | 237 | 1.75 | 135 |
| Prestn | 169 | 180 | 156 | 167 | 197 | 1.23 | 160 |
| Redng | 105 | 103 | 116 | 100 | 107 | 0.70 | 153 |
| Salford | 173 | 161 | 172 | 173 | 143 | 1.15 | 124 |
| Sheff | 160 | 184 | 160 | 174 | 170 | 1.13 | 150 |

**Table 2.2** Continued

| Centre | N on KRT | | | | | Estimated catchment population (millions) | 2021 crude rate (pmp) |
| | 2017 | 2018 | 2019 | 2020 | 2021 | | |
|---|---|---|---|---|---|---|---|
| Shrew | 62 | 77 | 66 | 45 | 62 | 0.41 | 151 |
| Stevng | 140 | 175 | 194 | 170 | 171 | 1.11 | 154 |
| Stoke | 100 | 105 | 100 | 117 | 131 | 0.73 | 179 |
| Sund | 95 | 89 | 88 | 68 | 69 | 0.55 | 126 |
| Truro | 59 | 61 | 55 | 45 | 71 | 0.36 | 198 |
| Wirral | 61 | 62 | 63 | 48 | 52 | 0.47 | 111 |
| Wolve | 90 | 94 | 95 | 109 | 121 | 0.55 | 220 |
| York | 59 | 51 | 58 | 47 | 49 | 0.49 | 101 |
| N IRELAND | | | | | | | |
| Antrim | 47 | 57 | 42 | 29 | 39 | 0.25 | 159 |
| Belfast | 78 | 73 | 74 | 78 | 102 | 0.53 | 191 |
| Newry | 30 | 32 | 30 | 30 | 39 | 0.24 | 166 |
| Ulster | 31 | 32 | 28 | 28 | 25 | 0.20 | 123 |
| West NI | 34 | 41 | 38 | 38 | 34 | 0.25 | 135 |
| SCOTLAND | | | | | | | |
| Abrdn | 54 | 58 | 29 | 56 | 54 | 0.50 | 108 |
| Airdrie | 66 | 64 | 70 | 55 | 65 | 0.46 | 142 |
| D&Gall | 16 | 18 | 17 | 19 | 13 | 0.12 | 106 |
| Dundee | 55 | 36 | 27 | 27 | 37 | 0.37 | 100 |
| Edinb | 126 | 106 | 108 | 87 | 91 | 0.84 | 108 |
| Glasgw | 202 | 210 | 203 | 180 | 207 | 1.37 | 151 |
| Inverns | 25 | 37 | 18 | 18 | 36 | 0.22 | 161 |
| Klmarnk | 49 | 38 | 44 | 57 | 39 | 0.29 | 133 |
| Krkcldy | 41 | 38 | 45 | 37 | 43 | 0.27 | 157 |
| WALES | | | | | | | |
| Bangor | 27 | 25 | 19 | 29 | 20 | 0.16 | 122 |
| Cardff | 180 | 189 | 165 | 137 | 154 | 1.16 | 133 |
| Clwyd | 24 | 32 | 28 | 26 | 30 | 0.18 | 166 |
| Swanse | 130 | 140 | 159 | 123 | 126 | 0.76 | 166 |
| Wrexm | 25 | 29 | 31 | 38 | 23 | 0.21 | 111 |
| TOTALS | | | | | | | |
| England | 6,850 | 6,823 | 6,990 | 6,527 | 6,998 | 44.77 | 156 |
| N Ireland | 220 | 235 | 212 | 203 | 239 | 1.47 | 163 |
| Scotland | 634 | 605 | 561 | 536 | 585 | 4.45 | 131 |
| Wales | 386 | 415 | 402 | 353 | 353 | 2.49 | 142 |
| **UK** | **8,090** | **8,078** | **8,165** | **7,619** | **8,175** | **53.19** | **154** |

Country KRT populations were calculated by summing the KRT patients from centres in each country. Estimated country populations were derived from Office for National Statistics figures (see appendix A for details on estimated catchment population by kidney centre)

\* Exeter was unable to submit 2021 patient level data. Numbers of incident patients in 2019 were used as estimate for 2021

pmp – per million population
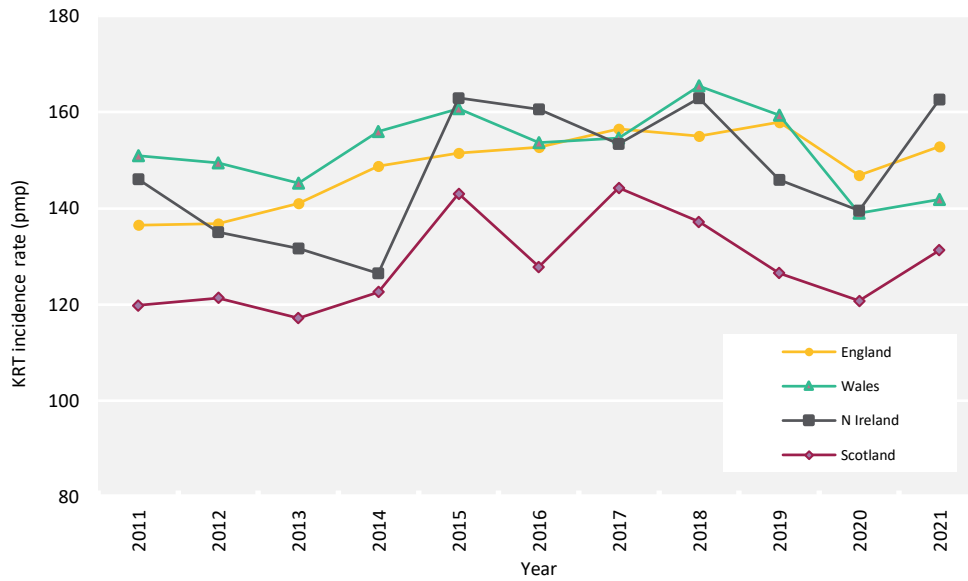
**Figure 2.2** Adult KRT incidence rates by country between 2011 and 2021

pmp – per million population
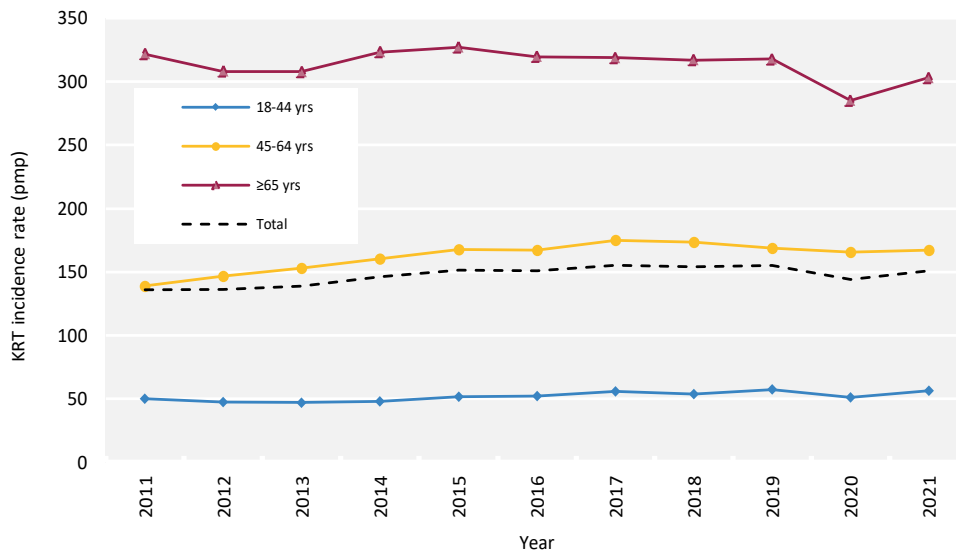


**Figure 2.3** Adult KRT incidence rates by age group between 2011 and 2021

pmp – per million population

Adults starting KRT in the UK in 2021

# Demographics and start modality of incident adult KRT patients

The proportion of KRT patients from each ethnic group is shown for patients with ethnicity data – the proportion of centre patients with no ethnicity data is shown separately.

**Table 2.3** Demographics and start modality of adult patients incident to KRT in 2021 by centre

| Centre | N on KRT | % on ICHD | % on PD | % on HHD | % on Tx | % pre-emptive listing/tx | Median age (yrs) | % male | % White | % Asian | % Black | % Other | % missing |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ENGLAND | | | | | | | | | | | | | |
| Bham | 352 | 67.6 | 29.0 | 0.6 | 2.8 | 12.8 | 64.1 | 65.9 | 60.6 | 26.7 | 10.3 | 2.4 | 6.3 |
| Bradfd | 80 | 72.5 | 27.5 | 0.0 | 0.0 | 11.3 | 62.1 | 52.5 | 57.5 | 35.0 | 1.3 | 6.3 | 0.0 |
| Brightn | 130 | 77.7 | 16.9 | 0.0 | 5.4 | 19.2 | 61.6 | 58.5 | 88.7 | 3.5 | 4.3 | 3.5 | 11.5 |
| Bristol | 157 | 71.3 | 22.9 | 0.0 | 5.7 | 17.2 | 59.9 | 60.5 | 81.0 | 8.5 | 8.5 | 2.1 | 9.6 |
| Camb | 150 | 72.7 | 8.7 | 0.0 | 18.7 | 22.0 | 64.8 | 64.0 | 94.5 | 3.9 | 0.8 | 0.8 | 15.3 |
| Carlis | 45 | 66.7 | 28.9 | 0.0 | 4.4 | 11.1 | 60.1 | 64.4 | 100.0 | 0.0 | 0.0 | 0.0 | 2.2 |
| Carsh | 294 | 79.6 | 20.1 | 0.0 | 0.3 | 4.8 | 64.1 | 61.2 | 66.7 | 18.4 | 8.0 | 6.9 | 11.2 |
| Colchr | 35 | 100.0 | 0.0 | 0.0 | 0.0 | 2.9 | 67.6 | 68.6 | 100.0 | 0.0 | 0.0 | 0.0 | 20.0 |
| Covnt | 150 | 75.3 | 19.3 | 0.7 | 4.7 | 13.3 | 67.6 | 68.0 | 82.7 | 12.7 | 4.7 | 0.0 | 0.0 |
| Derby | 88 | 62.5 | 27.3 | 6.8 | 3.4 | 13.6 | 66.5 | 60.2 | 83.5 | 12.7 | 1.3 | 2.5 | 10.2 |
| Donc | 44 | 79.6 | 20.5 | 0.0 | 0.0 | 13.6 | 63.2 | 61.4 | 97.7 | 2.3 | 0.0 | 0.0 | 2.3 |
| Dorset | 79 | 77.2 | 13.9 | 0.0 | 8.9 | 16.5 | 70.1 | 68.4 | 94.9 | 3.8 | 1.3 | 0.0 | 1.3 |
| Dudley | 60 | 83.3 | 16.7 | 0.0 | 0.0 | 13.3 | 61.0 | 75.0 | 76.7 | 18.3 | 3.3 | 1.7 | 0.0 |
| EssexMS | 134 | 67.2 | 29.9 | 0.0 | 3.0 | 5.2 | 67.6 | 73.9 | 86.3 | 3.4 | 7.7 | 2.6 | 12.7 |
| Exeter* | 157 | 77.7 | 18.5 | 0.6 | 3.2 | | | | | | | | |
| Glouc | 81 | 80.3 | 16.1 | 0.0 | 3.7 | 16.0 | 67.5 | 64.2 | 86.8 | 5.3 | 5.3 | 2.6 | 6.2 |
| Hull | 94 | 80.9 | 18.1 | 0.0 | 1.1 | 3.2 | 61.0 | 62.8 | 96.8 | 3.2 | 0.0 | 0.0 | 1.1 |
| Ipswi | 61 | 85.3 | 8.2 | 0.0 | 6.6 | 14.8 | 72.9 | 62.3 | 84.2 | 1.8 | 5.3 | 8.8 | 6.6 |
| Kent | 180 | 77.8 | 20.0 | 0.0 | 2.2 | 10.6 | 65.5 | 66.1 | 91.4 | 2.9 | 2.3 | 3.4 | 3.3 |
| L Barts | 253 | 49.0 | 45.5 | 0.0 | 5.5 | 17.8 | 58.7 | 58.9 | 28.4 | 41.4 | 22.8 | 7.3 | 8.3 |
| L Guys | 196 | 78.6 | 14.3 | 0.0 | 7.1 | 15.3 | 63.2 | 59.7 | 51.0 | 11.1 | 32.7 | 5.2 | 21.9 |
| L Kings | 219 | 79.0 | 18.3 | 0.9 | 1.8 | 7.3 | 61.9 | 62.6 | 42.4 | 13.2 | 41.5 | 2.9 | 6.4 |
| L Rfree | 283 | 68.2 | 24.4 | 0.0 | 7.4 | 15.9 | 63.5 | 65.0 | 40.5 | 23.2 | 23.6 | 12.7 | 22.3 |
| L St.G | 92 | 63.0 | 28.3 | 0.0 | 8.7 | 25.0 | 60.3 | 70.7 | 36.0 | 20.0 | 16.0 | 28.0 | 18.5 |
| L West | 418 | 73.7 | 22.3 | 0.0 | 4.1 | 17.5 | 62.8 | 63.9 | 41.0 | 37.9 | 18.9 | 2.2 | 0.2 |
| Leeds | 168 | 79.2 | 13.7 | 0.6 | 6.6 | 25.6 | 61.3 | 65.5 | 76.2 | 15.5 | 6.0 | 2.4 | 0.0 |
| Leic | 307 | 78.8 | 18.6 | 0.0 | 2.6 | 13.7 | 66.1 | 66.5 | 72.6 | 20.7 | 4.4 | 2.2 | 12.1 |
| Liv Ain | 63 | 81.0 | 17.5 | 0.0 | 1.6 | 6.3 | 62.1 | 58.7 | 89.7 | 0.0 | 3.4 | 6.9 | 7.9 |
| Liv Roy | 103 | 68.0 | 16.5 | 2.9 | 12.6 | 18.4 | 58.3 | 68.0 | 93.6 | 3.2 | 1.1 | 2.1 | 8.7 |
| M RI | 205 | 62.0 | 22.0 | 6.3 | 9.8 | 20.5 | 62.8 | 62.4 | 60.5 | 16.2 | 20.4 | 3.0 | 18.5 |
| Middlbr | 110 | 85.5 | 9.1 | 0.0 | 5.5 | 12.7 | 63.2 | 59.1 | 93.1 | 3.9 | 2.0 | 1.0 | 7.3 |
| Newc | 129 | 69.8 | 19.4 | 0.0 | 10.9 | 24.0 | 62.9 | 67.4 | 89.8 | 4.7 | 2.3 | 3.1 | 0.8 |
| Norwch | 96 | 79.2 | 20.8 | 0.0 | 0.0 | 3.1 | 69.2 | 58.3 | 92.8 | 1.4 | 1.4 | 4.3 | 28.1 |
| Nottm | 127 | 58.3 | 36.2 | 0.0 | 5.5 | 19.7 | 63.6 | 73.2 | 85.5 | 8.1 | 5.6 | 0.8 | 2.4 |
| Oxford | 193 | 64.3 | 25.4 | 0.0 | 10.4 | 30.6 | 62.3 | 64.8 | | | | | 43.5 |
| Plymth | 85 | 70.6 | 17.7 | 0.0 | 11.8 | 23.5 | 63.1 | 70.6 | 98.8 | 0.0 | 0.0 | 1.2 | 2.4 |
| Ports | 237 | 74.7 | 17.3 | 3.4 | 4.6 | 13.5 | 66.1 | 58.7 | | | | | 30.4 |
| Prestn | 197 | 72.1 | 17.8 | 1.0 | 9.1 | 24.4 | 62.5 | 67.5 | 81.1 | 17.9 | 1.0 | 0.0 | 0.5 |
| Redng | 107 | 66.4 | 25.2 | 0.0 | 8.4 | 15.9 | 59.7 | 72.0 | 68.6 | 19.8 | 2.3 | 9.3 | 19.6 |
| Salford | 143 | 81.8 | 9.8 | 0.0 | 8.4 | 21.7 | 59.0 | 59.4 | 70.6 | 18.9 | 7.7 | 2.8 | 0.0 |
| Sheff | 170 | 70.0 | 24.1 | 0.6 | 5.3 | 14.1 | 62.0 | 62.9 | 89.1 | 4.8 | 4.2 | 1.8 | 2.9 |
| Shrew | 62 | 59.7 | 35.5 | 1.6 | 3.2 | 17.7 | 64.0 | 62.9 | 91.4 | 0.0 | 1.7 | 6.9 | 6.5 |
| Stevng | 171 | 79.0 | 16.4 | 1.2 | 3.5 | 11.7 | 63.0 | 69.6 | 66.7 | 21.3 | 8.0 | 4.0 | 12.3 |
| Stoke | 131 | 57.3 | 39.7 | 0.0 | 3.1 | 10.7 | 65.0 | 58.8 | 81.2 | 6.8 | 6.8 | 5.1 | 10.7 |

**Table 2.3** Continued

| Centre | N on KRT | % on ICHD | % on PD | % on HHD | % on Tx | % pre-emptive listing/tx | Median age (yrs) | % male | Ethnicity % White | % Asian | % Black | % Other | % missing |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sund | 69 | 59.4 | 37.7 | 0.0 | 2.9 | 5.8 | 70.2 | 59.4 | 92.8 | 2.9 | 0.0 | 4.3 | 0.0 |
| Truro | 71 | 87.3 | 9.9 | 0.0 | 2.8 | 9.9 | 67.6 | 56.3 | 97.2 | 1.4 | 0.0 | 1.4 | 0.0 |
| Wirral | 52 | 71.2 | 28.9 | 0.0 | 0.0 | 5.8 | 67.4 | 67.3 | 98.1 | 0.0 | 1.9 | 0.0 | 0.0 |
| Wolve | 121 | 74.4 | 18.2 | 6.6 | 0.8 | 6.6 | 64.5 | 63.6 | 58.7 | 28.1 | 6.6 | 6.6 | 0.0 |
| York | 49 | 69.4 | 16.3 | 0.0 | 14.3 | 28.6 | 64.5 | 49.0 | 95.9 | 4.1 | 0.0 | 0.0 | 0.0 |
| N IRELAND | | | | | | | | | | | | | |
| Antrim | 39 | 71.8 | 25.6 | 0.0 | 2.6 | 12.8 | 66.9 | 59.0 | | | | | 69.2 |
| Belfast | 102 | 52.9 | 18.6 | 0.0 | 28.4 | 38.2 | 64.4 | 58.8 | 98.6 | 1.4 | 0.0 | 0.0 | 29.4 |
| Newry | 39 | 74.4 | 23.1 | 0.0 | 2.6 | 12.8 | 72.7 | 53.8 | 100.0 | 0.0 | 0.0 | 0.0 | 17.9 |
| Ulster | 25 | 88.0 | 12.0 | 0.0 | 0.0 | 12.0 | 68.4 | 64.0 | 96.0 | 4.0 | 0.0 | 0.0 | 0.0 |
| West NI | 34 | 85.3 | 8.8 | 0.0 | 5.9 | 23.5 | 72.7 | 70.6 | 100.0 | 0.0 | 0.0 | 0.0 | 5.9 |
| SCOTLAND | | | | | | | | | | | | | |
| Abrdn | 54 | 77.8 | 16.7 | 0.0 | 5.6 | 13.0 | 66.5 | 70.4 | | | | | |
| Airdrie | 65 | 81.5 | 18.5 | 0.0 | 0.0 | 18.5 | 61.7 | 53.8 | | | | | |
| D&Gall | 13 | 69.2 | 7.7 | 0.0 | 23.1 | 38.5 | 69.0 | 53.8 | | | | | |
| Dundee | 37 | 73.0 | 27.0 | 0.0 | 0.0 | 13.5 | 67.6 | 67.6 | | | | | |
| Edinb | 91 | 58.2 | 28.6 | 0.0 | 13.2 | 33.0 | 60.3 | 68.1 | | | | | |
| Glasgw | 207 | 76.3 | 11.6 | 0.0 | 12.1 | 31.9 | 61.7 | 60.4 | | | | | |
| Inverns | 36 | 61.1 | 22.2 | 0.0 | 16.7 | 33.3 | 63.5 | 69.4 | | | | | |
| Klmarnk | 39 | 66.7 | 33.3 | 0.0 | 0.0 | 17.9 | 65.4 | 56.4 | | | | | |
| Krkcldy | 43 | 95.4 | 4.7 | 0.0 | 0.0 | 7.0 | 68.3 | 65.1 | | | | | |
| WALES | | | | | | | | | | | | | |
| Bangor | 20 | 60.0 | 40.0 | 0.0 | 0.0 | 5.0 | 67.4 | 60.0 | 100.0 | 0.0 | 0.0 | 0.0 | 30.0 |
| Cardff | 154 | 79.2 | 11.0 | 1.3 | 8.4 | 15.6 | 62.8 | 70.8 | 93.1 | 4.6 | 2.3 | 0.0 | 15.6 |
| Clwyd | 30 | 83.3 | 16.7 | 0.0 | 0.0 | 3.3 | 68.0 | 60.0 | | | | | 36.7 |
| Swanse | 126 | 80.2 | 14.3 | 0.0 | 5.6 | 12.7 | 63.2 | 68.3 | 97.6 | 1.6 | 0.8 | 0.0 | 0.8 |
| Wrexm | 23 | 91.3 | 4.4 | 0.0 | 4.4 | 13.0 | 64.6 | 69.6 | 100.0 | 0.0 | 0.0 | 0.0 | 4.3 |
| TOTALS | | | | | | | | | | | | | |
| England | 6,998 | 72.4 | 21.7 | 0.7 | 5.2 | 15.1 | 63.6 | 63.9 | 72.1 | 15.0 | 9.2 | 3.7 | 9.8 |
| N Ireland | 239 | 67.8 | 18.4 | 0.0 | 13.8 | 25.1 | 66.8 | 60.3 | 98.8 | 1.2 | 0.0 | 0.0 | 27.6 |
| Scotland | 585 | 73.7 | 18.0 | 0.0 | 8.4 | 25.1 | 63.3 | 62.7 | | | | | |
| Wales | 353 | 79.6 | 13.9 | 0.6 | 6.0 | 12.7 | 64.0 | 68.3 | 96.1 | 2.6 | 1.3 | 0.0 | 12.2 |
| **UK** | **8,175** | **72.6** | **21.0** | **0.7** | **5.7** | **16.1** | **63.7** | **63.9** | **74.0** | **14.0** | **8.6** | **3.4** | **10.5** |

Blank cells - no data retuned by the centre or data completeness <70%

Breakdown by ethnicity is not shown for centres with <70% data completeness, but these centres were included in national averages

*Exeter was unable to submit 2021 patient level data, numbers of incident patients in 2019 were used as estimate for 2021

UK ethnicity distribution and completeness does not include Scotland

Incidence

**Table 2.4** Demographics, primary renal diseases (PRDs), referral time and start modality of adult patients incident to KRT in 2021 by age group

| Characteristic | Age group (yrs) | | | | | | | Total | Median age (yrs) |
|---|---|---|---|---|---|---|---|---|---|
| | 18-34 | 35-44 | 45-54 | 55-64 | 65-74 | 75-84 | ≥85 | | |
| **Total** | | | | | | | | | |
| N | 593 | 718 | 1,200 | 1,707 | 2,038 | 1,546 | 216 | 8,018 | 63.7 |
| % | 7.4 | 9.0 | 15.0 | 21.3 | 25.4 | 19.3 | 2.7 | | |
| | | | | | | | | | |
| **Sex (%)** | | | | | | | | | |
| Male | 60.7 | 61.1 | 64.4 | 63.0 | 64.0 | 65.7 | 71.8 | 63.9 | 64.1 |
| Female | 39.3 | 38.9 | 35.6 | 37.0 | 36.0 | 34.3 | 28.2 | 36.1 | 63.1 |
| | | | | | | | | | |
| **Ethnicity (%)** | | | | | | | | | |
| White | 72.7 | 66.7 | 65.2 | 69.8 | 77.2 | 83.9 | 80.2 | 74.0 | 65.6 |
| Asian | 15.0 | 17.5 | 16.5 | 15.0 | 14.6 | 9.1 | 8.9 | 14.0 | 61.8 |
| Black | 8.6 | 11.5 | 13.2 | 10.7 | 5.4 | 5.7 | 6.8 | 8.6 | 57.8 |
| Other | 3.6 | 4.3 | 5.0 | 4.5 | 2.8 | 1.3 | 4.2 | 3.4 | 58.5 |
| Missing | 10.4 | 10.1 | 9.7 | 10.8 | 10.6 | 11.1 | 8.6 | 10.5 | 64.2 |
| | | | | | | | | | |
| **PRD (%)** | | | | | | | | | |
| Diabetes | 20.0 | 25.8 | 30.2 | 37.4 | 36.1 | 26.8 | 23.0 | 31.3 | 63.7 |
| Glomerulonephritis | 27.4 | 17.3 | 15.8 | 14.0 | 11.1 | 7.3 | 3.7 | 13.3 | 56.7 |
| Hypertension | 5.6 | 7.7 | 7.2 | 6.5 | 5.5 | 7.9 | 11.8 | 6.8 | 63.3 |
| Polycystic kidney disease | 2.9 | 10.1 | 13.3 | 7.2 | 4.2 | 2.9 | 1.9 | 6.4 | 55.1 |
| Pyelonephritis | 6.4 | 3.7 | 4.7 | 4.2 | 5.0 | 5.0 | 9.3 | 4.9 | 64.7 |
| Renal vascular disease | 0.6 | 1.3 | 2.1 | 2.4 | 6.3 | 9.4 | 10.6 | 4.6 | 73.7 |
| Other | 22.7 | 20.5 | 15.9 | 15.6 | 17.0 | 19.3 | 12.4 | 17.6 | 63.3 |
| Uncertain aetiology | 14.4 | 13.8 | 10.8 | 12.7 | 14.7 | 21.4 | 27.3 | 15.1 | 67.4 |
| Missing | 13.2 | 13.0 | 13.4 | 12.3 | 15.1 | 16.1 | 25.5 | 14.4 | 66.1 |
| | | | | | | | | | |
| **Referral time (%)** | | | | | | | | | |
| <90 days | 24.0 | 24.3 | 17.4 | 17.4 | 16.9 | 16.8 | 16.0 | 18.2 | 61.8 |
| ≥90 days | 76.0 | 75.7 | 82.6 | 82.6 | 83.1 | 83.2 | 84.0 | 81.8 | 64.2 |
| Missing | 7.4 | 6.2 | 5.6 | 5.7 | 5.8 | 5.5 | 7.6 | 5.9 | 63.8 |
| | | | | | | | | | |
| **Start modality (%)** | | | | | | | | | |
| ICHD | 59.5 | 61.7 | 67.3 | 71.2 | 75.2 | 82.6 | 87.0 | 72.5 | 65.6 |
| HHD | 0.8 | 1.1 | 0.7 | 0.6 | 0.7 | 0.3 | 0.5 | 0.6 | 57.1 |
| PD | 27.7 | 28.1 | 22.6 | 21.4 | 20.1 | 16.0 | 12.5 | 21.0 | 60.4 |
| Tx | 12.0 | 9.1 | 9.5 | 6.8 | 4.0 | 1.0 | 0.0 | 5.8 | 53.8 |

Scotland was excluded from analysis of ethnicity and referral time as these two data items are not available from the Scottish registry
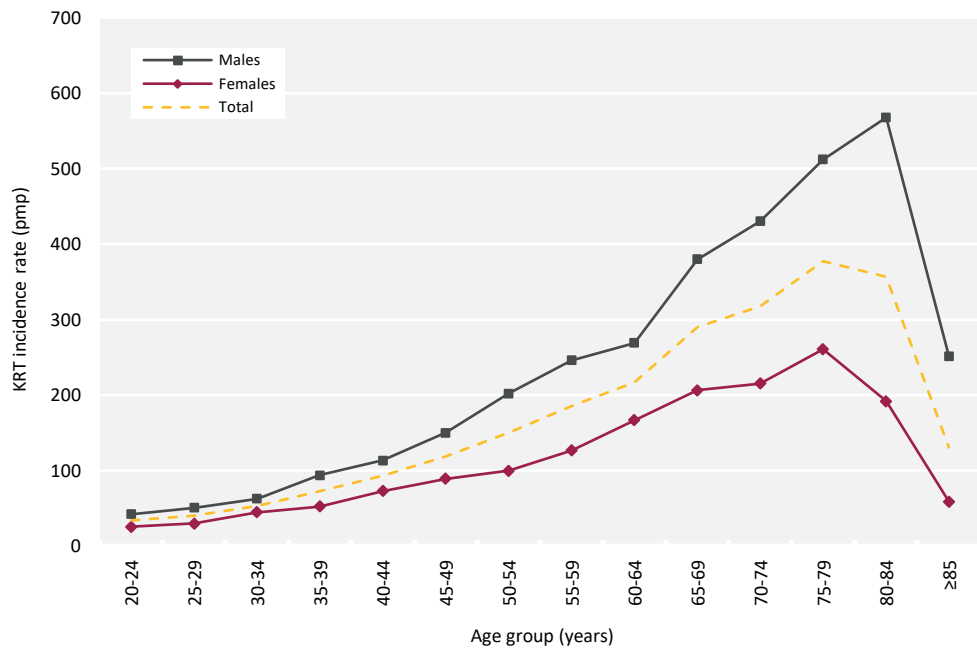
Incidence

**Figure 2.4** Incidence rates for adult patients starting KRT in 2021 by age group and sex

pmp – per million population

**Table 2.5** Change in primary renal disease (PRD) of adult patients incident to KRT from 2012 to 2021

| PRD | Year of KRT start | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
| Diabetes | 25.3 | 25.3 | 26.3 | 26.9 | 27.5 | 28.7 | 29.8 | 30.7 | 30.6 | 31.3 |
| Glomerulonephritis | 13.7 | 14.3 | 12.9 | 13.4 | 13.3 | 13.6 | 13.0 | 13.1 | 12.3 | 13.3 |
| Hypertension | 7.4 | 7.5 | 6.4 | 6.6 | 6.2 | 6.5 | 6.7 | 7.5 | 7.2 | 6.8 |
| Polycystic kidney disease | 6.7 | 7.6 | 6.5 | 7.2 | 6.7 | 6.8 | 7.0 | 6.9 | 6.7 | 6.4 |
| Pyelonephritis | 6.7 | 6.6 | 5.7 | 6.2 | 6.2 | 5.7 | 5.1 | 5.4 | 5.4 | 4.9 |
| Renal vascular disease | 6.2 | 5.3 | 6.1 | 5.9 | 6.1 | 5.7 | 5.6 | 5.5 | 4.9 | 4.6 |
| Other | 17.4 | 18.1 | 19.8 | 18.7 | 18.6 | 18.7 | 18.7 | 16.8 | 18.1 | 17.6 |
| Uncertain aetiology | 16.6 | 15.4 | 16.2 | 15.0 | 15.3 | 14.5 | 14.1 | 14.1 | 14.9 | 15.1 |
| Missing | 2.1 | 3.2 | 1.7 | 2.7 | 3.2 | 5.5 | 4.4 | 6.9 | 9.4 | 14.4 |

The percentages in each PRD category add up to 100% in each year; the percentages with missing PRD data are shown separately

The audit of pre-emptive listing and pre-emptive transplantation was merged as a single metric. Figure 2.5 shows the percentage of patients at each centre who were either pre-emptively listed or pre-emptively transplanted on day one of their KRT treatment in 2021. Please visit the UKRR data portal (ukkidney.org/audit-research/data-portals) to identify individual kidney centres.
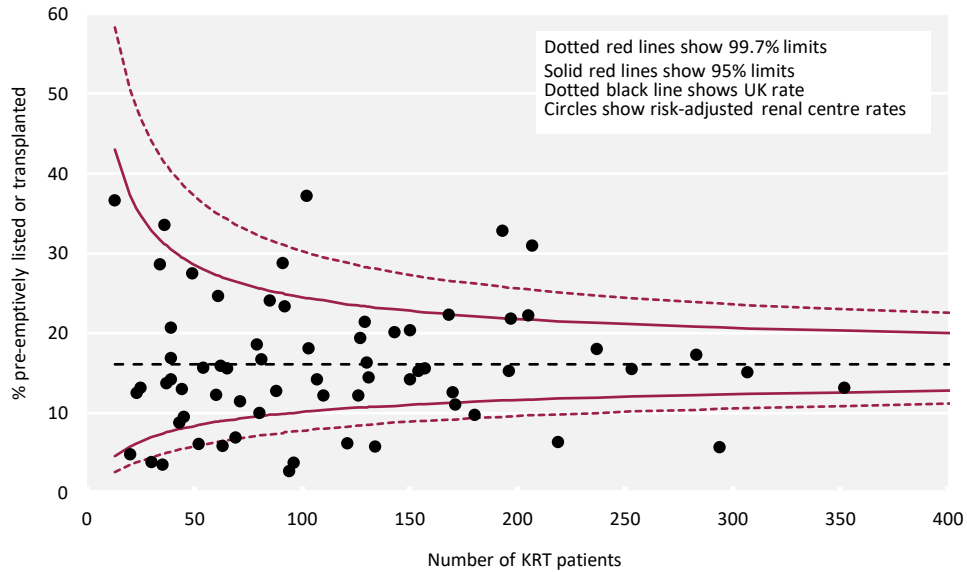
**Figure 2.5** Transplant-status (listed or transplanted) at the start of KRT for adult patients incident to KRT in 2021 by centre
Analysis is adjusted for age, sex and PRD (diabetes versus non-diabetes)

# Modality changes of incident adult KRT patients

Many patients start on HD, but then switch to other modalities, so the modality in use at 90 days may be more representative of the first elective modality. The analysis of the proportion of patients by treatment modality at three months post-KRT initiation is shown over time (table 2.6) and by UK country (table 2.7). Changes from start modality and deaths during the first five years are shown by start modality (table 2.8). Due to small numbers, the percentage of incident patients on HHD and ICHD at start and 90 days after start of KRT is shown at a UK level (table 2.6), but all HD patients are combined for other analyses.

**Table 2.6** KRT modality at start and 90 days after start of KRT for incident adult KRT patients by year of start

| KRT start year | % on ICHD | % on HHD | % on PD | % with Tx |
|---|---|---|---|---|
| **Day 0 modality** | | | | |
| 2016 | 71.7 | 0.5 | 20.0 | 7.8 |
| 2017 | 71.5 | 0.4 | 19.2 | 9.0 |
| 2018 | 71.7 | 0.4 | 19.6 | 8.3 |
| 2019 | 71.0 | 0.4 | 20.1 | 8.4 |
| 2020 | 71.9 | 0.4 | 21.8 | 6.0 |
| 2021 | 72.5 | 0.7 | 21.0 | 5.8 |
| | | | | |
| **Day 90 modality** | | | | |
| Oct 2015 - Sept 2016 | 68.5 | 0.9 | 20.4 | 10.2 |
| Oct 2016 - Sept 2017 | 68.5 | 0.8 | 20.0 | 10.7 |
| Oct 2017 - Sept 2018 | 69.1 | 1.0 | 19.8 | 10.2 |
| Oct 2018 - Sept 2019 | 68.3 | 1.1 | 20.8 | 9.9 |
| Oct 2019 - Sept 2020 | 69.8 | 1.0 | 21.5 | 7.7 |
| Oct 2020 - Sept 2021 | 70.5 | 1.1 | 21.4 | 7.1 |

For 90 day analyses, the incident cohort from the 12 months starting 1 October of the previous year was used, so that follow-up to 90 days was possible for all patients

**Table 2.7** KRT modality at 90 days for adult patients incident to KRT between 01/10/2020 and 30/09/2021 by country

| Country | N | Patients who started KRT | | | | | Patients still on RRT at 90 days | | |
|---|---|---|---|---|---|---|---|---|---|
| | | % on HD[1] | % on PD | % with Tx | % discontinued[2] | % died | % on HD[1] | % on PD | % with Tx |
| England | 6,778 | 67.3 | 21.1 | 6.3 | 0.8 | 4.6 | 71.1 | 22.3 | 6.6 |
| N Ireland | 235 | 66.4 | 14.9 | 13.2 | 4.7 | 0.9 | 70.3 | 15.8 | 14.0 |
| Scotland | 561 | 71.5 | 16.0 | 9.5 | 0.0 | 3.0 | 73.7 | 16.5 | 9.7 |
| Wales | 348 | 74.4 | 14.7 | 6.3 | 0.9 | 3.7 | 78.0 | 15.4 | 6.6 |
| UK | 7,922 | 67.9 | 20.3 | 6.7 | 0.9 | 4.3 | 71.5 | 21.4 | 7.1 |

[1]HD includes ICHD and HHD

[2]Discontinued did not include patients who recovered function within 90 days, because by definition they were not included in the incident cohort

**Table 2.8** Start and subsequent KRT modalities for adult patients incident to KRT in 2016 by time after start

| Start modality | N | Later modality | Time after start (%) | | | |
|---|---|---|---|---|---|---|
| | | | 90 days | 1 yr | 3 yrs | 5 yrs |
| HD | 5,639 | HD | 90.3 | 73.2 | 44.1 | 24.5 |
| | | PD | 2.2 | 2.7 | 1.2 | 0.4 |
| | | Tx | 1.2 | 6.0 | 15.5 | 18.2 |
| | | Other | 1.0 | 2.1 | 2.4 | 2.3 |
| | | Died | 5.2 | 15.9 | 36.9 | 54.6 |
| | | | | | | |
| PD | 1,564 | HD | 5.9 | 16.4 | 20.5 | 14.5 |
| | | PD | 89.3 | 58.6 | 18.5 | 6.7 |
| | | Tx | 2.9 | 16.3 | 36.3 | 40.0 |
| | | Other | 0.6 | 1.5 | 1.3 | 1.5 |
| | | Died | 1.2 | 7.2 | 23.4 | 37.3 |
| | | | | | | |
| Tx | 608 | HD | 0.5 | 0.8 | 1.0 | 1.6 |
| | | PD | 0.0 | 0.3 | 0.5 | 0.3 |
| | | Tx | 99.2 | 97.2 | 93.4 | 87.8 |
| | | Other | 0.2 | 0.5 | 1.3 | 1.8 |
| | | Died | 0.2 | 1.2 | 3.8 | 8.4 |

Shading indicates proportion of individuals maintained on their initial modality
HD included ICHD and HHD
Other is discontinued, recovered, moved away or currently transferring between centres

The modality at one year after KRT initiation is shown in figure 2.6 for all KRT starters and in figure 2.7 for those starting on PD by centre, using incident patients starting KRT in 2020 to allow one year follow-up time.

**Figure 2.6** KRT modality at 1 year for incident adult KRT patients who started KRT in 2020 by centre

Number of patients in a centre in brackets

Out – moved out of a centre but did not reappear in another centre; Rec – recovered kidney function; Stop – treatment withdrawal
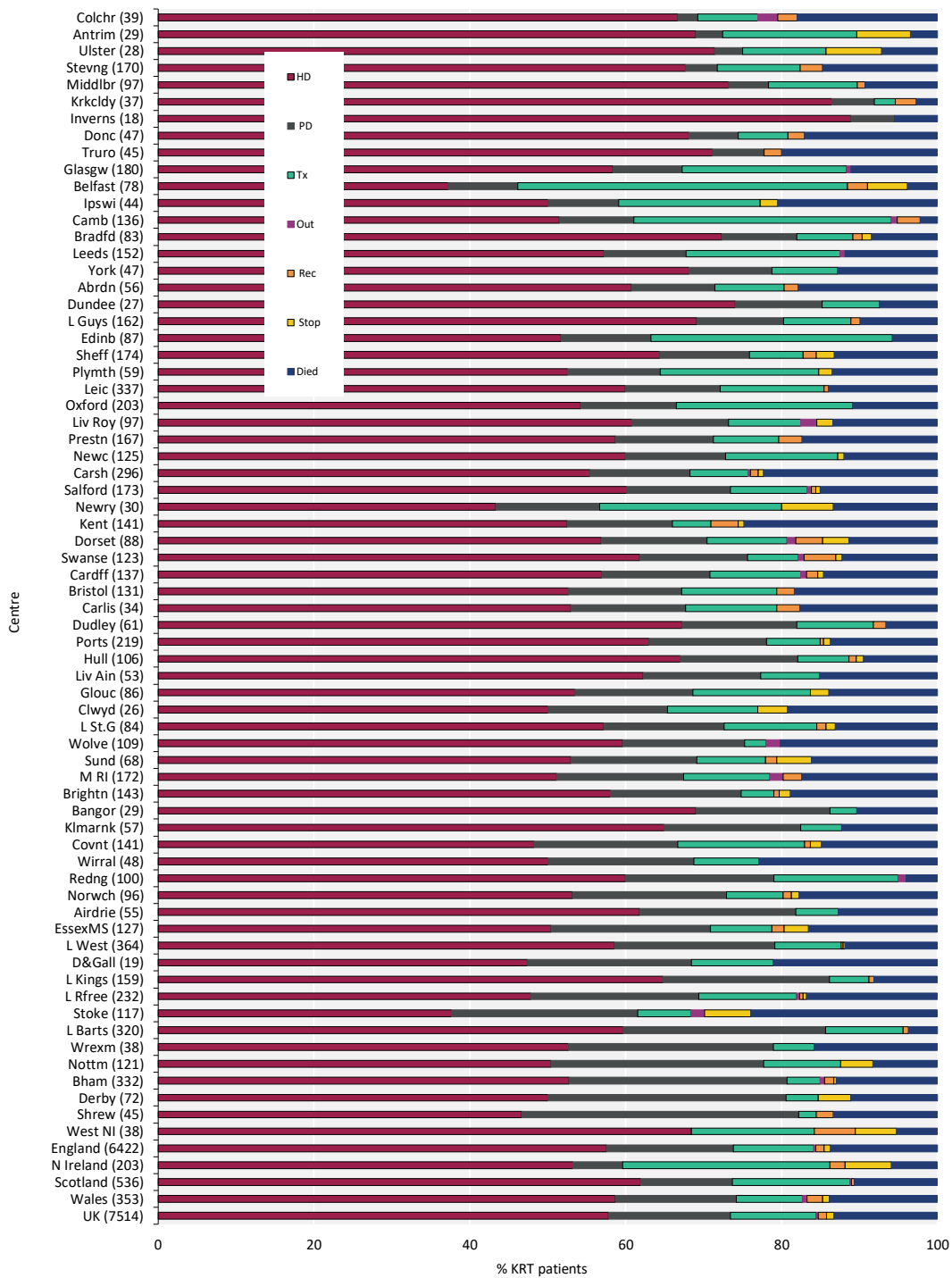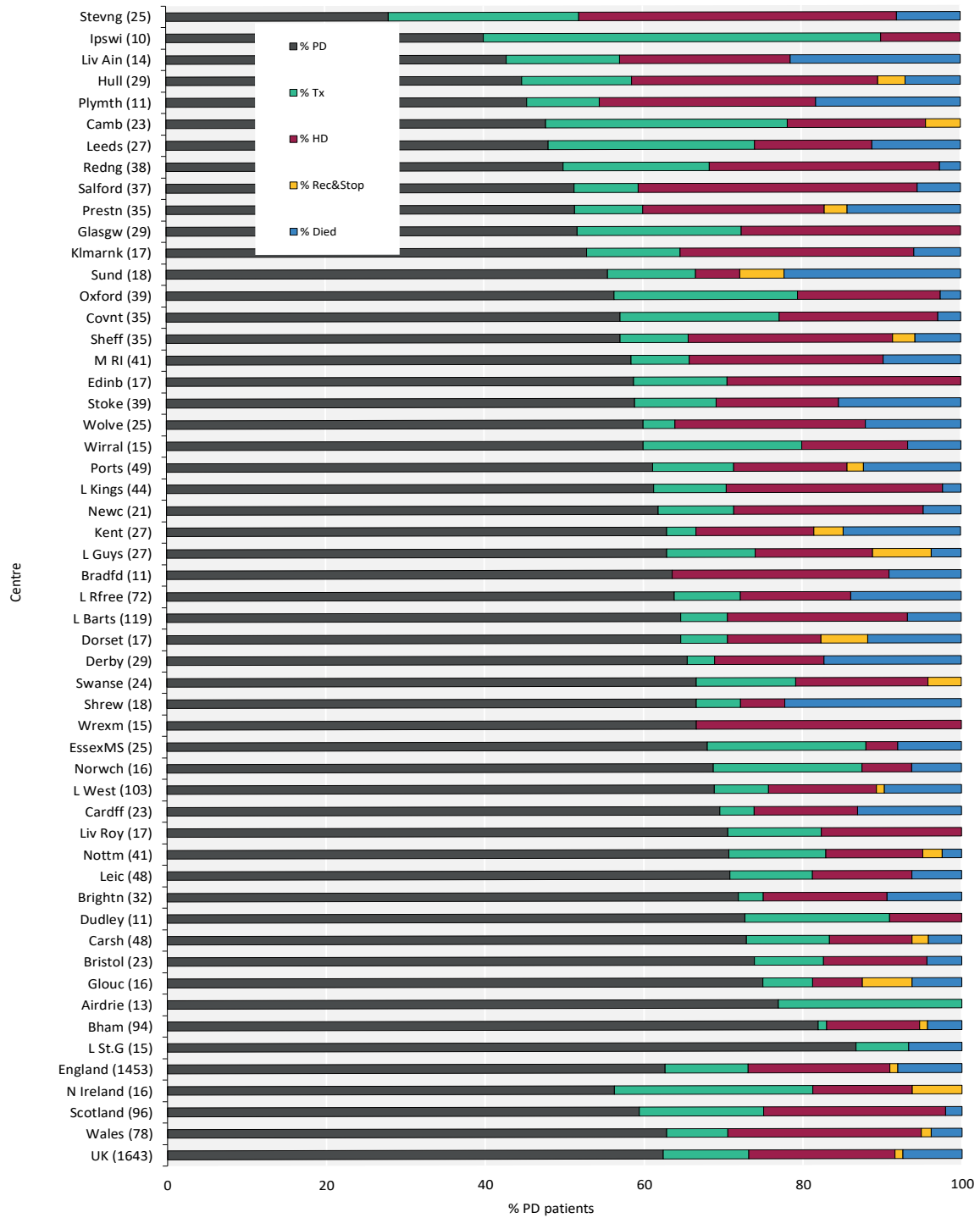
**Figure 2.7** KRT modality at 1 year for incident adult PD patients who started KRT in 2020 by centre

Number of patients in a centre in brackets

Rec – recovered kidney function; Stop – treatment withdrawal

# Late presentation to nephrology services of incident adult KRT patients

Late presentation to a nephrologist is defined as a patient being seen by the kidney service for the first time within 90 days of starting KRT and is used interchangeably with referral time in this report. Due to small numbers, a two year cohort (2020–2021) was used at a centre level to estimate late referral to a nephrologist and centres with a completeness of <70% were excluded. A seven year cohort was used to show national longitudinal trends (table 2.12).

**Table 2.9** Referral times of incident adult KRT patients by centre (2020–2021 2 year cohort)

| Centre | N on KRT | | N with referral data | % data completeness | | % presenting <90 days before KRT start | | % presenting <1 yr before KRT start |
| | 2020 | 2021 | | 2020 | 2021 | All PRDs | Non-diabetes PRDs | All PRDs |
|---|---|---|---|---|---|---|---|---|
| | | | | | ENGLAND | | | |
| Bham | 332 | 352 | 684 | 100.0 | 100.0 | 17.1 | 23.3 | 28.9 |
| Bradfd | 83 | 80 | 163 | 100.0 | 100.0 | 11.7 | 15.3 | 20.2 |
| Brightn | 143 | 130 | 272 | 99.3 | 100.0 | 14.7 | 17.0 | 27.6 |
| Bristol | 131 | 157 | 263 | 82.4 | 98.7 | 18.6 | 23.6 | 28.1 |
| Camb | 136 | 150 | 285 | 100.0 | 99.3 | 21.8 | 22.9 | 38.6 |
| Carlis | 34 | 45 | 79 | 100.0 | 100.0 | 13.9 | 20.8 | 22.8 |
| Carsh | 296 | 294 | 578 | 99.3 | 96.6 | 23.0 | | 36.0 |
| Colchr | 39 | 35 | | 10.3 | 8.6 | | | |
| Covnt | 141 | 150 | 289 | 99.3 | 99.3 | 14.9 | 19.2 | 25.6 |
| Derby | 72 | 88 | 160 | 100.0 | 100.0 | 18.8 | 21.4 | 28.8 |
| Donc | 47 | 44 | 89 | 97.9 | 97.7 | 9.0 | 11.5 | 24.7 |
| Dorset | 88 | 79 | 166 | 100.0 | 98.7 | 15.7 | 19.8 | 24.7 |
| Dudley | 61 | 60 | 121 | 100.0 | 100.0 | 17.4 | 16.7 | 27.3 |
| EssexMS | 127 | 134 | 247 | 98.4 | 91.0 | 23.9 | 28.0 | 39.3 |
| Exeter | 105 | 0 | 105 | 100.0 | | 13.3 | 20.8 | 21.9 |
| Glouc | 86 | 81 | 163 | 98.8 | 96.3 | 16.0 | 18.1 | 27.0 |
| Hull | 106 | 94 | 199 | 99.1 | 100.0 | 30.2 | 34.2 | 42.7 |
| Ipswi | 44 | 61 | 84 | 90.9 | 72.1 | 15.5 | | 32.1 |
| Kent | 141 | 180 | 320 | 99.3 | 100.0 | 10.0 | 12.1 | 15.9 |
| L Barts | 320 | 253 | | 60.9 | 47.8 | | | |
| L Guys | 162 | 196 | 345 | 98.8 | 94.4 | 15.9 | 16.7 | 33.6 |
| L Kings | 159 | 219 | 369 | 99.4 | 96.3 | 21.4 | 25.0 | 30.6 |
| L Rfree | 232 | 283 | 505 | 98.3 | 97.9 | 16.6 | 16.7 | 27.9 |
| L St.G | 84 | 92 | 176 | 100.0 | 100.0 | 23.3 | 26.9 | 44.9 |
| L West | 364 | 418 | 778 | 99.5 | 99.5 | 16.7 | 18.7 | 33.0 |
| Leeds | 152 | 168 | 320 | 100.0 | 100.0 | 17.2 | 19.1 | 27.8 |
| Leic | 337 | 307 | 641 | 99.7 | 99.3 | 17.0 | 14.0 | 24.3 |
| Liv Ain | 53 | 63 | 116 | 100.0 | 100.0 | 19.8 | 23.8 | 29.3 |
| Liv Roy | 97 | 103 | 200 | 100.0 | 100.0 | 21.0 | | 31.0 |
| M RI | 172 | 205 | 319 | 84.9 | 84.4 | 20.4 | | 27.3 |
| Middlbr | 97 | 110 | 203 | 99.0 | 97.3 | 18.2 | 20.3 | 33.5 |
| Newc | 125 | 129 | 254 | 100.0 | 100.0 | 16.1 | 20.9 | 25.6 |
| Norwch | 96 | 96 | 81 | 84.4 | 37.5 | 32.1 | 33.9 | 44.4 |
| Nottm | 121 | 127 | 248 | 100.0 | 100.0 | 11.7 | 15.5 | 23.0 |
| Oxford | 203 | 193 | 394 | 99.5 | 99.5 | 13.5 | 19.2 | 24.6 |
| Plymth | 59 | 85 | 144 | 100.0 | 100.0 | 27.8 | 33.0 | 41.0 |
| Ports | 219 | 237 | 436 | 97.3 | 94.1 | 15.1 | | 26.1 |
| Prestn | 167 | 197 | 358 | 100.0 | 97.0 | 17.0 | 20.4 | 31.0 |
| Redng | 100 | 107 | 206 | 99.0 | 100.0 | 16.0 | 21.3 | 21.8 |
| Salford | 173 | 143 | 316 | 100.0 | 100.0 | 15.8 | 20.9 | 30.7 |
| Sheff | 174 | 170 | 342 | 98.9 | 100.0 | 14.9 | 17.1 | 25.4 |
| Shrew | 45 | 62 | 105 | 97.8 | 98.4 | 16.2 | 19.8 | 32.4 |
| Stevng | 170 | 171 | 331 | 98.8 | 95.3 | 14.5 | 18.3 | 21.8 |

**Table 2.9** Continued

| Centre | N on KRT 2020 | N on KRT 2021 | N with referral data | % data completeness 2020 | % data completeness 2021 | % presenting <90 days before KRT start All PRDs | % presenting <90 days before KRT start Non-diabetes PRDs | % presenting <1 yr before KRT start All PRDs |
|---|---|---|---|---|---|---|---|---|
| Stoke | 117 | 131 | | 61.5 | 57.3 | | | |
| Sund | 68 | 69 | 136 | 100.0 | 98.6 | 13.2 | 15.7 | 25.7 |
| Truro | 45 | 71 | 116 | 100.0 | 100.0 | 14.7 | 20.5 | 24.1 |
| Wirral | 48 | 52 | 100 | 100.0 | 100.0 | 14.0 | 19.7 | 26.0 |
| Wolve | 109 | 121 | 226 | 98.2 | 98.3 | 15.5 | 18.6 | 24.3 |
| York | 47 | 49 | 96 | 100.0 | 100.0 | 15.6 | 17.8 | 21.9 |
| N IRELAND | | | | | | | | |
| Antrim | 29 | 39 | 68 | 100.0 | 100.0 | 14.7 | 10.0 | 20.6 |
| Belfast | 78 | 102 | 169 | 96.2 | 92.2 | 24.3 | 23.0 | 30.8 |
| Newry | 30 | 39 | 67 | 100.0 | 94.9 | 16.4 | 7.9 | 26.9 |
| Ulster | 28 | 25 | 53 | 100.0 | 100.0 | 17.0 | 22.2 | 20.8 |
| West NI | 38 | 34 | 72 | 100.0 | 100.0 | 26.4 | 33.3 | 30.6 |
| WALES | | | | | | | | |
| Bangor | 29 | 20 | 49 | 100.0 | 100.0 | 12.2 | 16.2 | 28.6 |
| Cardff | 137 | 154 | 287 | 99.3 | 98.1 | 11.5 | 12.2 | 20.2 |
| Clwyd | 26 | 30 | 56 | 100.0 | 100.0 | 8.9 | 11.4 | 19.6 |
| Swanse | 123 | 126 | 249 | 100.0 | 100.0 | 15.7 | 19.7 | 25.7 |
| Wrexm | 38 | 23 | 59 | 97.4 | 95.7 | 25.4 | 26.7 | 35.6 |
| TOTALS | | | | | | | | |
| England | 6,527 | 6,841 | 12,634 | 95.3 | 93.8 | 17.3 | 19.6 | 28.8 |
| N Ireland | 203 | 239 | 429 | 98.5 | 95.8 | 21.0 | 20.7 | 27.3 |
| Wales | 353 | 353 | 700 | 99.4 | 98.9 | 14.0 | 16.6 | 24.0 |
| **E, W & NI** | **7,083** | **7,433** | **13,763** | **95.6** | **94.1** | **17.2** | **19.5** | **28.5** |

Blank cells – no data returned by the centre or data completeness <70%

If a centre had low referral completeness (<70%) for 1 of the 2 years, only a 1 year cohort was included in the analysis

For the analysis of late referral in people without diabetes, patients with missing PRD were excluded from the analysis and the results not shown if the completeness of PRD was <70%

PRD – primary renal disease
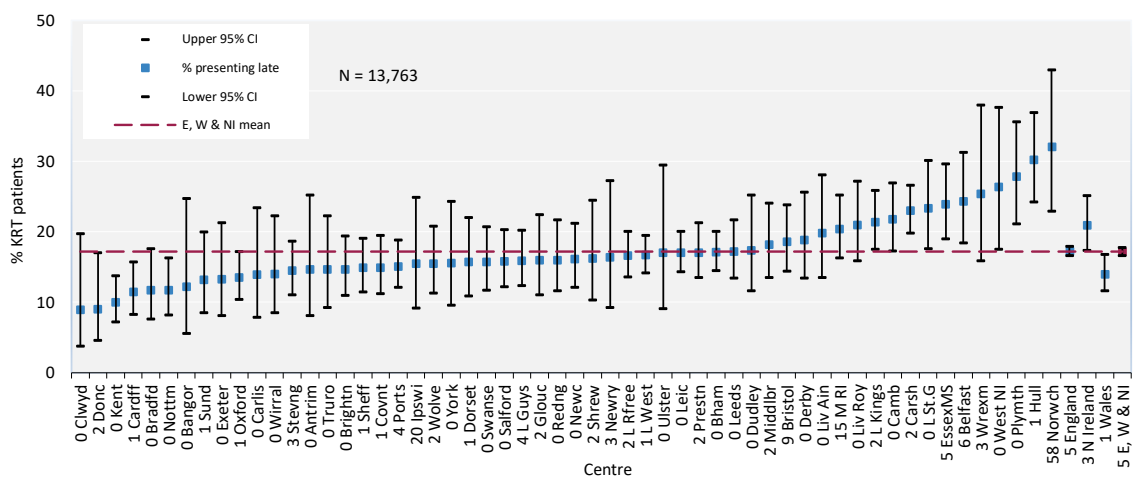
**Figure 2.8** Percentage of incident adult KRT patients presenting late (<90 days) to a nephrologist (2019–2021 2 year cohort)
CI – confidence interval

**Table 2.10** Characteristics of incident adult KRT patients by referral time (2020–2021 2 year cohort)

| Characteristic | Referral time | |
| --- | --- | --- |
| | <90 days | ≥90 days |
| Median age (yrs) | 62.6 | 64.0 |
| % male | 68.1 | 63.6 |
| % starting on PD | 9.8 | 24.5 |
| % on PD at 90 days | 11.9 | 23.3 |
| Mean haemoglobin at KRT start (g/L) | 94 | 100 |
| Mean eGFR at KRT start (mL/min/1.73m2)[1] | 6.2 | 7.2 |

[1]Data available for approximately 35% of patients
eGFR – estimated glomerular filtration rate

Late presentation is shown by PRDs, which were grouped into categories as shown in table 2.11, with the mapping of disease codes into groups explained in more detail in appendix A. The proportion of patients with each PRD presenting late is shown for patients with PRD data. The proportion of patients with no PRD data is shown on a separate line.

**Table 2.11** Referral time of incident adult KRT patients by primary renal disease (PRD) (2020–2021 2 year cohort)

| PRD | N with data | Referral time | | | |
| | | <90 days | | ≥90 days | |
| | | N | % | N | % |
|---|---|---|---|---|---|
| Diabetes | 3,788 | 335 | 8.8 | 3,453 | 91.2 |
| Glomerulonephritis | 1,541 | 203 | 13.2 | 1,338 | 86.8 |
| Hypertension | 890 | 147 | 16.5 | 743 | 83.5 |
| Polycystic kidney disease | 791 | 41 | 5.2 | 750 | 94.8 |
| Pyelonephritis | 623 | 110 | 17.7 | 513 | 82.3 |
| Renal vascular disease | 574 | 72 | 12.5 | 502 | 87.5 |
| Other | 2,202 | 742 | 33.7 | 1,460 | 66.3 |
| Uncertain aetiology | 1,867 | 338 | 18.1 | 1,529 | 81.9 |
| **Total (with data)** | 12,276 | 1,988 | 16.2 | 10,288 | 83.8 |
| | | | | | |
| Missing | 1,487 | 380 | 25.6 | 1,107 | 74.4 |

**Table 2.12** Referral time of incident adult KRT patients by year of start (restricted to centres reporting continuous data for 2015–2021)

| Referral time | KRT start year (%) | | | | | | |
| | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|
| <90 days | 16.1 | 15.2 | 16.0 | 15.1 | 15.7 | 15.9 | 18.1 |
| 3-6 mths | 4.6 | 4.7 | 4.8 | 4.5 | 4.1 | 3.7 | 4.5 |
| 6-12 mths | 7.9 | 8.2 | 6.9 | 7.4 | 7.7 | 7.5 | 6.7 |
| ≥12 mths | 71.4 | 72.0 | 72.3 | 73.1 | 72.4 | 72.8 | 70.7 |

## Start estimated glomerular filtration rate in incident adult KRT patients

Start eGFR was calculated using the CKD Epidemiology Collaboration method for incident KRT patients by age group and by start modality. Care needs to be taken in interpreting these data because (i) start eGFR data completeness is poor (35% overall), (ii) if the date of KRT start is incorrect, the documented start eGFR may have been taken after the patient had started KRT.
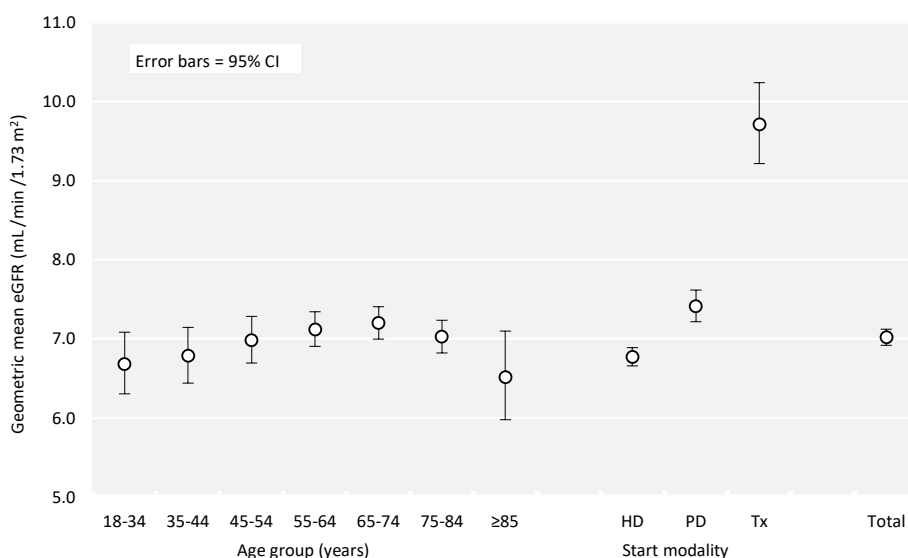


**Figure 2.9** Geometric mean estimated glomerular filtration rates (eGFR) for adult patients incident to KRT in 2021 by age group and start modality

CI – confidence interval

# Anaemia in incident adult KRT patients

The analyses of haemoglobin by modality and timing of presentation used haemoglobin measurements from after the start of KRT but still within the same quarter.

**Table 2.13** Haemoglobin (Hb) data for adult patients incident to KRT in 2021 by centre

| Centre | All KRT patients | | Median Hb (g/L) by modality | | | Median Hb (g/L) by presentation time | | % data completeness |
| | Median Hb (g/L) | % Hb ≥100 g/L | Tx | PD | HD | ≥90 days | <90 days | |
|---|---|---|---|---|---|---|---|---|
| ENGLAND | | | | | | | | |
| Bham | 99 | 47.9 | 105 | 105 | 94 | 100 | 91 | 94.9 |
| Bradfd | 99 | 46.3 | | 112 | 94 | 99 | | 83.8 |
| Brightn | 102 | 58.1 | | 111 | 100 | 102 | 96 | 95.4 |
| Bristol | 104 | 68.4 | | 113 | 101 | 105 | 101 | 98.7 |
| Camb | 100 | 53.3 | 106 | 111 | 97 | 102 | 97 | 71.3 |
| Carlis | 100 | 51.1 | | 114 | 93 | 101 | | 100.0 |
| Carsh | 94 | 40.3 | | 106 | 92 | 97 | 92 | 96.3 |
| Colchr | | | | | | | | 65.7 |
| Covnt | 98 | 46.5 | | 107 | 94 | 100 | 92 | 96.0 |
| Derby | 97 | 40.5 | | 104 | 94 | 98 | 95 | 95.5 |
| Donc | 95 | 39.0 | | | 91 | 97 | | 93.2 |
| Dorset | 100 | 52.0 | | | 96 | 101 | 94 | 94.9 |
| Dudley | 95 | 39.7 | | 109 | 93 | 97 | 91 | 96.7 |
| EssexMS | 93 | 35.7 | | 105 | 90 | 98 | 88 | 94.0 |
| Exeter | | | | | | | | |
| Glouc | 99 | 48.7 | | 105 | 98 | 98 | 101 | 96.3 |
| Hull | 97 | 45.9 | | 110 | 93 | 104 | 88 | 90.4 |
| Ipswi | 92 | 30.5 | | | 90 | 92 | | 96.7 |
| Kent | 97 | 42.5 | | 105 | 95 | 97 | 91 | 96.7 |
| L Barts | | | | | | | | 56.9 |
| L Guys | 93 | 31.3 | 99 | 103 | 91 | 93 | 93 | 98.0 |
| L Kings | 96 | 41.0 | | 103 | 93 | 97 | 92 | 91.3 |
| L Rfree | 100 | 51.3 | 110 | 105 | 96 | 101 | 97 | 98.6 |
| L St.G | 94 | 40.5 | | 103 | 90 | 97 | 92 | 96.7 |
| L West | 101 | 54.3 | 117 | 105 | 100 | 102 | 93 | 72.3 |
| Leeds | 91 | 30.6 | 110 | 106 | 89 | 93 | 83 | 95.2 |
| Leic | 95 | 41.5 | 108 | 106 | 93 | 98 | 91 | 90.2 |
| Liv Ain | | | | | | | | 44.4 |
| Liv Roy | | | | | | | | 44.7 |
| M RI | 95 | 42.2 | 103 | 100 | 94 | 96 | 93 | 97.1 |
| Middlbr | 100 | 50.0 | | | 99 | 101 | 87 | 90.9 |
| Newc | 98 | 46.5 | 111 | 107 | 94 | 100 | 85 | 98.5 |
| Norwch | 96 | 45.7 | | 112 | 89 | | | 84.4 |
| Nottm | 100 | 50.8 | | 107 | 95 | 101 | 91 | 94.5 |
| Oxford | 98 | 43.7 | 101 | 102 | 95 | 98 | 91 | 94.8 |
| Plymth | 100 | 54.2 | 108 | 109 | 99 | 100 | 102 | 97.7 |
| Ports | 98 | 44.0 | 115 | 104 | 95 | 99 | 93 | 98.7 |
| Prestn | 96 | 42.7 | 102 | 102 | 94 | 95 | 92 | 97.5 |
| Redng | 94 | 35.0 | | 104 | 91 | 94 | 93 | 93.5 |
| Salford | 95 | 41.3 | 110 | 107 | 90 | 96 | 87 | 96.5 |
| Sheff | 95 | 40.1 | | 108 | 91 | 98 | 82 | 98.2 |
| Shrew | 108 | 60.7 | | 112 | 98 | 108 | | 98.4 |
| Stevng | 97 | 45.8 | | 101 | 96 | 99 | 93 | 98.3 |
| Stoke | 105 | 71.1 | | 109 | 103 | | | 92.4 |
| Sund | 101 | 56.1 | | 104 | 99 | 101 | | 95.7 |
| Truro | 97 | 47.8 | | | 94 | 97 | | 94.4 |

**Table 2.13** Continued

| Centre | All KRT patients | | Median Hb (g/L) by modality | | | Median Hb (g/L) by presentation time | | % data completeness |
|---|---|---|---|---|---|---|---|---|
| | Median Hb (g/L) | % Hb ≥100 g/L | Tx | PD | HD | ≥90 days | <90 days | |
| Wirral | | | | | | | | 44.2 |
| Wolve | 97 | 42.1 | | 103 | 95 | 99 | 83 | 94.2 |
| York | 97 | 40.4 | | 105 | 93 | 99 | | 95.9 |
| N IRELAND | | | | | | | | |
| Antrim | 101 | 52.8 | | | 95 | 105 | | 92.3 |
| Belfast | 107 | 68.4 | 115 | 116 | 100 | 110 | 90 | 93.1 |
| Newry | 101 | 55.6 | | | 96 | 102 | | 92.3 |
| Ulster | 97 | 45.8 | | | 96 | 101 | | 96.0 |
| West NI | 104 | 61.8 | | | 103 | 104 | | 100.0 |
| WALES | | | | | | | | |
| Bangor | 110 | 60.0 | | | 95 | 110 | | 100.0 |
| Cardff | 96 | 47.0 | 110 | 104 | 96 | 97 | 94 | 98.1 |
| Clwyd | 87 | 34.5 | | | 86 | 88 | | 96.7 |
| Swanse | 97 | 44.4 | | 107 | 97 | 98 | 90 | 100.0 |
| Wrexm | 96 | 43.5 | | | 96 | 95 | | 100.0 |
| TOTALS | | | | | | | | |
| England | 98 | 45.8 | 107 | 105 | 94 | 99 | 92 | 90.2 |
| N Ireland | 104 | 60.4 | 115 | 113 | 99 | 105 | 88 | 94.1 |
| Wales | 97 | 45.6 | 107 | 107 | 95 | 97 | 92 | 98.9 |
| **UK** | **98** | **46.2** | **107** | **106** | **94** | **99** | **92** | **90.7** |

Blank cells – no data returned by the centre, data completeness (including referral time) <70% or N<10

For Scotland data see the Scottish Renal Registry Annual report 2022 (publichealthscotland.scot/publications/scottish-renal-registry/scottish-renal-registry-reporting-on-2021/)
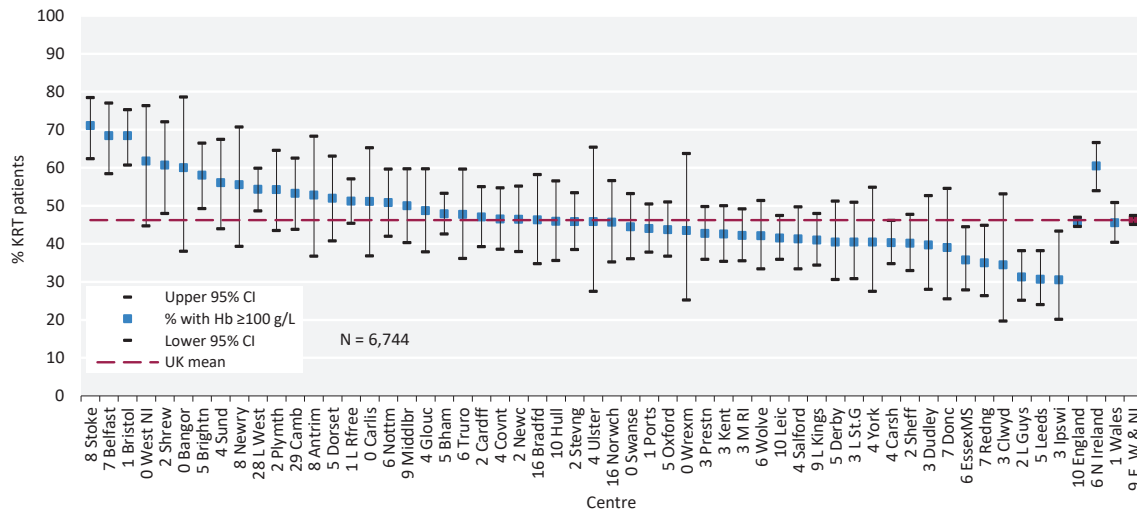
**Figure 2.10** Percentage of adult patients incident to KRT in 2021 with haemoglobin (Hb) ≥100 g/L at start of KRT treatment by centre
CI – confidence interval
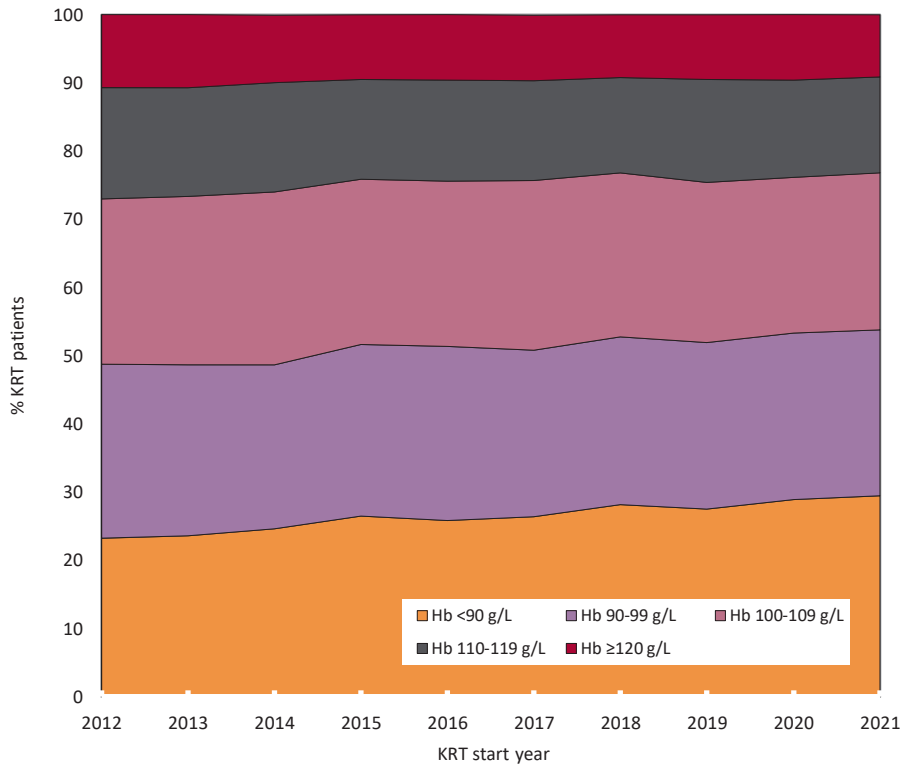


**Figure 2.11** Distribution of haemoglobin (Hb) in incident adult KRT patients by year of start between 2012 and 2021

# Biochemistry parameters in incident adult KRT patients

The latest UK Kidney Association guideline on CKD mineral bone disease contains only one audit measure, which applies to patients with CKD and patients on KRT. It is the percentage of patients with adjusted calcium above the target range.

**Table 2.14** Median adjusted calcium (Ca) and percentage with adjusted Ca within and above the target range (2.2–2.5 mmol/L) in adult patients incident to KRT in 2021 by centre

| Centre | Median adj Ca (mmol/L) | % adj Ca 2.2–2.5 mmol/L | % adj Ca >2.5 mmol/L | % data completeness |
|---|---|---|---|---|
| ENGLAND | | | | |
| Bham | 2.3 | 81.6 | 8.3 | 98.9 |
| Bradfd | 2.4 | 79.7 | 17.6 | 92.5 |
| Brightn | 2.3 | 80.8 | 3.1 | 100.0 |
| Bristol | 2.3 | 93.0 | 5.7 | 100.0 |
| Camb | 2.4 | 84.9 | 9.4 | 92.7 |
| Carlis | 2.3 | 77.3 | 0.0 | 97.8 |
| Carsh | 2.2 | 71.7 | 2.8 | 96.3 |
| Colchr | 2.3 | 83.3 | 6.7 | 85.7 |
| Covnt | 2.3 | 86.4 | 1.4 | 93.3 |
| Derby | 2.3 | 80.7 | 5.7 | 100.0 |
| Donc | 2.4 | 90.9 | 6.8 | 100.0 |
| Dorset | 2.3 | 68.0 | 14.1 | 98.7 |
| Dudley | 2.4 | 85.0 | 10.0 | 100.0 |
| EssexMS | 2.3 | 83.2 | 3.8 | 97.8 |
| Exeter | | | | |
| Glouc | 2.4 | 80.3 | 12.4 | 100.0 |
| Hull | 2.4 | 86.4 | 6.8 | 93.6 |
| Ipswi | 2.3 | 72.1 | 8.2 | 100.0 |
| Kent | 2.3 | 77.0 | 10.1 | 98.9 |
| L Barts | 2.3 | 81.5 | 3.7 | 96.1 |
| L Guys | 2.4 | 83.7 | 9.2 | 100.0 |
| L Kings | 2.3 | 78.9 | 5.2 | 97.3 |
| L Rfree | 2.3 | 80.9 | 5.7 | 99.7 |
| L St.G | 2.4 | 81.1 | 10.0 | 97.8 |
| L West | 2.3 | 74.7 | 6.7 | 75.6 |
| Leeds | 2.3 | 79.3 | 5.5 | 97.6 |
| Leic | 2.3 | 77.4 | 7.8 | 96.4 |
| Liv Ain | 2.4 | 73.6 | 15.1 | 84.1 |
| Liv Roy | 2.4 | 84.3 | 12.1 | 80.6 |
| M RI | 2.4 | 81.5 | 7.3 | 100.0 |
| Middlbr | 2.2 | 81.3 | 2.8 | 97.3 |
| Newc | 2.4 | 79.8 | 8.5 | 100.0 |
| Norwch | 2.3 | 80.0 | 8.2 | 88.5 |
| Nottm | 2.2 | 66.7 | 4.0 | 99.2 |
| Oxford | 2.3 | 77.3 | 6.0 | 95.9 |
| Plymth | 2.3 | 88.1 | 3.6 | 98.8 |
| Ports | 2.3 | 80.2 | 5.9 | 100.0 |
| Prestn | 2.3 | 71.7 | 3.3 | 91.4 |
| Redng | 2.3 | 81.3 | 6.5 | 100.0 |
| Salford | 2.4 | 80.3 | 11.3 | 99.3 |
| Sheff | 2.3 | 78.2 | 3.5 | 100.0 |
| Shrew | 2.3 | 82.3 | 16.1 | 100.0 |
| Stevng | 2.3 | 77.8 | 4.7 | 100.0 |
| Stoke | 2.4 | 82.4 | 13.6 | 95.4 |
| Sund | 2.3 | 75.0 | 8.8 | 98.6 |
| Truro | 2.3 | 87.3 | 7.0 | 100.0 |

**Table 2.14** Continued

| Centre | Median adj Ca (mmol/L) | % adj Ca 2.2–2.5 mmol/L | % adj Ca >2.5 mmol/L | % data completeness |
|---|---|---|---|---|
| Wirral | 2.3 | 69.1 | 7.1 | 80.8 |
| Wolve | 2.3 | 73.5 | 12.0 | 96.7 |
| York | 2.4 | 85.4 | 12.5 | 98.0 |
| N IRELAND | | | | |
| Antrim | 2.4 | 89.7 | 7.7 | 100.0 |
| Belfast | 2.3 | 82.8 | 6.1 | 97.1 |
| Newry | 2.4 | 76.3 | 5.3 | 97.4 |
| Ulster | 2.4 | 79.2 | 12.5 | 96.0 |
| West NI | 2.2 | 76.5 | 2.9 | 100.0 |
| WALES | | | | |
| Bangor | 2.4 | 85.0 | 10.0 | 100.0 |
| Cardff | 2.3 | 82.5 | 5.8 | 100.0 |
| Clwyd | 2.2 | 56.7 | 3.3 | 100.0 |
| Swanse | 2.3 | 84.9 | 2.4 | 100.0 |
| Wrexm | 2.4 | 95.7 | 4.4 | 100.0 |
| TOTALS | | | | |
| England | 2.3 | 79.6 | 7.0 | 95.8 |
| N Ireland | 2.3 | 81.6 | 6.4 | 97.9 |
| Wales | 2.3 | 82.2 | 4.5 | 100.0 |
| **E, W & NI** | **2.3** | **79.7** | **6.8** | **96.0** |

Ca - calcium

Adults starting KRT in the UK in 2021
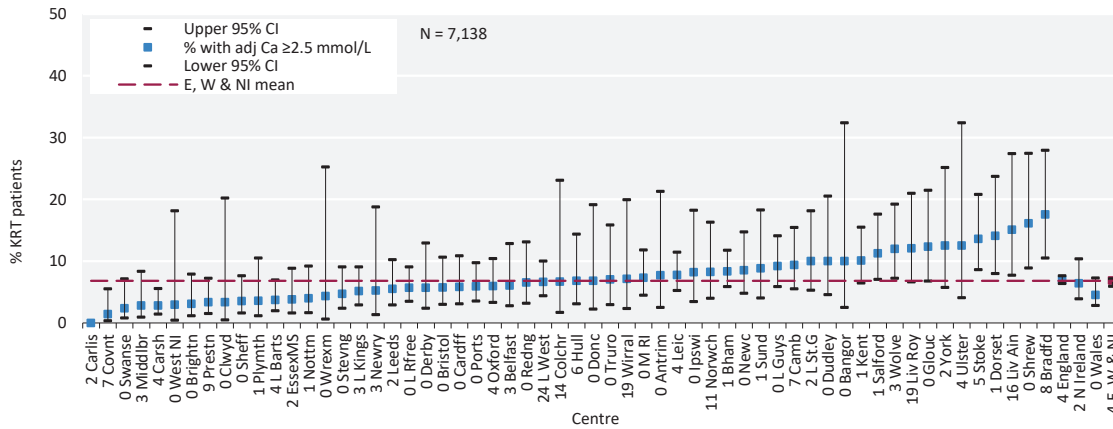
Incidence

**Figure 2.12** Percentage of adult patients incident to KRT in 2021 with adjusted calcium (Ca) above the normal range (>2.5 mmol/L) by centre
CI – confidence interval

## Dialysis access in incident adult dialysis patients

In previous years, incident dialysis access data were collected separately to the main UKRR quarterly data returns via the Multisite Dialysis Access Audit. This year in addition to the audit, some incident dialysis access data were collected through the dialysis sessions and access at start information in the quarterly returns. For more details please see Appendix A. Patients who did not start dialysis for the first time in 2021 based on UKRR quarterly data submissions were excluded. Data are not included in this section from any centres with <70% completeness for type of access at dialysis start.

**Table 2.15** Demographics and characteristics of patients incident to dialysis in 2021 by first dialysis access type

| Characteristic | | HD – first dialysis access type | | | | PD | Total |
|---|---|---|---|---|---|---|---|
| | | N | AVF/AVG | TL | NTL | N | |
| **Total** | | | | | | | |
| N | | 5,372 | 1,884 | 2,262 | 1,226 | 1,632 | 7,004 |
| % | | | 35.1 | 42.1 | 22.8 | | |
| | | | | | | | |
| **Age (%)** | Median (yrs) | 66 | 67 | 64 | 65 | 60 | 64 |
| | IQR (yrs) | 53,75 | 56,76 | 51,75 | 53,74 | 47,72 | 52,74 |
| | <45 yrs | 728 | 22.3 | 50.7 | 27.1 | 357 | 1,085 |
| | 45–54 yrs | 748 | 32.8 | 46.9 | 20.3 | 261 | 1,009 |
| | 55–64 yrs | 1,133 | 37.3 | 39.5 | 23.1 | 352 | 1,485 |
| | 65–74 yrs | 1,428 | 38.2 | 37.8 | 23.9 | 400 | 1,828 |
| | ≥75 yrs | 1,335 | 38.1 | 41.5 | 20.4 | 262 | 1,597 |
| | | | | | | | |
| **PRD (%)** | Diabetes | 1,392 | 39.0 | 41.2 | 19.8 | 364 | 1,756 |
| | Glomerulonephritis | 488 | 39.3 | 40.8 | 19.9 | 227 | 715 |
| | Hypertension | 285 | 37.9 | 40.4 | 21.8 | 83 | 368 |
| | Polycystic kidney disease | 195 | 61.0 | 30.8 | 8.2 | 113 | 308 |
| | Pyelonephritis | 179 | 36.9 | 36.3 | 26.8 | 60 | 239 |
| | Renal vascular disease | 223 | 37.7 | 42.2 | 20.2 | 46 | 269 |
| | Other | 766 | 21.5 | 46.1 | 32.4 | 170 | 936 |
| | Uncertain aetiology | 647 | 34.9 | 43.7 | 21.3 | 206 | 853 |
| | Missing | 240 | 30.4 | 36.7 | 32.9 | 43 | 283 |
| | | | | | | | |
| **Referral time (%)** | <90 days | 1,075 | 5.9 | 48.0 | 46.1 | 120 | 1,195 |
| | 90–179 days | 210 | 17.1 | 64.8 | 18.1 | 59 | 269 |
| | 180–364 days | 326 | 28.8 | 53.4 | 17.8 | 91 | 417 |
| | ≥365 days | 3,024 | 47.0 | 37.9 | 15.1 | 1,066 | 4,090 |
| | Missing | 66 | 12.1 | 53.0 | 34.8 | 6 | 72 |
| | | | | | | | |
| **Sex (%)** | Male | 3,479 | 35.2 | 41.8 | 23.1 | 1,026 | 4,505 |
| | Female | 1,893 | 34.9 | 42.7 | 22.4 | 606 | 2,499 |
| | | | | | | | |
| **Ethnicity (%)** | White | 3,102 | 36.3 | 41.1 | 22.6 | 920 | 4,022 |
| | Asian | 592 | 35.8 | 40.7 | 23.5 | 226 | 818 |
| | Black | 382 | 24.1 | 45.3 | 30.6 | 111 | 493 |
| | Other | 145 | 26.9 | 47.6 | 25.5 | 53 | 198 |
| | Missing | 378 | 32.5 | 41.3 | 26.2 | 95 | 473 |
| | | | | | | | |
| **eGFR at start[1]** | Median | 7 | 7 | 7 | 6 | 8 | 7 |
| | IQR (yrs) | 5,9 | 6,8 | 5,9 | 5,9 | 6,9 | 5,9 |
| | | | | | | | |
| **Diabetes[2] (%)** | Yes | 691 | 40.2 | 42.0 | 17.8 | 152 | 843 |
| | No | 837 | 38.8 | 39.7 | 21.5 | 264 | 1,101 |
| | Missing | 123 | 29.3 | 39.8 | 30.9 | 21 | 144 |

[1]eGFR units are mL/min/1.73m²
[2]Diabetes at start of dialysis as a comorbidity or PRD from the UKRR database
A centre was excluded from the analysis of a particular variable if it returned data for <70% of patients
AVF – arteriovenous fistula; AVG – arteriovenous graft; eGFR – estimated glomerular filtration rate; IQR – interquartile range; NTL – non-tunnelled line; PRD – primary renal disease; TL – tunnelled line

Incidence

Dialysis access is best interpreted in the context of all patients starting KRT, so data were supplemented with pre-emptive Tx numbers.

Dialysis access data are described in relation to age, PRD and timing of presentation. Delayed presentation/ referral to kidney services is defined as being within 90 days (3 months) prior to the start of KRT.
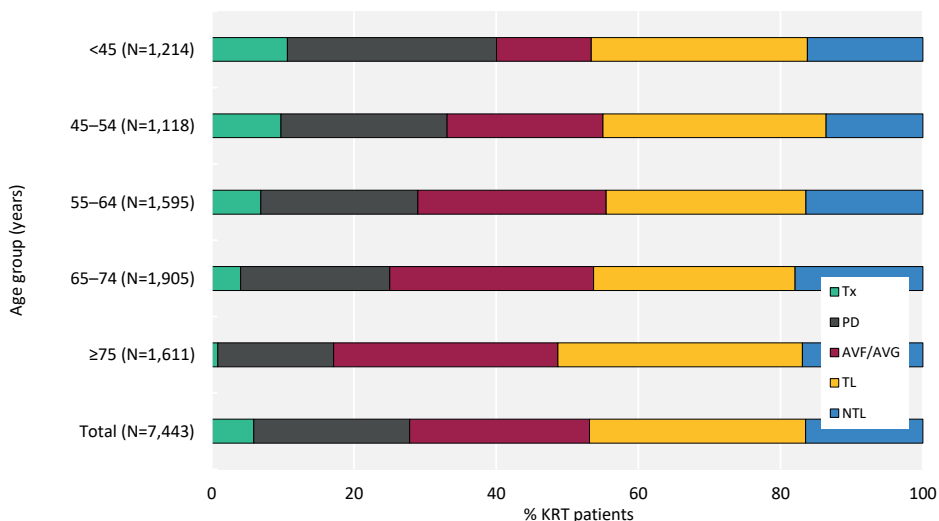
**Figure 2.13** Dialysis access used for adult patients incident to KRT in 2021 by age group
AVF – arteriovenous fistula; AVG – arteriovenous graft; NTL – non-tunnelled line; TL – tunnelled line
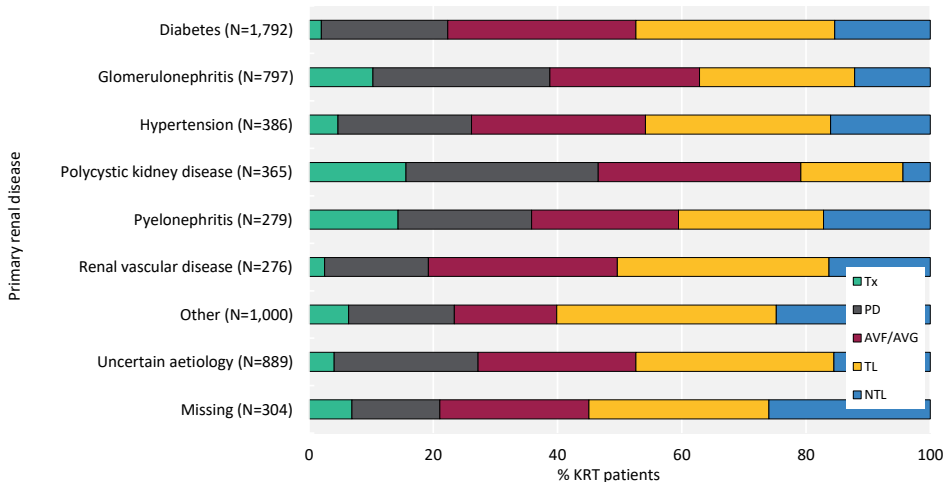


**Figure 2.14** Dialysis access used for adult patients incident to KRT in 2021 by primary renal disease
AVF – arteriovenous fistula; AVG – arteriovenous graft; NTL – non-tunnelled line; TL – tunnelled line

Adults starting KRT in the UK in 2021
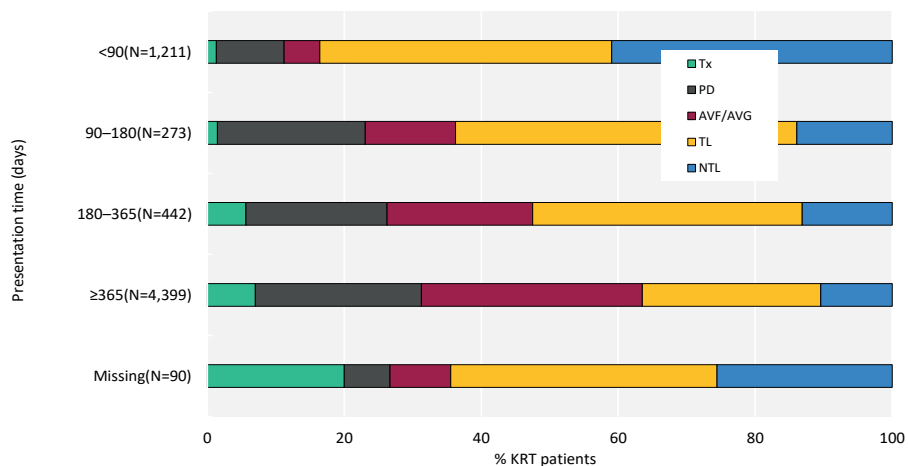
**Figure 2.15** Dialysis access used for adult patients incident to KRT in 2021 by presentation time
AVF – arteriovenous fistula; AVG – arteriovenous graft; NTL – non-tunnelled line; TL – tunnelled line

The audit measures related to dialysis access at KRT start include the proportion of planned starts on KRT with a pre-emptive Tx or with definitive access. In addition, at least 60% of the planned HD starts should be with either an AVF or an AVG. The proportions of patients who commenced dialysis with definitive access (AVF/AVG/PD catheter) were reported for centres returning adequate data.

**Figure 2.16** First dialysis access used for adult patients incident to KRT in 2021 by centre

Number of incident patients on KRT in a centre in brackets

Centres are ordered by decreasing use of lines

AVF – arteriovenous fistula; AVG – arteriovenous graft; NTL – non-tunnelled line; TL – tunnelled line

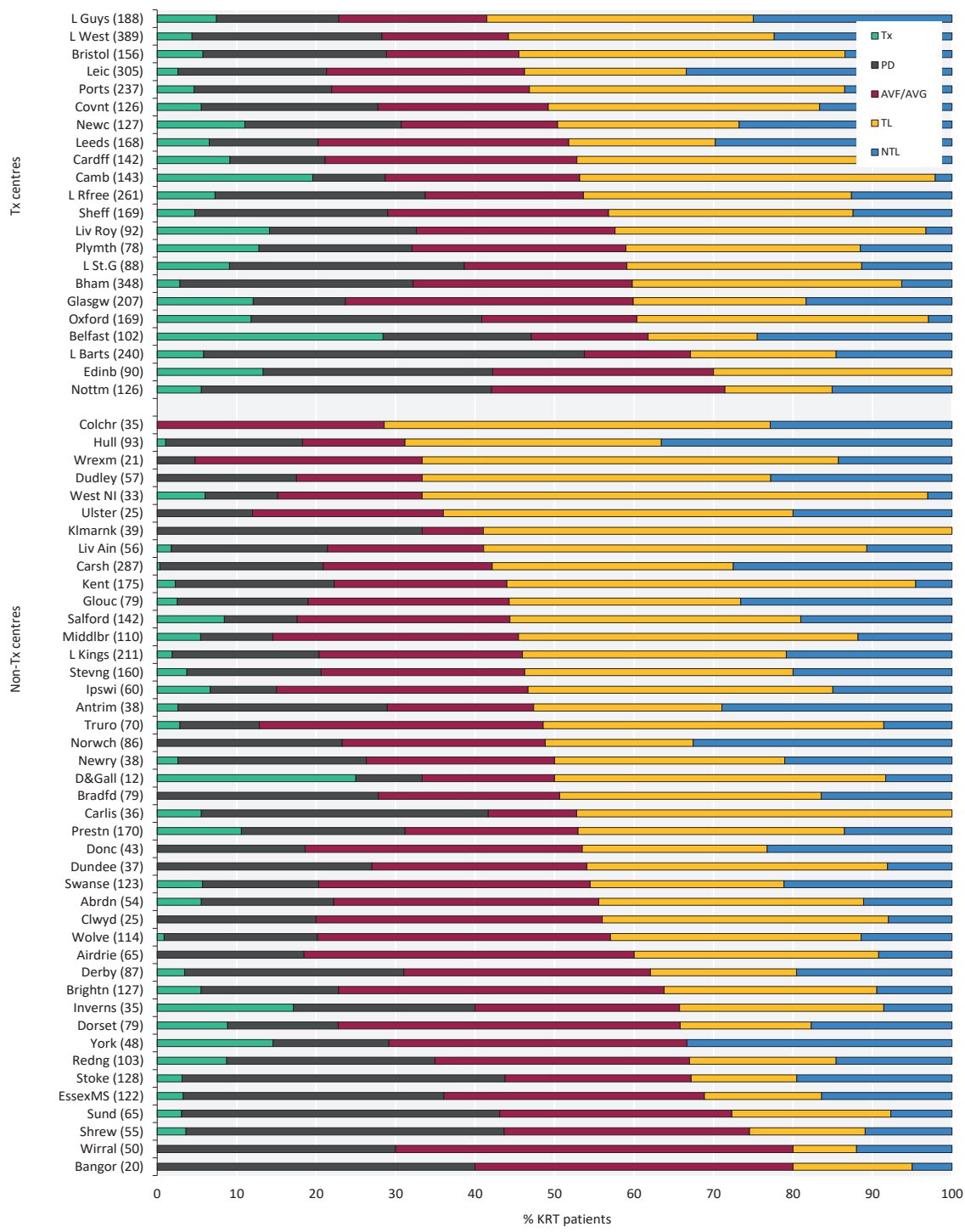**Table 2.16** Start modality and dialysis access used for adult patients incident to dialysis in 2021 by presentation before start of dialysis by centre

| Centre | Early presenters (≥90 days)(%) | | | | | Late presenters (<90 days) (%) | | | | | Start modality (%) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | PD | AVF/AVG | TL | NTL | N | PD | AVF/AVG | TL | NTL | HD | PD | Tx |
| Antrim | 30 | 33.3 | 23.3 | 30.0 | 13.3 | 7 | 0.0 | 0.0 | 0.0 | 100.0 | 71.1 | 26.3 | 2.6 |
| Bangor | 18 | 44.4 | 44.4 | 11.1 | 0.0 | 2 | 0.0 | 0.0 | 50.0 | 50.0 | 60.0 | 40.0 | 0.0 |
| Belfast | 45 | 33.3 | 31.1 | 17.8 | 17.8 | 23 | 17.4 | 4.3 | 17.4 | 60.9 | 52.9 | 18.6 | 28.4 |
| Bham | 277 | 35.4 | 33.2 | 26.0 | 5.4 | 61 | 6.6 | 6.6 | 75.4 | 11.5 | 67.8 | 29.3 | 2.9 |
| Bradfd | 71 | 29.6 | 25.4 | 32.4 | 12.7 | 8 | 12.5 | 0.0 | 37.5 | 50.0 | 72.2 | 27.8 | 0.0 |
| Brightn | 105 | 20.0 | 49.5 | 24.8 | 5.7 | 15 | 6.7 | 0.0 | 53.3 | 40.0 | 77.2 | 17.3 | 5.5 |
| Bristol | 118 | 28.0 | 21.2 | 40.7 | 10.2 | 27 | 11.1 | 0.0 | 59.3 | 29.6 | 71.2 | 23.1 | 5.8 |
| Camb | 90 | 12.2 | 38.9 | 47.8 | 1.1 | 25 | 8.0 | 0.0 | 84.0 | 8.0 | 71.3 | 9.1 | 19.6 |
| Cardff | 111 | 15.3 | 38.7 | 40.5 | 5.4 | 16 | 0.0 | 12.5 | 68.8 | 18.8 | 78.9 | 12.0 | 9.2 |
| Carlis | 28 | 46.4 | 14.3 | 39.3 | 0.0 | 6 | 0.0 | 0.0 | 100.0 | 0.0 | 58.3 | 36.1 | 5.6 |
| Carsh | 213 | 23.0 | 27.2 | 32.4 | 17.4 | 64 | 15.6 | 4.7 | 20.3 | 59.4 | 79.1 | 20.6 | 0.3 |
| Clwyd | 23 | 21.7 | 39.1 | 34.8 | 4.3 | 2 | 0.0 | 0.0 | 50.0 | 50.0 | 80.0 | 20.0 | 0.0 |
| Colchr | 1 | | | | | 2 | | | | | 100.0 | 0.0 | 0.0 |
| Covnt | 5 | 100.0 | 0.0 | 0.0 | 0.0 | 114 | 20.2 | 23.7 | 37.7 | 18.4 | 72.2 | 22.2 | 5.6 |
| Derby | 68 | 33.8 | 38.2 | 19.1 | 8.8 | 16 | 6.3 | 6.3 | 18.8 | 68.8 | 69.0 | 27.6 | 3.4 |
| Donc | 40 | 20.0 | 37.5 | 22.5 | 20.0 | 3 | 0.0 | 0.0 | 33.3 | 66.7 | 81.4 | 18.6 | 0.0 |
| Dorset | 56 | 19.6 | 58.9 | 16.1 | 5.4 | 16 | 0.0 | 6.3 | 25.0 | 68.8 | 77.2 | 13.9 | 8.9 |
| Dudley | 46 | 21.7 | 19.6 | 43.5 | 15.2 | 11 | 0.0 | 0.0 | 45.5 | 54.5 | 82.5 | 17.5 | 0.0 |
| EssexMS | 92 | 40.2 | 38.0 | 14.1 | 7.6 | 24 | 8.3 | 16.7 | 20.8 | 54.2 | 63.9 | 32.8 | 3.3 |
| Glouc | 61 | 19.7 | 31.1 | 27.9 | 21.3 | 15 | 6.7 | 6.7 | 33.3 | 53.3 | 81.0 | 16.5 | 2.5 |
| Hull | 61 | 24.6 | 19.7 | 34.4 | 21.3 | 31 | 3.2 | 0.0 | 29.0 | 67.7 | 81.7 | 17.2 | 1.1 |
| Ipswi | 35 | 5.7 | 48.6 | 31.4 | 14.3 | 6 | 33.3 | 0.0 | 16.7 | 50.0 | 85.0 | 8.3 | 6.7 |
| Kent | 137 | 20.4 | 27.7 | 49.6 | 2.2 | 34 | 20.6 | 0.0 | 64.7 | 14.7 | 77.7 | 20.0 | 2.3 |
| L Barts | 92 | | | | | 21 | | | | | 46.3 | 47.9 | 5.8 |
| L Guys | 144 | 19.4 | 24.3 | 35.4 | 20.8 | 23 | 4.3 | 0.0 | 39.1 | 56.5 | 77.1 | 15.4 | 7.4 |
| L Kings | 156 | 21.8 | 33.3 | 30.8 | 14.1 | 43 | 9.3 | 2.3 | 44.2 | 44.2 | 79.6 | 18.5 | 1.9 |
| L Rfree | 193 | 33.7 | 26.4 | 30.6 | 9.3 | 48 | 6.3 | 2.1 | 60.4 | 31.3 | 66.3 | 26.4 | 7.3 |
| L St.G | 57 | 36.8 | 28.1 | 21.1 | 14.0 | 23 | 21.7 | 8.7 | 60.9 | 8.7 | 61.4 | 29.5 | 9.1 |
| L West | 303 | 29.4 | 20.5 | 35.6 | 14.5 | 69 | 5.8 | 0.0 | 31.9 | 62.3 | 71.7 | 23.9 | 4.4 |
| Leeds | 132 | 17.4 | 39.4 | 18.9 | 24.2 | 25 | 0.0 | 4.0 | 24.0 | 72.0 | 79.8 | 13.7 | 6.5 |
| Leic | 234 | 24.4 | 32.5 | 19.2 | 23.9 | 61 | 0.0 | 0.0 | 24.6 | 75.4 | 78.7 | 18.7 | 2.6 |
| Liv Ain | 42 | 19.0 | 26.2 | 47.6 | 7.1 | 13 | 23.1 | 0.0 | 53.8 | 23.1 | 78.6 | 19.6 | 1.8 |
| Liv Roy | 69 | 23.2 | 33.3 | 42.0 | 1.4 | 10 | 10.0 | 0.0 | 70.0 | 20.0 | 67.4 | 18.5 | 14.1 |
| Middlbr | 82 | 11.0 | 39.0 | 45.1 | 4.9 | 19 | 5.3 | 5.3 | 52.6 | 36.8 | 85.5 | 9.1 | 5.5 |
| Newc | 94 | 25.5 | 26.6 | 28.7 | 19.1 | 19 | 5.3 | 0.0 | 10.5 | 84.2 | 69.3 | 19.7 | 11.0 |
| Newry | 29 | 31.0 | 27.6 | 27.6 | 13.8 | 8 | 0.0 | 12.5 | 37.5 | 50.0 | 73.7 | 23.7 | 2.6 |
| Norwch | 13 | | | | | 18 | | | | | 76.7 | 23.3 | 0.0 |
| Nottm | 107 | 40.2 | 34.6 | 15.0 | 10.3 | 12 | 25.0 | 0.0 | 8.3 | 66.7 | 57.9 | 36.5 | 5.6 |
| Oxford | 132 | 34.1 | 25.0 | 37.9 | 3.0 | 17 | 23.5 | 0.0 | 70.6 | 5.9 | 59.2 | 29.0 | 11.8 |
| Plymth | 60 | 23.3 | 35.0 | 33.3 | 8.3 | 8 | 12.5 | 0.0 | 37.5 | 50.0 | 67.9 | 19.2 | 12.8 |
| Ports | 177 | 20.3 | 32.8 | 36.2 | 10.7 | 37 | 8.1 | 2.7 | 64.9 | 24.3 | 78.1 | 17.3 | 4.6 |
| Prestn | 122 | 24.6 | 30.3 | 35.2 | 9.8 | 30 | 16.7 | 0.0 | 46.7 | 36.7 | 68.8 | 20.6 | 10.6 |
| Redng | 77 | 31.2 | 37.7 | 18.2 | 13.0 | 17 | 17.6 | 23.5 | 29.4 | 29.4 | 65.0 | 26.2 | 8.7 |
| Salford | 105 | 11.4 | 36.2 | 37.1 | 15.2 | 25 | 4.0 | 0.0 | 52.0 | 44.0 | 82.4 | 9.2 | 8.5 |
| Sheff | 129 | 31.0 | 33.3 | 29.5 | 6.2 | 32 | 3.1 | 12.5 | 43.8 | 40.6 | 71.0 | 24.3 | 4.7 |
| Shrew | 45 | 44.4 | 37.8 | 8.9 | 8.9 | 8 | 25.0 | 0.0 | 50.0 | 25.0 | 56.4 | 40.0 | 3.6 |
| Stevng | 122 | 20.5 | 31.1 | 35.2 | 13.1 | 30 | 6.7 | 3.3 | 36.7 | 53.3 | 79.4 | 16.9 | 3.8 |
| Stoke | 71 | | | | | 0 | | | | | 56.3 | 40.6 | 3.1 |
| Sund | 53 | 43.4 | 35.8 | 15.1 | 5.7 | 10 | 30.0 | 0.0 | 50.0 | 20.0 | 56.9 | 40.0 | 3.1 |
| Swanse | 98 | 17.3 | 42.9 | 23.5 | 16.3 | 18 | 5.6 | 0.0 | 38.9 | 55.6 | 79.7 | 14.6 | 5.7 |
| Truro | 58 | 12.1 | 43.1 | 37.9 | 6.9 | 10 | 0.0 | 0.0 | 80.0 | 20.0 | 87.1 | 10.0 | 2.9 |
| Ulster | 19 | 15.8 | 31.6 | 42.1 | 10.5 | 6 | 0.0 | 0.0 | 50.0 | 50.0 | 88.0 | 12.0 | 0.0 |
| West NI | 24 | 12.5 | 25.0 | 62.5 | 0.0 | 7 | 0.0 | 0.0 | 85.7 | 14.3 | 84.8 | 9.1 | 6.1 |
| Wirral | 46 | 30.4 | 54.3 | 6.5 | 8.7 | 4 | 25.0 | 0.0 | 25.0 | 50.0 | 70.0 | 30.0 | 0.0 |
| Wolve | 92 | 18.5 | 43.5 | 31.5 | 6.5 | 21 | 23.8 | 9.5 | 33.3 | 33.3 | 79.8 | 19.3 | 0.9 |
| Wrexm | 13 | 7.7 | 46.2 | 23.1 | 23.1 | 7 | 0.0 | 0.0 | 100.0 | 0.0 | 95.2 | 4.8 | 0.0 |

**Table 2.16** Continued

| Centre | Early presenters (≥90 days)(%) | | | | | Late presenters (<90 days) (%) | | | | | Start modality (%) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | PD | AVF/AVG | TL | NTL | N | PD | AVF/AVG | TL | NTL | HD | PD | Tx |
| York | 32 | 21.9 | 56.3 | 0.0 | 21.9 | 9 | 0.0 | 0.0 | 0.0 | 100.0 | 70.8 | 14.6 | 14.6 |
| **Total** | **4,953** | **26.8** | **31.9** | **29.7** | **11.6** | **1,236** | **11.1** | **5.1** | **42.2** | **41.6** | **72.2** | **22.1** | **5.6** |

Start modality breakdown includes patients with missing presentation time

Blank cells - referral data completeness < 70%; breakdown by access type not presented but these centres were included in the totals

AVF – arteriovenous fistula; AVG – arteriovenous graft; NTL – non-tunnelled line; TL – tunnelled line
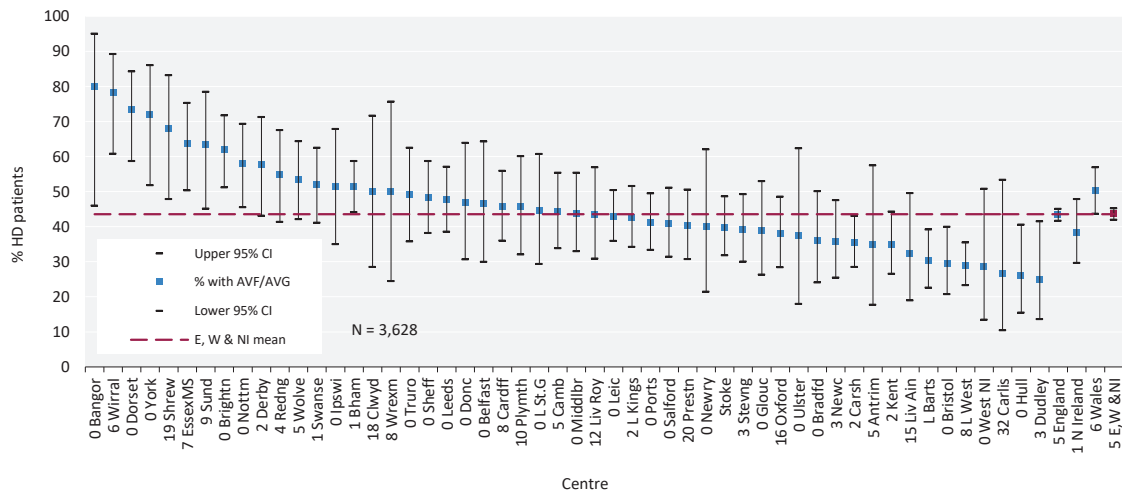


**Figure 2.17** Percentage of adult patients incident to HD in 2021 who started dialysis using either an arteriovenous fistula (AVF) or an arteriovenous graft (AVG) by centre, excluding late presenters

CI – confidence interval

# Survival in incident adult KRT patients

The survival of patients who started KRT for ESKD is described, with primary focus on the one year incident to KRT in 2020 cohort, followed up for a year. Some analyses used rolling incident cohorts over several years (two years or more as stated) to increase cohort patient numbers and more reliably identify survival differences between compared countries or centres. Analyses included patients who were coded as being on chronic dialysis for ESKD who died during the first 90 days (unless stated otherwise), provided that data were returned to the UKRR. Analyses were often adjusted to age 60 years to allow comparisons between centres with different age distributions and one analysis was also adjusted for sex and comorbidity. However, analyses were not generally adjusted for differences in ethnicity, PRD, socioeconomic status or comorbidity.

To enable comparisons with international registries, survival was described to day 90, one year and one year after the first 90 days. The UKRR defines day 0 as the first day of KRT, but some countries define day 90 of KRT as day 0 and do not include patients who died in the first 90 days. Analyses were not censored for Tx unless stated (for more details see appendix A).

**Table 2.17** 90 days and 1 year after 90 days survival (adjusted to age 60 years) of incident adult KRT patients (2019–2020 2 year cohort) by country

| Survival period | England | N Ireland | Scotland | Wales | UK |
|---|---|---|---|---|---|
| Survival at 90 days (%) | 96.2 | 98.4 | 96.1 | 97.5 | 96.4 |
| 95% CI | 95.9-96.6 | 97.4-99.5 | 95.1-97.2 | 96.6-98.5 | 96.0-96.7 |
| Survival 1 year after 90 days (%) | 90.4 | 92.4 | 91.3 | 87.8 | 90.4 |
| 95% CI | 89.8-91.0 | 90.2-94.7 | 89.7-92.9 | 85.7-89.9 | 89.9-90.9 |

CI – confidence interval
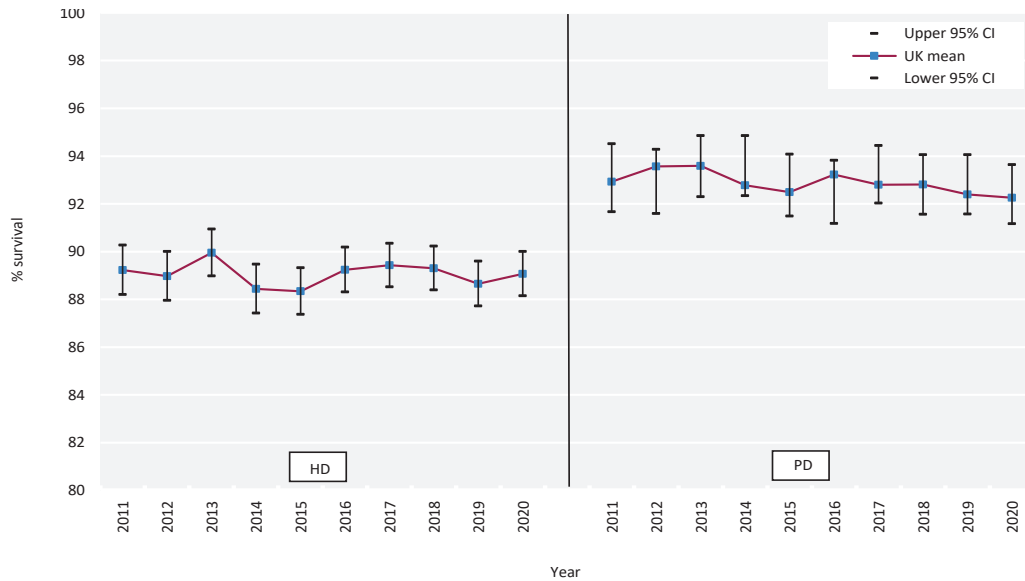
**Figure 2.18** 1 year after 90 days survival (adjusted to age 60 years) of incident adult KRT patients by start modality between 2011 and 2020
CI – confidence interval
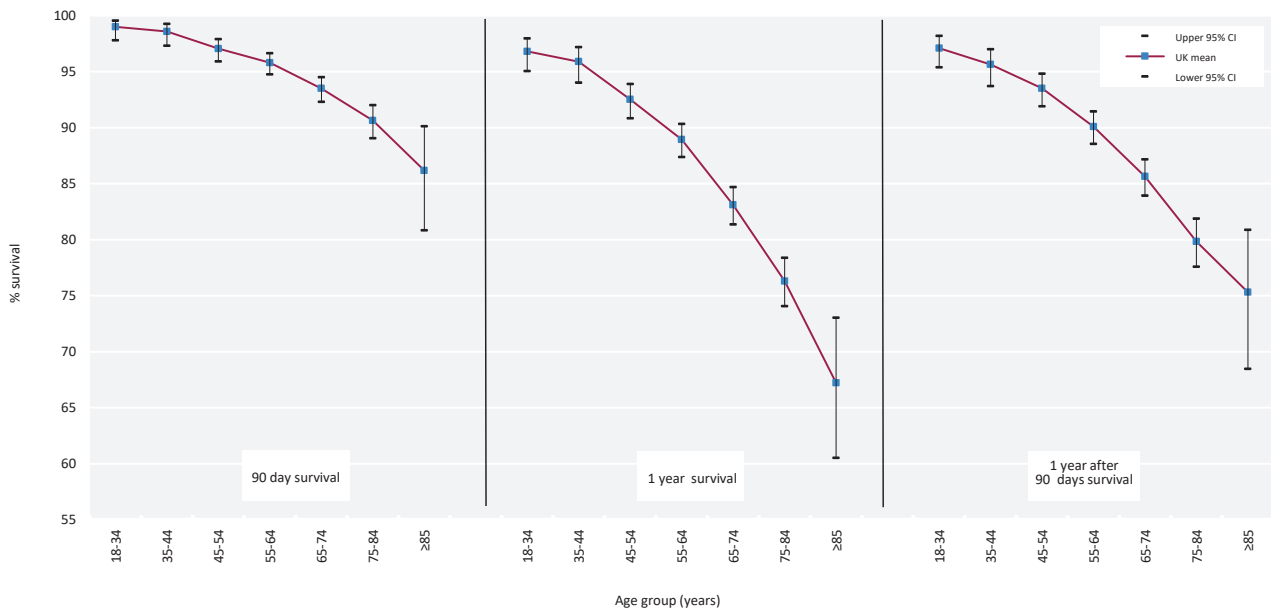


**Figure 2.19** 90 days, 1 year and 1 year after 90 days survival of incident adult KRT patients by age group (2020 cohort)
CI – confidence interval
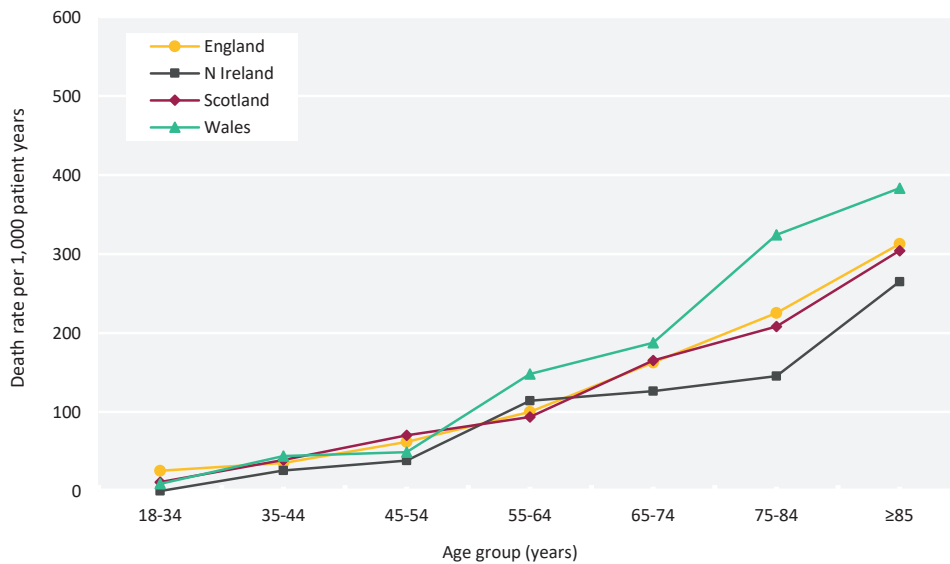
**Figure 2.20** 1 year after 90 days death rate per 1,000 incident KRT adult patient years by age group and country (2017–2020 4 year cohort)

A ten year rolling cohort was used to analyse the long term survival of incident patients from start of KRT (day 0), according to age at KRT start (figure 2.21), with median survival identifiable from the y-axis. The same cohort was used in analyses of the monthly and six monthly hazard of death on KRT by age group (figures 2.22 and 2.23).



**Figure 2.21** Survival (unadjusted) of incident adult KRT patients from day 0 by age group (2011–2020 10 year cohort)

**Figure 2.22** Monthly hazard of death (unadjusted) of incident adult KRT patients from day 0 to 1 year by age group (2011–2020 10 year cohort)



**Figure 2.23** 6 monthly hazard of death (unadjusted) of incident adult KRT patients from day 0 to 8 years by age group (2011–2020 10 year cohort)

**Table 2.18** Survival (unadjusted) of incident adult KRT patients aged <65 years (2001–2020)

| Cohort | Unadjusted survival (%) | | | | | | | | | | 95% CI for longest survival | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 yr | 2 yr | 3 yr | 4 yr | 5 yr | 6 yr | 7 yr | 8 yr | 9 yr | 10 yr | | |
| 2020 | 92.2 | | | | | | | | | | 91.3-92.9 | 4,142 |
| 2019 | 93.2 | 86.4 | | | | | | | | | 85.3-87.4 | 4,195 |
| 2018 | 92.9 | 86.9 | 80.1 | | | | | | | | 78.8-81.3 | 4,253 |
| 2017 | 93.0 | 87.2 | 81.6 | 76.4 | | | | | | | 75.1-77.7 | 4,235 |
| 2016 | 92.9 | 87.5 | 82.1 | 77.2 | 71.4 | | | | | | 69.9-72.8 | 4,015 |
| 2015 | 92.3 | 86.4 | 81.4 | 76.9 | 72.6 | 68.3 | | | | | 66.8-69.8 | 3,923 |
| 2014 | 92.8 | 86.8 | 81.4 | 77.0 | 73.4 | 69.2 | 65.0 | | | | 63.5-66.6 | 3,668 |
| 2013 | 93.7 | 88.2 | 83.1 | 77.7 | 73.2 | 68.6 | 64.6 | 60.2 | | | 58.5-61.8 | 3,572 |
| 2012 | 93.1 | 87.4 | 81.9 | 76.9 | 72.6 | 68.6 | 64.9 | 60.9 | 57.5 | | 55.8-59.1 | 3,516 |
| 2011 | 93.2 | 88.6 | 83.6 | 79.0 | 74.5 | 70.9 | 67.7 | 64.7 | 60.7 | 57.5 | 55.7-59.2 | 3,339 |
| 2010 | 92.3 | 86.6 | 81.7 | 77.4 | 72.8 | 69.6 | 66.4 | 62.5 | 59.5 | 56.6 | 54.9-58.3 | 3,363 |
| 2009 | 91.2 | 85.1 | 80.4 | 76.3 | 71.1 | 67.0 | 63.8 | 60.4 | 57.4 | 54.6 | 52.9-56.3 | 3,392 |
| 2008 | 91.5 | 86.0 | 81.2 | 76.9 | 73.2 | 69.6 | 65.7 | 62.4 | 59.4 | 56.5 | 54.8-58.2 | 3,450 |
| 2007 | 92.5 | 86.9 | 81.7 | 76.6 | 72.9 | 69.1 | 65.8 | 62.4 | 59.1 | 56.1 | 54.3-57.8 | 3,310 |
| 2006 | 90.6 | 84.9 | 80.0 | 75.5 | 71.7 | 67.9 | 63.7 | 60.8 | 57.8 | 55.1 | 53.3-56.8 | 3,149 |
| 2005 | 89.6 | 83.5 | 78.4 | 73.7 | 69.0 | 65.5 | 62.4 | 59.4 | 56.4 | 53.8 | 51.9-55.6 | 2,830 |
| 2004 | 89.6 | 83.3 | 77.9 | 72.5 | 67.8 | 64.0 | 60.9 | 57.1 | 54.6 | 53.0 | 51.0-54.9 | 2,536 |
| 2003 | 89.3 | 82.5 | 77.2 | 72.4 | 67.1 | 62.9 | 59.3 | 56.6 | 54.0 | 51.5 | 49.3-53.6 | 2,176 |
| 2002 | 88.8 | 81.1 | 75.2 | 69.6 | 65.5 | 61.5 | 58.0 | 55.0 | 51.9 | 49.8 | 47.5-52.0 | 1,981 |
| 2001 | 88.0 | 81.0 | 75.4 | 70.0 | 65.1 | 60.4 | 56.4 | 53.0 | 50.1 | 48.0 | 45.5-50.4 | 1,678 |

CI – confidence interval
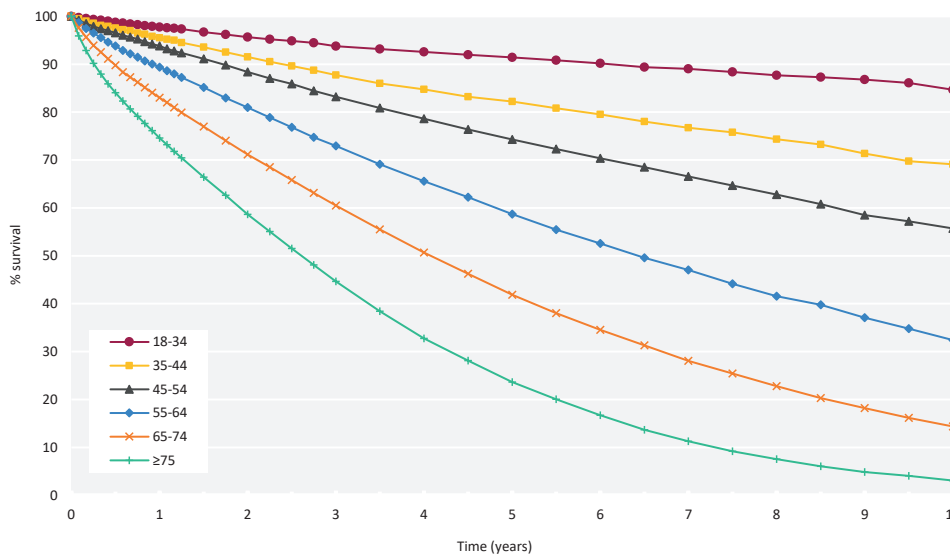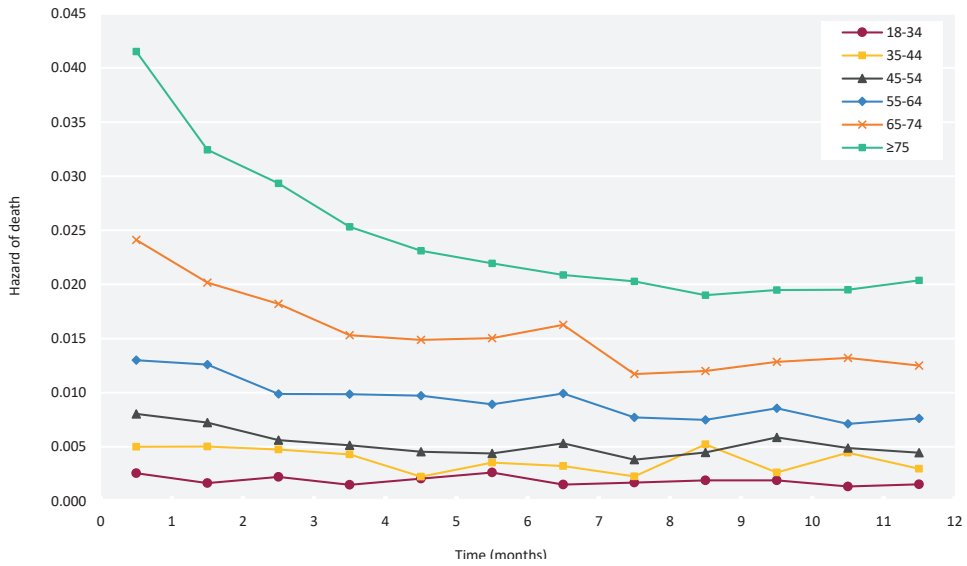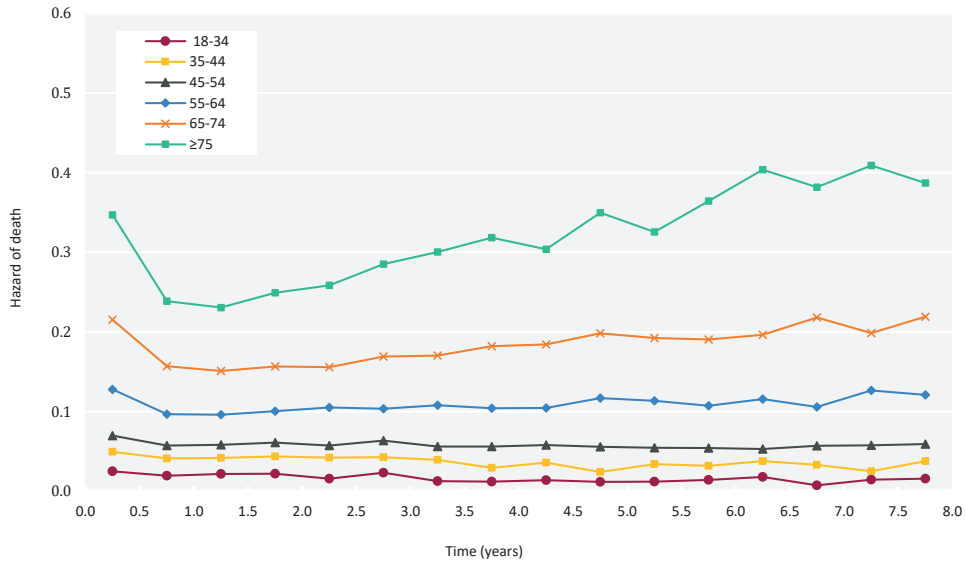
**Table 2.19** Survival (unadjusted) of incident adult KRT patients aged ≥65 years (2001–2020)

| Cohort | Unadjusted survival (%) | | | | | | | | | | 95% CI for longest survival | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 yr | 2 yr | 3 yr | 4 yr | 5 yr | 6 yr | 7 yr | 8 yr | 9 yr | 10 yr | | |
| 2020 | 79.4 | | | | | | | | | | 78.0-80.7 | 3,674 |
| 2019 | 80.0 | 64.4 | | | | | | | | | 62.8-65.8 | 3,949 |
| 2018 | 79.3 | 65.3 | 51.7 | | | | | | | | 50.1-53.3 | 3,817 |
| 2017 | 79.3 | 67.4 | 53.6 | 42.0 | | | | | | | 40.4-43.6 | 3,834 |
| 2016 | 80.1 | 65.2 | 52.8 | 40.3 | 30.8 | | | | | | 29.3-32.3 | 3,756 |
| 2015 | 78.2 | 64.8 | 52.2 | 42.0 | 32.0 | 24.8 | | | | | 23.5-26.2 | 3,811 |
| 2014 | 78.5 | 64.2 | 52.2 | 41.3 | 32.8 | 26.2 | 19.8 | | | | 18.5-21.1 | 3,588 |
| 2013 | 78.5 | 64.6 | 53.1 | 42.9 | 34.5 | 27.6 | 20.7 | 15.5 | | | 14.3-16.8 | 3,436 |
| 2012 | 77.2 | 65.1 | 54.2 | 44.0 | 35.4 | 27.7 | 21.8 | 17.1 | 13.3 | | 12.1-14.5 | 3,328 |
| 2011 | 77.2 | 62.7 | 51.2 | 41.1 | 32.4 | 24.7 | 18.9 | 14.4 | 11.1 | 7.9 | 7.0-8.9 | 3,353 |
| 2010 | 76.0 | 63.0 | 51.1 | 41.8 | 32.1 | 25.4 | 19.6 | 14.5 | 11.3 | 8.3 | 7.4-9.3 | 3,282 |
| 2009 | 76.4 | 63.0 | 52.4 | 41.4 | 32.8 | 26.1 | 20.0 | 15.3 | 11.2 | 8.2 | 7.3-9.2 | 3,376 |
| 2008 | 74.6 | 61.0 | 49.7 | 40.3 | 32.0 | 25.6 | 20.4 | 16.1 | 12.1 | 9.0 | 8.0-10.0 | 3,180 |
| 2007 | 74.9 | 61.1 | 49.5 | 40.3 | 31.8 | 25.2 | 20.0 | 15.3 | 11.7 | 9.1 | 8.1-10.1 | 3,219 |
| 2006 | 72.0 | 58.1 | 46.8 | 37.2 | 28.8 | 22.9 | 17.4 | 13.2 | 10.5 | 8.3 | 7.4-9.4 | 3,110 |
| 2005 | 71.2 | 57.3 | 45.5 | 36.3 | 27.9 | 21.2 | 16.6 | 12.5 | 9.9 | 7.7 | 6.8-8.8 | 2,942 |
| 2004 | 68.9 | 53.9 | 42.2 | 33.8 | 26.6 | 20.8 | 16.1 | 12.8 | 9.7 | 7.4 | 6.4-8.5 | 2,599 |
| 2003 | 68.3 | 53.2 | 41.4 | 31.6 | 24.3 | 18.1 | 14.0 | 10.8 | 8.2 | 6.5 | 5.5-7.6 | 2,230 |
| 2002 | 65.9 | 50.9 | 40.4 | 31.8 | 24.0 | 18.4 | 13.7 | 10.8 | 8.1 | 6.4 | 5.4-7.5 | 2,039 |
| 2001 | 66.1 | 51.7 | 38.2 | 28.6 | 21.4 | 15.9 | 11.9 | 8.7 | 7.0 | 5.4 | 4.3-6.6 | 1,636 |

CI – confidence interval

Due to small numbers of incident patients in a given year, centre one year after the first 90 days survival is compared using a rolling four year cohort (table 2.20). Centre-specific one year survival rates were adjusted for not only age (figure 2.24), but also sex and comorbidities for centres with at least 85% completeness (figure 2.25). UKRR comorbidity data have been augmented using diagnostic and procedure codes from HES in England and PEDW in Wales (see appendix A for details). Centres can be identified in the funnel plots using the number of patients in the centre in table 2.20. Given there are 68 centres with data for age adjusted survival, it would be expected that three centres would fall outside the 95% (1 in 20) confidence limit, entirely by chance.

**Table 2.20** 1 year after 90 days adjusted survival (60 years, male and median comorbidity score) of incident adult KRT patients by centre (2017–2020 4 year cohort)

| Centre | Age adjusted survival | | | | Case-mix adjusted survival[1] | | | |
| | | | Limits for funnel plot | | | | Limits for funnel plot | |
| | N on KRT | Adj 1 yr after 90 days survival (%) | Lower 95% limit | Upper 95% limit | N on KRT | Adj 1 yr after 90 days survival (%) | Lower 95% limit | Upper 95% limit |
|---|---|---|---|---|---|---|---|---|
| D&Gall | 66 | 89.3 | 81.0 | 95.7 | | | | |
| Inverns | 91 | 92.0 | 82.8 | 95.2 | | | | |
| Bangor | 96 | 89.6 | 83.0 | 95.1 | 96 | 90.6 | 83.0 | 95.1 |
| Clwyd | 106 | 87.5 | 83.5 | 94.9 | 106 | 87.6 | 83.5 | 94.9 |
| Newry | 119 | 87.7 | 84.0 | 94.8 | 116 | 83.9 | 83.9 | 94.8 |
| Ulster | 120 | 91.3 | 84.0 | 94.8 | 118 | 88.0 | 83.9 | 94.7 |
| Wrexm | 125 | 85.9 | 84.2 | 94.7 | 125 | 84.7 | 84.2 | 94.7 |
| Carlis | 145 | 90.3 | 84.8 | 94.5 | 144 | 89.9 | 84.7 | 94.4 |
| Dundee | 145 | 91.1 | 84.8 | 94.5 | | | | |
| West NI | 146 | 93.8 | 84.8 | 94.5 | 145 | 91.2 | 84.7 | 94.4 |
| Krkcldy | 156 | 93.1 | 85.0 | 94.4 | | | | |
| Colchr | 160 | 92.2 | 85.1 | 94.3 | 156 | 92.8 | 85.0 | 94.3 |
| Antrim | 164 | 94.3 | 85.2 | 94.3 | 148 | 92.8 | 84.8 | 94.4 |
| Klmarnk | 179 | 88.3 | 85.5 | 94.2 | | | | |
| Abrdn | 185 | 92.4 | 85.6 | 94.1 | | | | |
| Ipswi | 188 | 90.8 | 85.6 | 94.1 | 179 | 90.5 | 85.4 | 94.1 |
| Truro | 195 | 91.6 | 85.7 | 94.1 | 193 | 91.7 | 85.7 | 94.0 |
| Donc | 197 | 88.9 | 85.8 | 94.0 | 196 | 88.6 | 85.7 | 94.0 |
| York | 199 | 88.2 | 85.8 | 94.0 | 199 | 87.9 | 85.8 | 94.0 |
| Liv Ain | 213 | 88.0 | 86.0 | 93.9 | 188 | 88.1 | 85.6 | 94.1 |
| Wirral | 219 | 90.4 | 86.1 | 93.9 | 219 | 91.6 | 86.0 | 93.9 |
| Dudley | 224 | 93.4 | 86.1 | 93.9 | 224 | 93.6 | 86.1 | 93.8 |
| Shrew | 249 | 88.0 | 86.4 | 93.7 | 249 | 88.8 | 86.4 | 93.7 |
| Airdrie | 254 | 89.7 | 86.5 | 93.7 | | | | |
| Plymth | 255 | 86.0 | 86.5 | 93.7 | 251 | 86.5 | 86.4 | 93.7 |
| Glouc | 279 | 90.4 | 86.7 | 93.6 | 275 | 90.2 | 86.6 | 93.6 |
| Belfast | 291 | 94.2 | 86.8 | 93.5 | | | | |
| Derby | 313 | 93.0 | 86.9 | 93.5 | 313 | 93.3 | 86.9 | 93.4 |
| Bradfd | 322 | 88.3 | 87.0 | 93.4 | 322 | 89.1 | 87.0 | 93.4 |
| Sund | 341 | 86.3 | 87.1 | 93.4 | 339 | 88.7 | 87.1 | 93.3 |
| L St.G | 343 | 91.8 | 87.1 | 93.4 | 334 | 91.6 | 87.0 | 93.3 |
| Norwch | 346 | 91.2 | 87.2 | 93.3 | 340 | 90.0 | 87.1 | 93.3 |
| Wolve | 360 | 86.0 | 87.2 | 93.3 | 360 | 86.9 | 87.2 | 93.3 |
| Dorset | 361 | 91.0 | 87.2 | 93.3 | 361 | 90.5 | 87.2 | 93.3 |
| Hull | 389 | 91.4 | 87.4 | 93.2 | 389 | 91.3 | 87.3 | 93.2 |
| Stoke | 391 | 87.1 | 87.4 | 93.2 | 388 | 88.0 | 87.3 | 93.2 |
| Redng | 407 | 93.8 | 87.5 | 93.2 | 407 | 94.1 | 87.4 | 93.1 |
| Edinb | 419 | 92.9 | 87.5 | 93.1 | | | | |
| Liv Roy | 424 | 90.5 | 87.5 | 93.1 | 372 | 90.6 | 87.3 | 93.2 |
| Middlbr | 431 | 93.3 | 87.6 | 93.1 | 431 | 93.9 | 87.5 | 93.1 |
| Camb | 468 | 94.6 | 87.7 | 93.0 | 468 | 94.0 | 87.7 | 93.0 |
| Newc | 492 | 91.1 | 87.8 | 93.0 | 491 | 91.7 | 87.7 | 92.9 |

**Table 2.20** Continued

| Centre | Age adjusted survival | | | | Case-mix adjusted survival[1] | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Limits for funnel plot | | | | Limits for funnel plot | |
| | N on KRT | Adj 1 yr after 90 days survival (%) | Lower 95% limit | Upper 95% limit | N on KRT | Adj 1 yr after 90 days survival (%) | Lower 95% limit | Upper 95% limit |
| Covnt | 493 | 92.4 | 87.8 | 93.0 | 482 | 91.9 | 87.7 | 93.0 |
| Nottm | 495 | 88.5 | 87.8 | 93.0 | 495 | 89.0 | 87.8 | 92.9 |
| EssexMS | 525 | 92.0 | 87.9 | 92.9 | 520 | 92.3 | 87.8 | 92.9 |
| Exeter | 530 | 91.5 | 87.9 | 92.9 | 526 | 91.2 | 87.9 | 92.9 |
| Swanse | 542 | 89.0 | 88.0 | 92.9 | 542 | 89.3 | 87.9 | 92.8 |
| Kent | 545 | 88.6 | 88.0 | 92.9 | 545 | 88.1 | 87.9 | 92.8 |
| Brightn | 579 | 88.8 | 88.1 | 92.8 | 568 | 88.5 | 88.0 | 92.8 |
| Bristol | 581 | 88.9 | 88.1 | 92.8 | 571 | 89.2 | 88.0 | 92.8 |
| Prestn | 624 | 87.0 | 88.2 | 92.7 | 624 | 87.3 | 88.1 | 92.7 |
| Sheff | 632 | 90.5 | 88.2 | 92.7 | 630 | 90.7 | 88.1 | 92.7 |
| Cardff | 640 | 88.4 | 88.2 | 92.7 | 640 | 88.1 | 88.1 | 92.7 |
| L Kings | 640 | 92.9 | 88.2 | 92.7 | 634 | 93.4 | 88.1 | 92.7 |
| Stevng | 641 | 92.6 | 88.2 | 92.7 | 641 | 92.6 | 88.1 | 92.7 |
| Salford | 657 | 88.9 | 88.2 | 92.7 | 656 | 89.1 | 88.2 | 92.7 |
| Leeds | 660 | 93.0 | 88.2 | 92.7 | 660 | 93.2 | 88.2 | 92.7 |
| L Guys | 679 | 91.6 | 88.3 | 92.7 | 679 | 91.2 | 88.2 | 92.6 |
| M RI | 743 | 90.2 | 88.4 | 92.6 | 722 | 90.8 | 88.3 | 92.6 |
| Glasgw | 767 | 90.0 | 88.4 | 92.6 | | | | |
| Oxford | 810 | 92.4 | 88.5 | 92.5 | 795 | 92.3 | 88.4 | 92.5 |
| Ports | 846 | 90.1 | 88.6 | 92.5 | 837 | 90.0 | 88.5 | 92.5 |
| Carsh | 902 | 90.8 | 88.6 | 92.4 | 885 | 90.7 | 88.6 | 92.4 |
| L Rfree | 945 | 89.3 | 88.7 | 92.4 | 923 | 89.7 | 88.6 | 92.4 |
| Leic | 1,233 | 91.8 | 88.9 | 92.2 | 1,214 | 91.3 | 88.9 | 92.2 |
| L Barts | 1,279 | 92.9 | 89.0 | 92.2 | 1,128 | 92.2 | 88.8 | 92.2 |
| Bham | 1,392 | 90.6 | 89.1 | 92.1 | 1,382 | 90.6 | 89.0 | 92.1 |
| L West | 1,483 | 91.0 | 89.1 | 92.1 | 1,440 | 91.0 | 89.0 | 92.1 |

[1]Centres excluded if <85% comorbidity data were available – this included Belfast and all Scottish kidney centres

Survivial adjusted to age 60 years, male and median comorbidity score
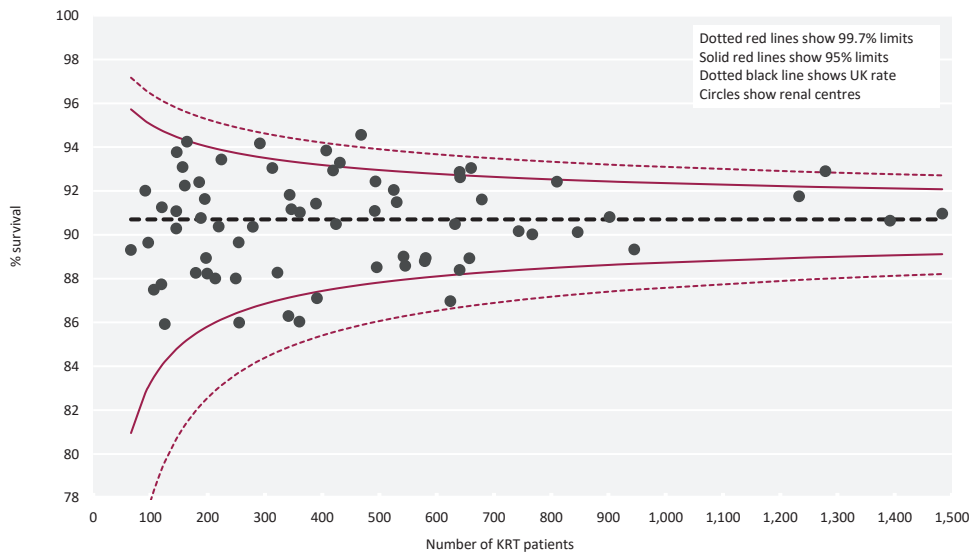
**Figure 2.24** 1 year after 90 days survival (adjusted to age 60 years) of incident adult KRT patients by centre (2017–2020 4 year cohort)
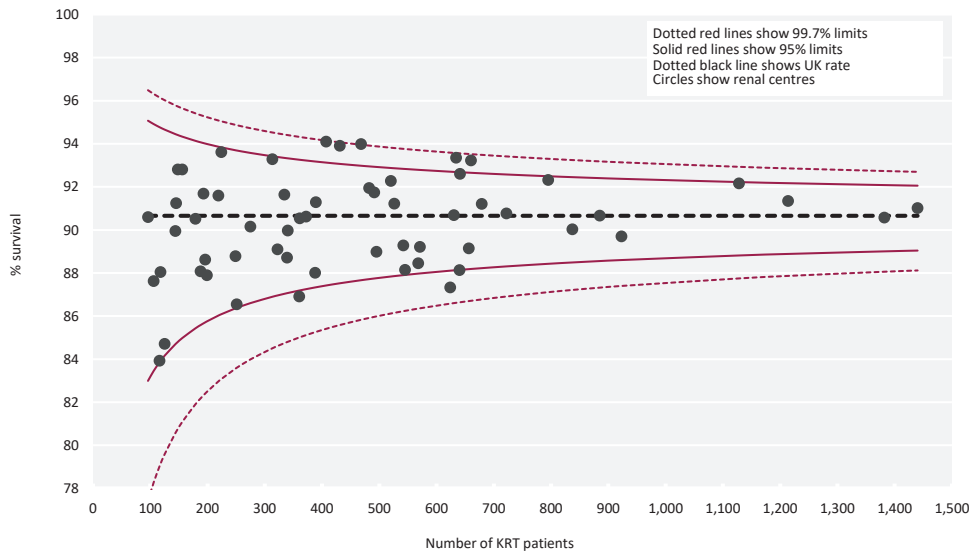


**Figure 2.25** 1 year after 90 days survival (adjusted to age 60 years, male and median comorbidity score) of incident adult KRT patients by centre (2017–2020 4 year cohort)

## Cause of death in incident adult KRT patients

Cause of death was analysed in incident KRT patients using a four year incident cohort followed up for 90 days and 1 year after 90 days. The proportion of incident adult KRT patients with each cause of death is shown for patients with cause of death data and these total 100% of patients with data. The proportion of patients with no cause of death data is shown on a separate line.

Adults starting KRT in the UK in 2021

**Table 2.21** Cause of death in the first 90 days and one year after 90 days in incident adult KRT patients by age group (2017–2020 4 year cohort)

| Cause of death | First 90 days All ages | | | | 1 year after 90 days All ages | | | |
|---|---|---|---|---|---|---|---|---|
| | N | % | <65 yrs (%) | ≥65 yrs (%) | N | % | <65 yrs (%) | ≥65 yrs (%) |
| Cardiac disease | 221 | 23.9 | 29.0 | 22.3 | 473 | 19.7 | 23.3 | 18.1 |
| Cerebrovascular disease | 23 | 2.5 | 3.1 | 2.3 | 87 | 3.6 | 5.1 | 3.0 |
| Infection | 187 | 20.3 | 21.5 | 19.9 | 505 | 21.0 | 23.6 | 19.9 |
| Malignancy | 60 | 6.5 | 4.4 | 7.2 | 191 | 7.9 | 6.8 | 8.5 |
| Treatment withdrawal | 153 | 16.6 | 8.8 | 19.1 | 460 | 19.1 | 13.2 | 21.7 |
| Other | 219 | 23.7 | 26.3 | 22.9 | 509 | 21.2 | 22.0 | 20.8 |
| Uncertain aetiology | 60 | 6.5 | 7.0 | 6.3 | 179 | 7.4 | 6.1 | 8.1 |
| **Total (with data)** | **923** | **100.0** | **100.0** | **100.0** | **2,404** | **100.0** | **100.0** | **100.0** |
| Missing | 619 | 40.1 | 42.4 | 39.4 | 1,151 | 32.4 | 31.8 | 32.6 |

*Chapter 3*

# Adults on kidney replacement therapy (KRT) in the UK at the end of 2021

# Contents

# Introduction

This chapter describes the population of adult patients with end-stage kidney disease (ESKD) who were on kidney replacement therapy (KRT) in the UK at the end of 2021 (figure 3.1). Patients may have started KRT prior to 2021 or during 2021. Three KRT modalities are available to patients with ESKD – haemodialysis (HD), peritoneal dialysis (PD) and kidney transplantation. HD may be undertaken in-centre (ICHD) or at home (HHD).

The size of the prevalent population on each KRT modality reflects uptake to the modality by new KRT patients (chapter 2); the number of patients switching from one modality to another; and the length of time patients remain on a modality before they switch to another, withdraw from KRT or die.
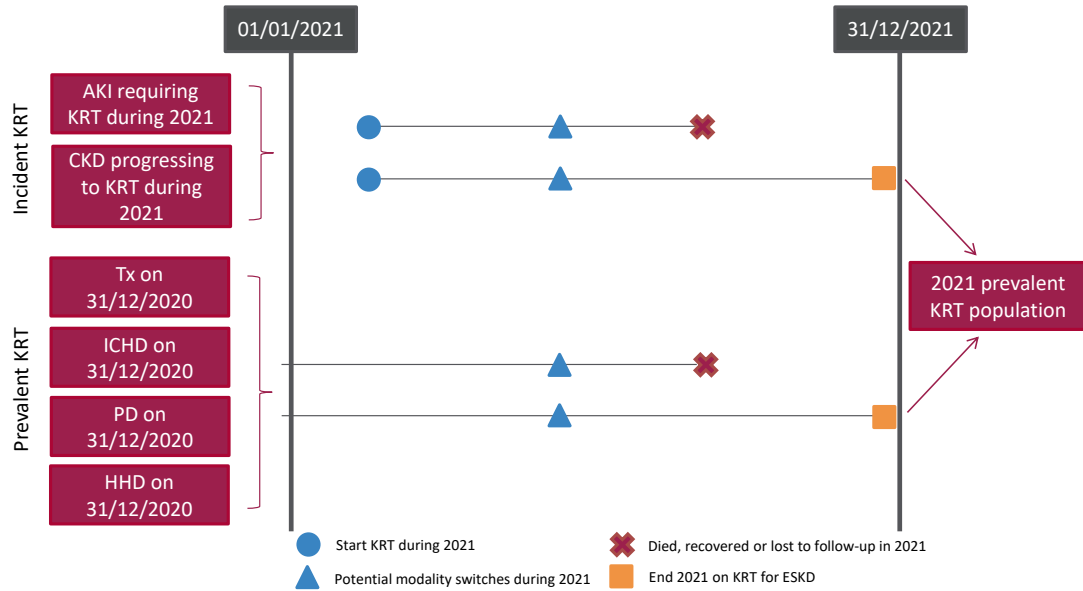


**Figure 3.1** Pathways adult patients could follow to be included in the UK 2021 prevalent KRT population

Note that patients receiving dialysis for acute kidney injury (AKI) are only included in this chapter if they had a timeline or KRT modality code for chronic KRT at the end of 2021 or if they had been on KRT for ≥90 days and were on KRT at the end of 2021.

CKD – chronic kidney disease; Tx – transplant

Survival and cause of death analyses were undertaken on historic prevalent cohorts to allow sufficient follow-up time.

# Rationale for analyses

The analyses focus on a description of the 2021 prevalent adult KRT population, including the number on KRT per million population (pmp). These analyses are performed annually to help clinicians and policy makers plan future KRT requirements in the UK. Variation in case-mix is also reported to aid understanding of how to improve equity of KRT provision in the UK.

The UK Kidney Association guidelines (ukkidney.org/health-professionals/guidelines/guidelines-commentaries) provide audit measures relevant to the care of patients on KRT, but these are treatment-specific – for further details see the guideline tables in each chapter.

Exeter was unable to submit patient level data for 2021. Aggregate numbers by modality were provided, enabling inclusion in Tables 3.1 and 3.2. Exeter is excluded from all other analyses.

For definitions and methods relating to this chapter see appendix A.

Adults on KRT in the UK at the end of 2021

# Key findings

- 69,497 adult patients were receiving KRT for ESKD on 31/12/2021. This represents a 1.5% increase from 2020 and approaches the 2-2.5% increase that was seen in the years before the pandemic.

- KRT prevalence was 1,307 per million population compared 1,290 per million population in 2020.

- The median age of KRT patients was 59.47 years (ICHD 66.1 years, HHD 56.0 years, PD 63.3 years and Tx 56.5 years). In 2010 the median age was 57.9 years (ICHD 66.8 years, HHD 52.4 years, PD 61.5 years and Tx 51.2 years).

- 61.3% of KRT patients were male.

- Tx continued as the most common treatment modality (56.4%) – ICHD comprised 36%, PD 5.6% and HHD 2.0% of the KRT population.

- The most common identifiable primary renal disease was glomerulonephritis (19.7%), followed by diabetes (18.7%).

- There were 2 centres above the upper 95% limit and 2 centres below the lower 95% limit in the funnel plots showing 1 year age-, sex- and comorbidity-adjusted survival for patients prevalent to dialysis on 31/12/2020. It is expected that 3 centres would be outside the limits by chance.

- There was no cause of death data available for 37.7% of deaths. For those with data , the leading cause of death was infection amongst both patients > 65 years and < 65 years at 26.8% and 30.4% respectively, with a significant contribution from COVID related deaths.

# Analyses

## Changes to the prevalent adult KRT population

For the 68 adult kidney centres, the number of prevalent patients on KRT was calculated as a proportion of the estimated centre catchment population (calculated as detailed in appendix A).

**Table 3.1** Number of prevalent adult KRT patients by year and by centre; number of KRT patients as a proportion of the catchment population

| Centre | N on KRT | | | | | Estimated catchment population (millions) | 2021 crude rate (pmp) |
|---|---|---|---|---|---|---|---|
| | 2017 | 2018 | 2019 | 2020 | 2021 | | |
| ENGLAND | | | | | | | |
| Bham | 3,174 | 3,249 | 3,312 | 3,261 | 3,309 | 2.05 | 1,611 |
| Bradfd | 674 | 688 | 732 | 724 | 735 | 0.49 | 1,496 |
| Brightn | 1,012 | 1,055 | 1,064 | 1,077 | 1,092 | 1.08 | 1,013 |
| Bristol | 1,473 | 1,471 | 1,487 | 1,476 | 1,497 | 1.22 | 1,225 |
| Camb | 1,336 | 1,387 | 1,456 | 1,509 | 1,629 | 0.94 | 1,739 |
| Carlis | 281 | 293 | 301 | 297 | 305 | 0.26 | 1,194 |
| Carsh | 1,696 | 1,752 | 1,781 | 1,850 | 1,907 | 1.63 | 1,170 |
| Colchr | 129 | 122 | 145 | 150 | 145 | 0.29 | 497 |
| Covnt | 966 | 959 | 1,076 | 1,102 | 1,119 | 0.80 | 1,407 |
| Derby | 555 | 586 | 654 | 676 | 689 | 0.56 | 1,227 |
| Donc | 333 | 330 | 342 | 341 | 339 | 0.38 | 903 |
| Dorset | 730 | 764 | 773 | 798 | 786 | 0.73 | 1,077 |
| Dudley | 366 | 360 | 366 | 372 | 398 | 0.34 | 1,157 |
| EssexMS | 831 | 844 | 851 | 885 | 895 | 0.99 | 900 |
| Exeter | 1,057 | 1,083 | 1,089 | 1,092 | 1,077 | 0.95 | 1,130 |
| Glouc | 511 | 522 | 531 | 522 | 546 | 0.51 | 1,070 |
| Hull | 872 | 880 | 904 | 914 | 919 | 0.80 | 1,148 |
| Ipswi | 436 | 428 | 428 | 426 | 421 | 0.31 | 1,347 |
| Kent | 1,091 | 1,112 | 1,139 | 1,143 | 1,192 | 1.07 | 1,114 |
| L Barts | 2,498 | 2,600 | 2,659 | 2,685 | 2,750 | 1.59 | 1,729 |
| L Guys | 2,166 | 2,231 | 2,321 | 2,317 | 2,322 | 1.01 | 2,307 |
| L Kings | 1,155 | 1,183 | 1,247 | 1,252 | 1,334 | 0.93 | 1,428 |
| L Rfree | 2,191 | 2,233 | 2,344 | 2,337 | 2,380 | 1.33 | 1,792 |
| L St.G | 839 | 834 | 852 | 852 | 866 | 0.67 | 1,302 |
| L West | 3,475 | 3,560 | 3,607 | 3,531 | 3,556 | 1.96 | 1,810 |
| Leeds | 1,619 | 1,683 | 1,727 | 1,752 | 1,784 | 1.37 | 1,299 |
| Leic | 2,357 | 2,452 | 2,580 | 2,621 | 2,640 | 2.09 | 1,265 |
| Liv Ain | 210 | 217 | 226 | 242 | 264 | 0.43 | 611 |
| Liv Roy | 1,253 | 1,271 | 1,258 | 1,208 | 1,207 | 0.81 | 1,486 |
| M RI | 2,052 | 2,066 | 2,048 | 1,986 | 2,077 | 1.33 | 1,556 |
| Middlbr | 904 | 930 | 953 | 946 | 955 | 0.81 | 1,183 |
| Newc | 1,116 | 1,153 | 1,172 | 1,197 | 1,226 | 0.95 | 1,286 |
| Norwch | 781 | 788 | 810 | 808 | 784 | 0.69 | 1,136 |
| Nottm | 1,184 | 1,197 | 1,217 | 1,210 | 1,220 | 0.93 | 1,313 |
| Oxford | 1,880 | 1,943 | 1,973 | 2,016 | 2,003 | 1.45 | 1,385 |
| Plymth | 541 | 540 | 535 | 542 | 548 | 0.40 | 1,365 |
| Ports | 1,746 | 1,763 | 1,881 | 1,899 | 1,941 | 1.75 | 1,109 |
| Prestn | 1,272 | 1,322 | 1,342 | 1,368 | 1,379 | 1.23 | 1,117 |
| Redng | 795 | 814 | 862 | 869 | 877 | 0.70 | 1,256 |
| Salford | 1,117 | 1,173 | 1,243 | 1,268 | 1,215 | 1.15 | 1,054 |
| Sheff | 1,442 | 1,482 | 1,489 | 1,490 | 1,496 | 1.13 | 1,319 |
| Shrew | 387 | 430 | 437 | 427 | 442 | 0.41 | 1,077 |

Adults on KRT in the UK at the end of 2021

**Table 3.1** Continued

| Centre | 2017 | 2018 | 2019 | 2020 | 2021 | Estimated catchment population (millions) | 2021 crude rate (pmp) |
|--------|------|------|------|------|------|------|------|
| | | | N on KRT | | | | |
| Stevng | 884 | 938 | 961 | 974 | 1,014 | 1.11 | 913 |
| Stoke | 811 | 806 | 806 | 813 | 845 | 0.73 | 1,154 |
| Sund | 544 | 560 | 570 | 556 | 547 | 0.55 | 999 |
| Truro | 425 | 437 | 450 | 445 | 461 | 0.36 | 1,287 |
| Wirral | 390 | 400 | 416 | 414 | 412 | 0.47 | 877 |
| Wolve | 583 | 609 | 614 | 655 | 691 | 0.55 | 1,259 |
| York | 557 | 569 | 582 | 572 | 581 | 0.49 | 1,196 |
| N IRELAND | | | | | | | |
| Antrim | 255 | 274 | 285 | 287 | 296 | 0.25 | 1,204 |
| Belfast | 844 | 878 | 881 | 890 | 911 | 0.53 | 1,706 |
| Newry | 241 | 252 | 253 | 264 | 281 | 0.24 | 1,195 |
| Ulster | 183 | 191 | 185 | 201 | 203 | 0.20 | 999 |
| West NI | 313 | 327 | 328 | 351 | 339 | 0.25 | 1,350 |
| SCOTLAND | | | | | | | |
| Abrdn | 563 | 572 | 558 | 565 | 578 | 0.50 | 1,155 |
| Airdrie | 466 | 488 | 524 | 517 | 504 | 0.46 | 1,098 |
| D&Gall | 135 | 145 | 149 | 156 | 154 | 0.12 | 1,257 |
| Dundee | 435 | 445 | 449 | 430 | 411 | 0.37 | 1,116 |
| Edinb | 825 | 862 | 885 | 889 | 926 | 0.84 | 1,101 |
| Glasgw | 1,772 | 1,813 | 1,854 | 1,848 | 1,865 | 1.37 | 1,357 |
| Inverns | 262 | 279 | 282 | 271 | 278 | 0.22 | 1,243 |
| Klmarnk | 337 | 340 | 359 | 369 | 365 | 0.29 | 1,249 |
| Krkcldy | 304 | 298 | 295 | 291 | 295 | 0.27 | 1,078 |
| WALES | | | | | | | |
| Bangor | 195 | 203 | 201 | 216 | 217 | 0.16 | 1,323 |
| Cardff | 1,683 | 1,720 | 1,730 | 1,679 | 1,700 | 1.16 | 1,469 |
| Clwyd | 179 | 190 | 205 | 204 | 204 | 0.18 | 1,126 |
| Swanse | 789 | 825 | 869 | 850 | 853 | 0.76 | 1,125 |
| Wrexm | 323 | 314 | 311 | 323 | 300 | 0.21 | 1,443 |
| TOTALS | | | | | | | |
| England | 54,697 | 56,069 | 57,613 | 57,867 | 58,817 | 44.77 | 1,314 |
| N Ireland | 1,836 | 1,922 | 1,932 | 1,993 | 2,030 | 1.47 | 1,381 |
| Scotland | 5,099 | 5,242 | 5,355 | 5,336 | 5,376 | 4.45 | 1,207 |
| Wales | 3,169 | 3,252 | 3,316 | 3,272 | 3,274 | 2.49 | 1,315 |
| **UK** | **64,801** | **66,485** | **68,216** | **68,468** | **69,497** | **53.19** | **1,307** |

Country KRT populations were calculated by summing the KRT patients from centres in each country. Estimated country populations were derived from Office for National Statistics figures (see appendix A for details on estimated catchment population by kidney centre)

Exeter was unable to submit 2021 patient level data, but provided aggregate numbers of patients on KRT at the end of 2021, by treatment modality

pmp – per million population

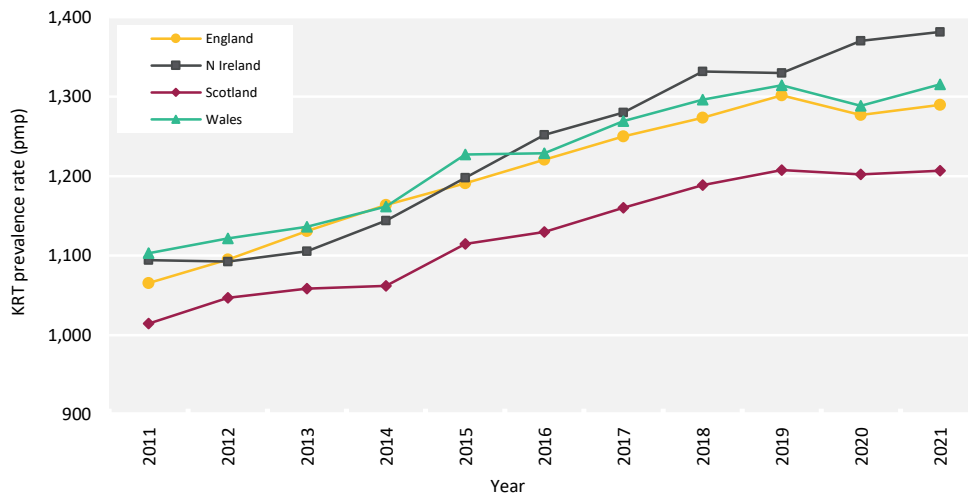**Figure 3.2** Adult KRT prevalence rates by country between 2011 and 2021
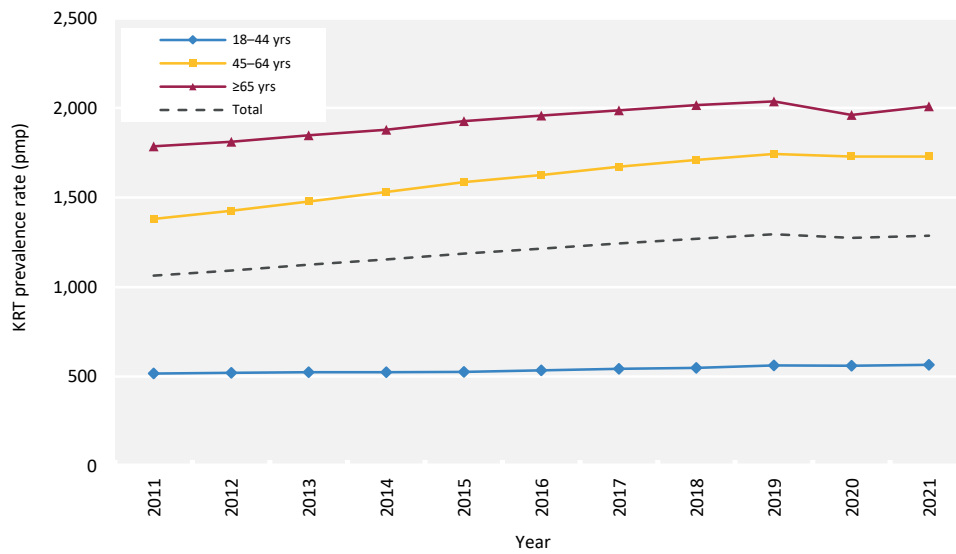
pmp – per million population

**Figure 3.3** Adult KRT prevalence rates by age group between 2011 and 2021

pmp – per million population

Adults on KRT in the UK at the end of 2021

# Demographics and treatment modality of prevalent adult KRT patients

The proportion of KRT patients from each ethnic group is shown for patients with ethnicity data – the proportion of centre patients with no ethnicity data is shown separately.

Variation between centres in the proportion of dialysis patients on home therapies (PD and HHD combined) is shown in figure 3.4.

**Table 3.2** Demographics and treatment modality of adult patients prevalent to KRT on 31/12/2021 by centre

| Centre | N on KRT | % on ICHD | % on PD | % on HHD | % with Tx | Median age (yrs) | % male | % White | % Asian | % Black | % Other | % missing |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ENGLAND | | | | | | |
| Bham | 3,309 | 40.7 | 8.4 | 2.1 | 48.8 | 58.9 | 59.2 | 56.7 | 29.6 | 10.8 | 2.9 | 1.5 |
| Bradfd | 735 | 37.4 | 5.0 | 1.0 | 56.6 | 56.7 | 60.0 | 51.2 | 43.7 | 2.7 | 2.4 | 0.0 |
| Brightn | 1,092 | 38.8 | 6.3 | 2.7 | 52.1 | 61.3 | 62.4 | 89.4 | 6.1 | 2.1 | 2.4 | 3.7 |
| Bristol | 1,497 | 31.8 | 5.1 | 1.2 | 61.9 | 59.0 | 61.0 | 88.4 | 4.0 | 5.7 | 1.9 | 1.1 |
| Camb | 1,629 | 21.8 | 1.8 | 1.5 | 75.0 | 58.0 | 63.1 | 90.0 | 5.9 | 2.5 | 1.6 | 3.2 |
| Carlis | 305 | 37.4 | 9.8 | 1.0 | 51.8 | 60.1 | 60.7 | 99.0 | 1.0 | 0.0 | 0.0 | 0.0 |
| Carsh | 1,907 | 46.4 | 7.0 | 1.5 | 45.1 | 61.7 | 61.3 | 65.7 | 17.3 | 11.2 | 5.7 | 3.9 |
| Colchr | 145 | 100.0 | 0.0 | 0.0 | 0.0 | 73.7 | 64.8 | 96.4 | 0.7 | 0.7 | 2.2 | 4.8 |
| Covnt | 1,119 | 33.1 | 7.2 | 2.0 | 57.7 | 59.9 | 62.5 | 77.9 | 16.8 | 5.1 | 0.2 | 0.2 |
| Derby | 689 | 38.0 | 9.6 | 8.0 | 44.4 | 61.8 | 63.1 | 82.3 | 12.2 | 2.9 | 2.5 | 1.6 |
| Donc | 339 | 51.6 | 3.8 | 1.5 | 43.1 | 62.4 | 61.7 | 93.8 | 3.0 | 1.2 | 2.1 | 0.6 |
| Dorset | 786 | 38.7 | 2.9 | 1.8 | 56.6 | 65.5 | 60.8 | 96.4 | 1.7 | 0.4 | 1.5 | 0.0 |
| Dudley | 398 | 55.3 | 10.1 | 2.5 | 32.2 | 63.6 | 64.8 | 78.6 | 14.6 | 5.8 | 1.0 | 0.0 |
| EssexMS | 895 | 47.9 | 10.4 | 2.3 | 39.3 | 63.1 | 66.3 | 85.3 | 5.9 | 5.3 | 3.4 | 3.9 |
| Exeter | 1,077 | 44.2 | 6.8 | 1.5 | 47.5 | | | | | | | |
| Glouc | 546 | 41.4 | 6.6 | 0.0 | 52.0 | 63.2 | 61.9 | 90.9 | 3.9 | 2.8 | 2.4 | 1.3 |
| Hull | 919 | 39.3 | 5.7 | 1.3 | 53.8 | 59.3 | 64.2 | 95.7 | 2.3 | 1.0 | 1.0 | 0.5 |
| Ipswi | 421 | 33.3 | 7.8 | 0.5 | 58.4 | 63.1 | 62.5 | 82.4 | 2.2 | 4.5 | 10.9 | 4.0 |
| Kent | 1,192 | 38.4 | 6.0 | 1.5 | 54.0 | 60.7 | 60.9 | 91.7 | 3.3 | 2.1 | 2.9 | 1.4 |
| L Barts | 2,750 | 39.8 | 9.4 | 0.9 | 49.9 | 58.0 | 58.9 | 32.3 | 35.3 | 25.3 | 7.2 | 2.3 |
| L Guys | 2,322 | 31.4 | 3.0 | 1.8 | 63.8 | 57.1 | 59.1 | 57.8 | 10.4 | 27.3 | 4.5 | 4.0 |
| L Kings | 1,334 | 50.4 | 7.3 | 2.5 | 39.7 | 59.6 | 60.6 | 42.5 | 14.5 | 38.8 | 4.3 | 1.5 |
| L Rfree | 2,380 | 30.9 | 7.3 | 0.4 | 61.4 | 58.5 | 60.5 | 42.5 | 22.8 | 22.6 | 12.1 | 7.5 |
| L St.G | 866 | 37.2 | 6.1 | 0.6 | 56.1 | 60.0 | 59.0 | 40.2 | 25.2 | 23.6 | 11.1 | 5.4 |
| L West | 3,556 | 36.3 | 6.0 | 1.0 | 56.6 | 61.0 | 61.6 | 38.1 | 36.5 | 19.2 | 6.2 | 0.1 |
| Leeds | 1,784 | 32.5 | 3.0 | 0.9 | 63.6 | 57.6 | 61.3 | 76.2 | 16.8 | 5.4 | 1.6 | 0.2 |
| Leic | 2,640 | 38.0 | 5.2 | 1.8 | 55.0 | 60.3 | 60.9 | 72.9 | 20.3 | 5.2 | 1.7 | 4.7 |
| Liv Ain | 264 | 68.6 | 8.3 | 4.9 | 18.2 | 62.4 | 63.3 | 94.2 | 1.2 | 1.9 | 2.7 | 2.3 |
| Liv Roy | 1,207 | 30.7 | 2.7 | 3.6 | 63.0 | 58.0 | 61.0 | 90.4 | 3.2 | 3.4 | 3.0 | 1.9 |
| M RI | 2,077 | 24.6 | 4.7 | 4.0 | 66.7 | 57.9 | 59.9 | 66.6 | 13.8 | 17.4 | 2.2 | 2.6 |
| Middlbr | 955 | 36.5 | 2.1 | 1.8 | 59.6 | 59.8 | 63.9 | 93.5 | 4.5 | 0.7 | 1.3 | 0.8 |
| Newc | 1,226 | 28.6 | 4.7 | 1.5 | 65.2 | 59.5 | 60.2 | 92.9 | 4.5 | 1.2 | 1.4 | 0.2 |
| Norwch | 784 | 36.2 | 5.7 | 1.3 | 56.8 | 62.6 | 60.6 | 96.8 | 1.2 | 0.9 | 1.1 | 3.2 |
| Nottm | 1,220 | 29.8 | 8.4 | 2.3 | 59.5 | 58.6 | 61.8 | 81.0 | 8.5 | 7.7 | 2.7 | 0.2 |
| Oxford | 2,003 | 23.1 | 3.3 | 0.9 | 72.6 | 58.4 | 61.3 | 78.9 | 11.2 | 5.1 | 4.8 | 14.3 |
| Plymth | 548 | 30.1 | 6.2 | 0.0 | 63.7 | 62.4 | 66.6 | 97.3 | 0.7 | 0.4 | 1.6 | 0.0 |
| Ports | 1,941 | 33.4 | 4.6 | 4.4 | 57.5 | 60.5 | 60.2 | 91.9 | 4.5 | 1.1 | 2.5 | 9.3 |
| Prestn | 1,379 | 36.3 | 4.0 | 3.0 | 56.6 | 59.6 | 60.9 | 82.5 | 15.9 | 0.9 | 0.7 | 0.0 |
| Redng | 877 | 34.7 | 5.7 | 1.0 | 58.6 | 60.1 | 62.7 | 64.6 | 23.4 | 5.5 | 6.5 | 6.5 |
| Salford | 1,215 | 33.9 | 6.9 | 2.6 | 56.6 | 58.5 | 61.0 | 76.5 | 17.7 | 3.7 | 2.1 | 0.0 |
| Sheff | 1,496 | 37.0 | 5.5 | 3.7 | 53.7 | 59.5 | 62.8 | 87.8 | 6.8 | 2.7 | 2.7 | 1.8 |
| Shrew | 442 | 41.4 | 11.5 | 8.4 | 38.7 | 61.8 | 64.3 | 90.6 | 3.9 | 2.3 | 3.2 | 1.8 |
| Stevng | 1,014 | 52.2 | 3.6 | 3.8 | 40.4 | 61.6 | 62.8 | 70.9 | 17.1 | 9.2 | 2.9 | 3.2 |
| Stoke | 845 | 31.4 | 12.7 | 4.9 | 51.1 | 59.6 | 63.3 | 89.5 | 5.9 | 2.3 | 2.2 | 3.8 |

**Table 3.2** Continued

| Centre | N on KRT | % on ICHD | % on PD | % on HHD | % with Tx | Median age (yrs) | % male | Ethnicity % White | % Asian | % Black | % Other | % missing |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sund | 547 | 39.3 | 6.8 | 1.8 | 52.1 | 60.3 | 59.6 | 95.2 | 3.3 | 0.6 | 0.9 | 0.4 |
| Truro | 461 | 39.9 | 4.8 | 1.1 | 54.2 | 63.4 | 58.6 | 98.0 | 0.7 | 0.0 | 1.3 | 0.0 |
| Wirral | 412 | 46.6 | 4.9 | 1.5 | 47.1 | 61.0 | 64.3 | 96.1 | 1.9 | 1.2 | 0.7 | 0.0 |
| Wolve | 691 | 50.1 | 9.3 | 5.5 | 35.2 | 59.9 | 61.2 | 60.3 | 27.7 | 10.0 | 2.0 | 0.1 |
| York | 581 | 32.7 | 4.6 | 2.9 | 59.7 | 61.3 | 60.6 | 95.7 | 1.6 | 0.3 | 2.4 | 0.5 |
| N IRELAND | | | | | | | | | | | | |
| Antrim | 296 | 38.9 | 6.1 | 0.7 | 54.4 | 64.9 | 63.2 | 99.6 | 0.0 | 0.4 | 0.0 | 10.5 |
| Belfast | 911 | 14.5 | 3.0 | 0.9 | 81.7 | 58.1 | 61.0 | 97.6 | 1.8 | 0.3 | 0.2 | 4.4 |
| Newry | 281 | 30.6 | 4.6 | 1.1 | 63.7 | 61.6 | 60.1 | 98.5 | 0.7 | 0.4 | 0.4 | 3.9 |
| Ulster | 203 | 48.8 | 1.5 | 0.0 | 49.8 | 65.8 | 59.1 | 94.1 | 3.9 | 1.5 | 0.5 | 0.0 |
| West NI | 339 | 31.0 | 1.8 | 0.9 | 66.4 | 59.1 | 60.2 | 99.1 | 0.6 | 0.3 | 0.0 | 1.5 |
| SCOTLAND | | | | | | | | | | | | |
| Abrdn | 578 | 32.7 | 3.5 | 0.3 | 63.5 | 58.8 | 59.2 | | | | | 71.1 |
| Airdrie | 504 | 38.7 | 5.8 | 0.0 | 55.6 | 58.6 | 57.9 | | | | | 26.4 |
| D&Gall | 154 | 34.4 | 5.2 | 0.6 | 59.7 | 61.3 | 62.3 | | | | | 42.2 |
| Dundee | 411 | 36.3 | 3.9 | 1.5 | 58.4 | 60.5 | 63.0 | | | | | 69.6 |
| Edinb | 926 | 30.6 | 3.6 | 0.8 | 65.1 | 59.5 | 64.8 | | | | | 79.9 |
| Glasgw | 1,865 | 30.8 | 2.0 | 0.5 | 66.6 | 58.6 | 59.7 | | | | | 56.9 |
| Inverns | 278 | 33.5 | 4.0 | 0.7 | 61.9 | 58.8 | 59.4 | | | | | 55.4 |
| Klmarnk | 365 | 37.8 | 9.0 | 4.4 | 48.8 | 61.3 | 60.0 | | | | | 63.0 |
| Krkcldy | 295 | 55.6 | 2.4 | 1.0 | 41.0 | 63.4 | 63.7 | | | | | 85.4 |
| WALES | | | | | | | | | | | | |
| Bangor | 217 | 35.0 | 6.0 | 9.7 | 49.3 | 61.5 | 65.9 | 98.6 | 0.0 | 0.0 | 1.4 | 4.1 |
| Cardff | 1,700 | 31.2 | 3.4 | 3.0 | 62.4 | 58.8 | 62.2 | 91.0 | 6.2 | 1.2 | 1.6 | 2.5 |
| Clwyd | 204 | 44.1 | 5.4 | 0.0 | 50.5 | 63.1 | 65.7 | 97.3 | 2.1 | 0.5 | 0.0 | 8.3 |
| Swanse | 853 | 47.5 | 5.7 | 4.7 | 42.1 | 62.9 | 63.4 | 97.3 | 1.8 | 0.4 | 0.6 | 0.2 |
| Wrexm | 300 | 33.3 | 5.3 | 1.0 | 60.3 | 58.1 | 65.7 | 95.9 | 1.0 | 1.0 | 2.0 | 2.0 |
| TOTALS | | | | | | | | | | | | |
| England | 58,817 | 36.4 | 5.9 | 2.1 | 55.6 | 59.7 | 61.2 | 71.9 | 15.1 | 9.5 | 3.5 | 2.8 |
| N Ireland | 2,030 | 26.5 | 3.3 | 0.8 | 69.5 | 60.0 | 60.9 | 97.9 | 1.4 | 0.5 | 0.2 | 4.3 |
| Scotland | 5,376 | 34.2 | 3.6 | 0.9 | 61.3 | 59.5 | 60.9 | | | | | 62.0 |
| Wales | 3,274 | 36.7 | 4.5 | 3.5 | 55.3 | 60.1 | 63.3 | 94.0 | 3.9 | 0.8 | 1.3 | 2.3 |
| **UK** | **69,497** | **36.0** | **5.6** | **2.0** | **56.4** | **59.7** | **61.3** | **74.3** | **13.9** | **8.6** | **3.2** | **7.5** |

Blank cells – no data returned by the centre or data completeness <70%
Breakdown by ethnicity is not shown for centres with <70% data completeness, but these centres were included in national averages
Exeter was unable to submit 2021 patient level data, but provided aggregate numbers of patients on KRT at the end of 2021, by treatment modality

PRDs were grouped into categories as shown in table 3.3, with the mapping of disease codes into groups explained in more detail in appendix A. The proportion of KRT patients in each ethnic group and with each PRD is shown for patients with ethnicity and PRD data, respectively, and these total 100% of patients with data. The proportions of patients with no ethnicity and no PRD data are shown on separate lines.

**Table 3.3** Demographics, primary renal diseases (PRDs) and prevalent treatment modality of adult patients prevalent to KRT on 31/12/2021 by age group

| Characteristic | Age group (yrs) 18–34 | 35–44 | 45–54 | 55–64 | 65–74 | 75–84 | ≥85 | Total | Median age (yrs) |
|---|---|---|---|---|---|---|---|---|---|
| **Total** | | | | | | | | | |
| N on KRT | 5,363 | 7,799 | 12,759 | 17,304 | 14,647 | 8,824 | 1,724 | 68,420 | 59.7 |
| % on KRT | 7.8 | 11.4 | 18.6 | 25.3 | 21.4 | 12.9 | 2.5 | | |
| | | | | | | | | | |
| **Sex (%)** | | | | | | | | | |
| Male | 7.6 | 11.2 | 18.4 | 25.4 | 21.6 | 13.1 | 2.6 | 61.3 | 60.0 |
| Female | 8.3 | 11.7 | 19.1 | 25.1 | 21.1 | 12.5 | 2.3 | 38.7 | 59.4 |
| | | | | | | | | | |
| **Ethnicity (%)** | | | | | | | | | |
| White | 7.9 | 10.8 | 18.1 | 25.1 | 21.7 | 13.6 | 2.7 | 74.3 | 60.1 |
| Asian | 8.8 | 13.9 | 19.4 | 23.0 | 23.4 | 9.8 | 1.7 | 13.9 | 59.0 |
| Black | 6.0 | 12.3 | 23.1 | 31.7 | 14.8 | 9.7 | 2.4 | 8.6 | 57.5 |
| Other | 10.0 | 16.8 | 20.6 | 24.0 | 17.2 | 9.2 | 2.1 | 3.2 | 56.0 |
| Missing | 6.9 | 9.5 | 16.7 | 24.4 | 23.7 | 16.2 | 2.6 | 7.5 | 62.3 |
| | | | | | | | | | |
| **PRD (%)** | | | | | | | | | |
| Diabetes | 2.8 | 9.0 | 18.0 | 28.9 | 25.6 | 13.6 | 2.1 | 18.7 | 62.0 |
| Glomerulonephritis | 9.2 | 14.1 | 21.5 | 26.6 | 18.7 | 8.8 | 1.2 | 19.7 | 57.0 |
| Hypertension | 3.1 | 9.2 | 18.8 | 26.7 | 21.0 | 17.0 | 4.1 | 6.3 | 61.9 |
| Polycystic kidney disease | 1.9 | 5.5 | 19.5 | 34.4 | 26.7 | 11.2 | 0.8 | 10.5 | 61.6 |
| Pyelonephritis | 11.0 | 14.8 | 21.6 | 24.6 | 16.3 | 9.5 | 2.3 | 9.4 | 55.8 |
| Renal vascular disease | 2.2 | 3.7 | 6.9 | 13.4 | 29.2 | 34.7 | 9.8 | 2.6 | 73.7 |
| Other | 10.0 | 16.8 | 20.6 | 24.0 | 17.2 | 9.2 | 2.1 | 3.2 | 56.0 |
| Uncertain aetiology | 6.9 | 11.8 | 17.8 | 21.5 | 21.5 | 16.2 | 4.3 | 14.5 | 61.3 |
| Missing | 6.9 | 9.5 | 16.7 | 24.4 | 23.7 | 16.2 | 2.6 | 7.5 | 62.3 |
| | | | | | | | | | |
| **Modality (%)** | | | | | | | | | |
| ICHD | 4.7 | 7.3 | 13.4 | 22.0 | 24.1 | 22.6 | 5.9 | 35.9 | 66.1 |
| HHD | 8.6 | 14.2 | 24.6 | 27.8 | 16.2 | 7.8 | 0.8 | 2.0 | 56.0 |
| PD | 7.9 | 9.5 | 15.1 | 21.2 | 23.3 | 19.3 | 3.7 | 5.6 | 63.3 |
| Tx | 9.8 | 14.1 | 22.1 | 27.7 | 19.7 | 6.3 | 0.3 | 56.5 | 56.5 |

Variation between centres in the proportion of patients prevalent to dialysis on 31/12/2021 and on home therapies is shown in figure 3.4 . Please visit the UKRR data portal (ukkidney.org/audit-research/data-portals) to identify individual kidney centres.
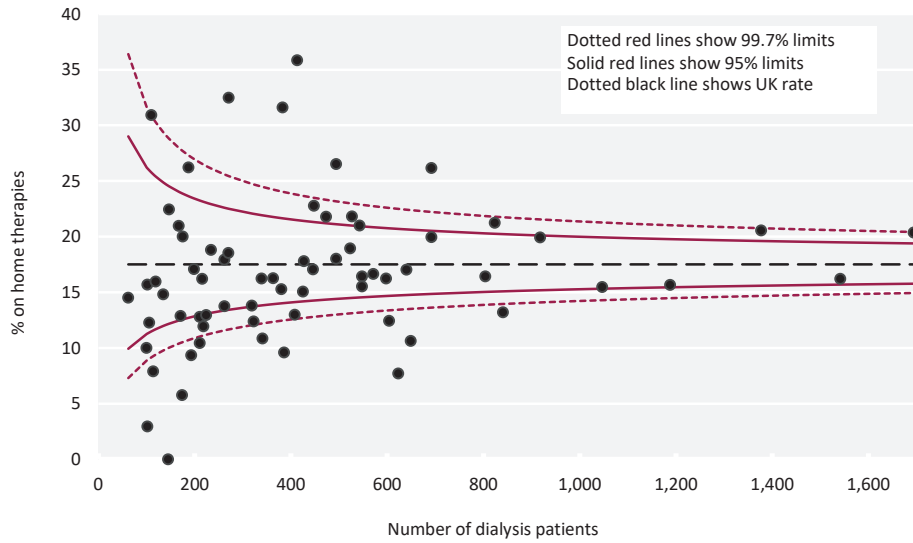
**Figure 3.4** Percentage of adult patients prevalent to dialysis on 31/12/2021 on home therapies (PD and HHD) by centre
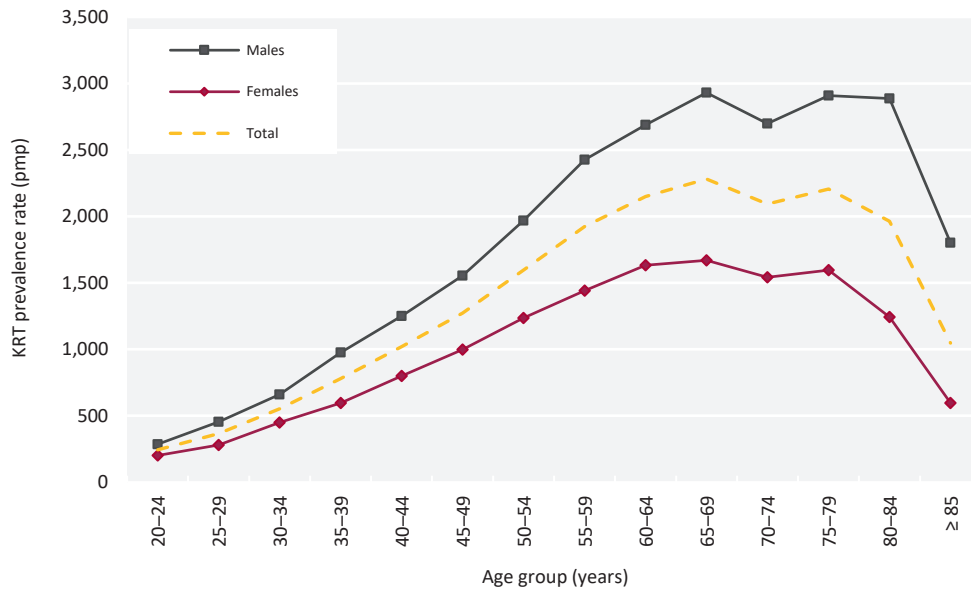


**Figure 3.5** Prevalence rates for adult patients on KRT on 31/12/2021 by age group and sex

pmp – per million population

For each modality, the percentage of patients of each year of age is shown in figure 3.6.

Adults on KRT in the UK at the end of 2021
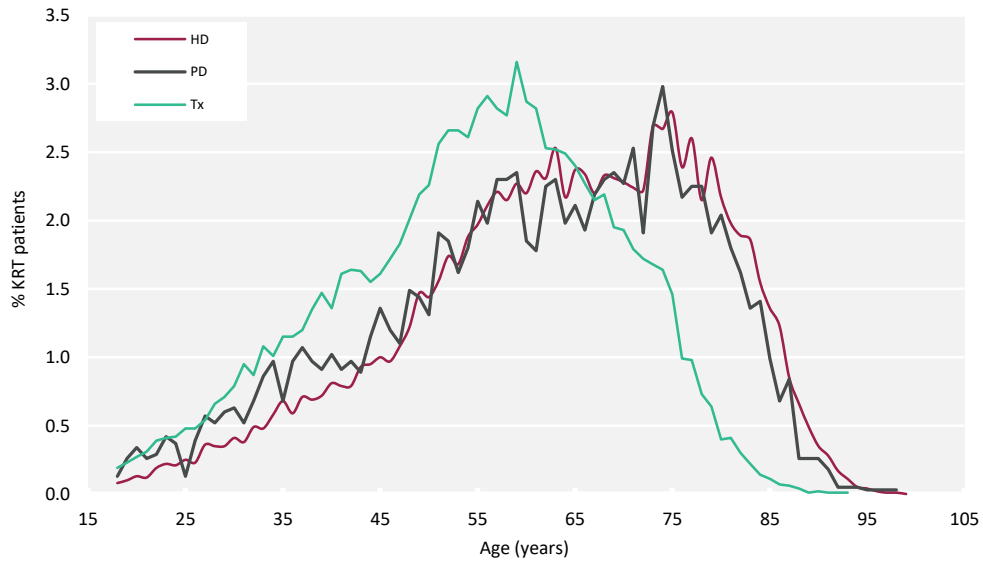
**Figure 3.6** Age profile of adult patients prevalent to KRT on 31/12/2021 by KRT modality
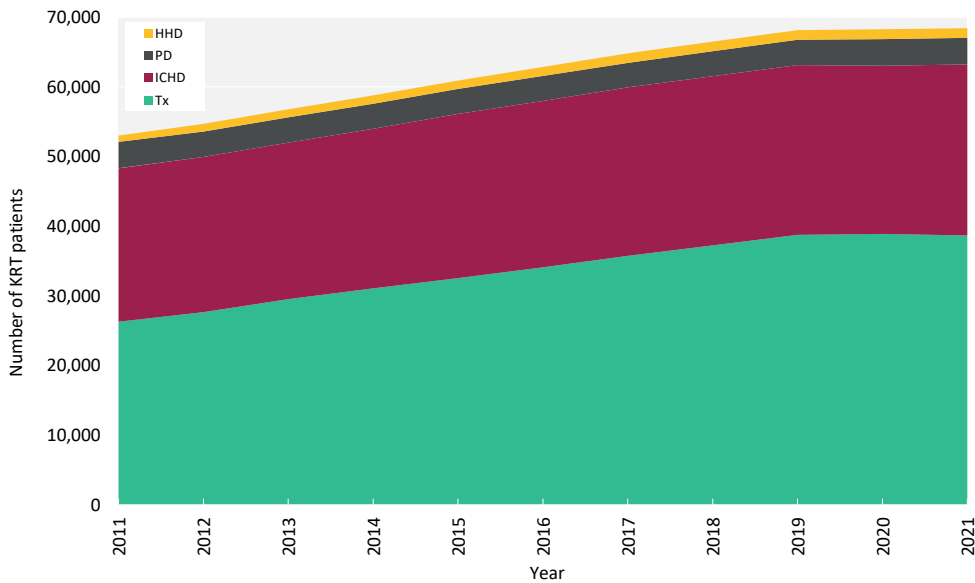


**Figure 3.7** Growth in numbers of prevalent adult KRT patients by treatment modality between 2011 and 2021

**Table 3.4** Change in adult KRT prevalence rates by modality between 2017 and 2021

| Year | Prevalence (pmp) | | | | | % growth in prevalence | | | | |
|------|------|------|----------|-----|-------|------|------|----------|------|------|
| | HD | PD | Dialysis | Tx | KRT | HD | PD | Dialysis | Tx | KRT |
| 2017 | 490 | 67 | 558 | 687 | 1,244 | | | | | |
| 2018 | 490 | 68 | 558 | 711 | 1,269 | -0.1 | 1.2 | 0.1 | 3.5 | 2.0 |
| 2019 | 490 | 69 | 559 | 736 | 1,295 | 0.0 | 1.3 | 0.2 | 3.5 | 2.0 |
| 2020 | 477 | 71 | 548 | 726 | 1,274 | -2.6 | 2.6 | -2.0 | -1.4 | -1.6 |
| 2021 | 487 | 72 | 559 | 727 | 1,286 | 2.1 | 1.5 | 2.0 | 0.2 | 1.0 |
| **Average annual growth 2017-2021** | | | | | | **-0.1** | **1.6** | **0.1** | **1.5** | **0.8** |

pmp – per million population

Adults on KRT in the UK at the end of 2021

Prevalence

In table 3.5, for each PRD category, the proportion of patients on each treatment modality is shown for patients with PRD data and these total 100% of patients with data. The proportion of patients with no PRD data is shown on a separate line. Table 3.6 shows changes in PRDs between 2012 and 2021, in particular the increase in diabetes.

**Table 3.5** Treatment modality of adult patients prevalent to KRT on 31/12/2021 by primary renal disease (PRD)

| PRD | N on KRT | % KRT population | Modality (%) | | |
|---|---|---|---|---|---|
| | | | HD | PD | Tx |
| Diabetes | 12,328 | 18.7 | 55.9 | 7.0 | 37.0 |
| Glomerulonephritis | 13,006 | 19.7 | 26.8 | 4.5 | 68.7 |
| Hypertension | 4,191 | 6.3 | 44.9 | 6.3 | 48.8 |
| Polycystic kidney disease | 6,940 | 10.5 | 21.5 | 4.3 | 74.2 |
| Pyelonephritis | 6,192 | 9.4 | 27.7 | 3.5 | 68.8 |
| Renal vascular disease | 1,718 | 2.6 | 63.9 | 8.6 | 27.5 |
| Other | 12,159 | 18.4 | 35.2 | 4.5 | 60.4 |
| Uncertain aetiology | 9,554 | 14.5 | 38.1 | 6.4 | 55.5 |
| **Total (with data)** | **66,088** | **100.0** | **37.1** | **5.3** | **57.6** |
| Missing | 2,332 | 3.4 | 61.0 | 13.1 | 25.9 |

**Table 3.6** Change in primary renal disease (PRD) of adult patients prevalent to KRT between 2012 and 2021

| PRD | Year | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
| Diabetes | 16.3 | 16.6 | 16.8 | 17.2 | 17.4 | 17.8 | 18.1 | 18.4 | 18.6 | 18.7 |
| Glomerulonephritis | 19.5 | 19.6 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.6 | 19.7 |
| Hypertension | 6.3 | 6.3 | 6.3 | 6.3 | 6.2 | 6.3 | 6.2 | 6.4 | 6.4 | 6.3 |
| Polycystic kidney disease | 10.0 | 10.2 | 10.2 | 10.3 | 10.3 | 10.3 | 10.4 | 10.4 | 10.5 | 10.5 |
| Pyelonephritis | 11.6 | 11.4 | 11.1 | 10.7 | 10.6 | 10.3 | 10.0 | 9.7 | 9.6 | 9.4 |
| Renal vascular disease | 3.4 | 3.2 | 3.1 | 3.0 | 3.0 | 3.0 | 2.9 | 2.8 | 2.7 | 2.6 |
| Other | 16.4 | 16.7 | 17.1 | 17.3 | 17.6 | 17.9 | 18.2 | 18.2 | 18.3 | 18.4 |
| Uncertain aetiology | 16.6 | 16.1 | 15.9 | 15.6 | 15.4 | 15.0 | 14.7 | 14.5 | 14.5 | 14.5 |
| Missing | 0.6 | 0.7 | 0.7 | 0.7 | 0.8 | 1.1 | 1.2 | 1.6 | 2.2 | 3.4 |

The percentages in each PRD category add up to 100% in each year; the percentages with missing PRD data are shown separately

The treatment modality distribution for prevalent adult KRT patients was further divided by treatment location for HD patients – hospital unit, satellite unit or home – and for PD patients by type of PD – automated PD (APD) and continuous ambulatory PD (CAPD).
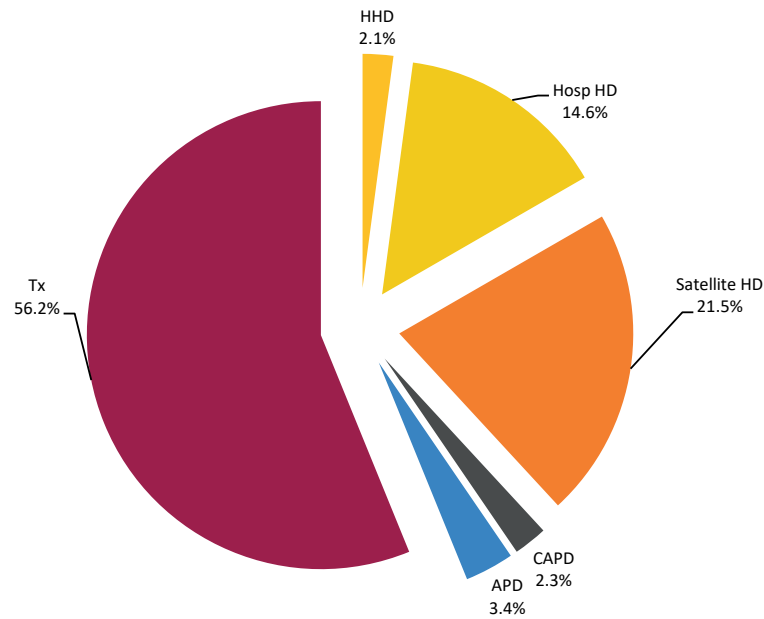
**Figure 3.8** Detailed treatment modality of adult patients prevalent to KRT on 31/12/2021

No Scottish centres were included because data on satellite HD were not available
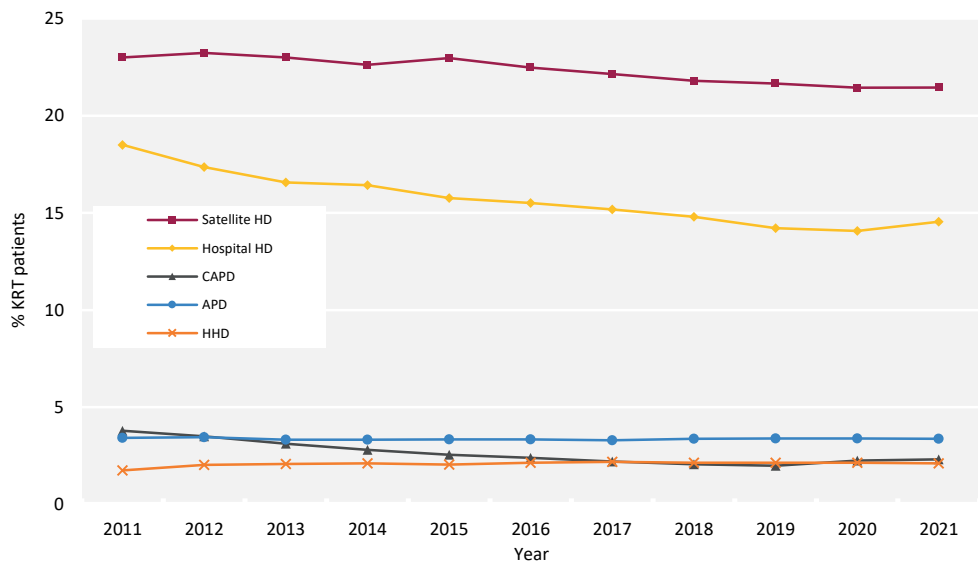APD – automated PD; CAPD – continuous ambulatory PD



**Figure 3.9** Detailed dialysis modality changes in prevalent adult KRT patients between 2011 and 2021

No Scottish centres were included because data on satellite HD were not available
The denominator includes patients with a Tx
APD – automated PD; CAPD – continuous ambulatory PD

Adults on KRT in the UK at the end of 2021

**Table 3.7** Adult patients prevalent to dialysis on 31/12/2021 by detailed dialysis modality and centre

| Centre | N on dialysis | % Tx wait-listed <65 yrs | % Tx wait-listed ≥65 yrs | % on HD | | | | % on PD | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | All HD | HHD | Hospital | Satellite | All PD | CAPD | APD |
| ENGLAND | | | | | | | | | | |
| Bham | 1,694 | 34.2 | 5.1 | 83.7 | 4.0 | 28.6 | 51.0 | 16.4 | 3.0 | 13.4 |
| Bradfd | 319 | 34.3 | 5.8 | 88.4 | 2.2 | 73.7 | 12.5 | 11.6 | 7.8 | 3.8 |
| Brightn | 523 | 34.5 | 5.9 | 86.8 | 5.7 | 38.2 | 42.8 | 13.2 | 8.4 | 4.8 |
| Bristol | 571 | 31.6 | 4.7 | 86.5 | 3.2 | 15.1 | 68.3 | 13.5 | 8.1 | 5.4 |
| Camb | 408 | 26.0 | 1.6 | 92.9 | 5.9 | 34.6 | 52.5 | 7.1 | 4.9 | 2.2 |
| Carlis | 147 | 31.2 | 5.7 | 79.6 | 2.0 | 46.9 | 30.6 | 20.4 | 4.8 | 15.7 |
| Carsh | 1,047 | 27.2 | 4.3 | 87.2 | 2.7 | 20.7 | 63.8 | 12.8 | 3.3 | 9.5 |
| Colchr | 145 | 6.1 | 3.1 | 100.0 | 0.0 | 69.0 | 31.0 | 0.0 | 0.0 | 0.0 |
| Covnt | 473 | 38.7 | 6.4 | 82.9 | 4.7 | 78.2 | 0.0 | 17.1 | 17.1 | 0.0 |
| Derby | 383 | 32.2 | 4.7 | 82.8 | 14.4 | 60.1 | 8.4 | 17.2 | 11.5 | 5.7 |
| Donc | 193 | 25.0 | 6.7 | 93.3 | 2.6 | 53.4 | 37.3 | 6.7 | 2.6 | 4.2 |
| Dorset | 341 | 31.8 | 10.4 | 93.3 | 4.1 | 23.8 | 65.4 | 6.7 | 2.4 | 4.1 |
| Dudley | 270 | 29.8 | 5.1 | 85.2 | 3.7 | 35.6 | 45.9 | 14.8 | 9.6 | 5.2 |
| EssexMS | 543 | 33.8 | 2.6 | 82.9 | 3.9 | 72.4 | 6.6 | 17.1 | 2.6 | 12.3 |
| Exeter | | | | | | | | | | |
| Glouc | 262 | 34.0 | 8.0 | 86.3 | 0.0 | 73.7 | 12.6 | 13.7 | 0.8 | 13.0 |
| Hull | 425 | 22.3 | 5.5 | 87.8 | 2.8 | 42.8 | 42.1 | 12.2 | 7.1 | 5.2 |
| Ipswi | 175 | 17.7 | 2.7 | 81.1 | 1.1 | 74.3 | 5.7 | 18.9 | 10.3 | 7.4 |
| Kent | 548 | 29.1 | 6.8 | 86.9 | 3.3 | 29.2 | 54.4 | 13.1 | 11.0 | 2.2 |
| L Barts | 1,377 | 36.1 | 5.5 | 81.3 | 1.8 | 32.5 | 47.0 | 18.7 | 9.2 | 9.6 |
| L Guys | 841 | 36.4 | 7.5 | 91.7 | 4.9 | 14.0 | 72.8 | 8.3 | 1.8 | 6.5 |
| L Kings | 804 | 25.9 | 5.4 | 87.8 | 4.2 | 15.1 | 68.5 | 12.2 | 5.0 | 7.2 |
| L Rfree | 918 | 34.4 | 9.4 | 81.2 | 1.1 | 2.9 | 77.1 | 18.9 | 8.8 | 10.0 |
| L St.G | 380 | 41.9 | 8.8 | 86.1 | 1.3 | 28.2 | 56.6 | 14.0 | 2.4 | 11.6 |
| L West | 1,542 | 49.5 | 15.5 | 86.1 | 2.3 | 14.6 | 69.2 | 13.9 | 10.6 | 3.3 |
| Leeds | 649 | 35.2 | 12.3 | 91.8 | 2.5 | 14.6 | 74.7 | 8.2 | 2.0 | 6.2 |
| Leic | 1,188 | 36.2 | 10.0 | 88.4 | 4.0 | 15.2 | 69.2 | 11.6 | 2.0 | 9.6 |
| Liv Ain | 216 | 20.4 | 7.4 | 89.8 | 6.0 | 13.4 | 70.4 | 10.2 | 1.9 | 8.3 |
| Liv Roy | 446 | 23.3 | 9.5 | 92.8 | 9.9 | 28.3 | 54.7 | 7.2 | 3.8 | 3.4 |
| M RI | 692 | 35.5 | 13.9 | 86.0 | 12.1 | 12.9 | 61.0 | 14.0 | 6.4 | 7.7 |
| Middlbr | 386 | 35.1 | 4.7 | 94.8 | 4.4 | 28.8 | 61.7 | 5.2 | 5.2 | 0.0 |
| Newc | 427 | 33.0 | 8.1 | 86.4 | 4.2 | 57.4 | 24.8 | 13.6 | 1.4 | 12.2 |
| Norwch | 339 | 14.6 | . | 86.7 | 3.0 | 47.2 | 36.6 | 13.3 | 9.7 | 3.5 |
| Nottm | 494 | 35.7 | 5.7 | 79.2 | 5.7 | 31.0 | 42.5 | 20.9 | 5.5 | 15.4 |
| Oxford | 548 | 41.8 | 11.8 | 88.0 | 3.5 | 31.4 | 53.1 | 12.0 | 4.0 | 8.0 |
| Plymth | 199 | 31.5 | 5.6 | 82.9 | 0.0 | 77.9 | 5.0 | 17.1 | 6.0 | 11.1 |
| Ports | 824 | 30.5 | 9.4 | 89.1 | 10.3 | 18.7 | 60.1 | 10.9 | 3.8 | 7.2 |
| Prestn | 598 | 35.8 | 11.4 | 90.8 | 7.0 | 17.7 | 66.1 | 9.2 | 2.3 | 6.9 |
| Redng | 363 | 37.7 | 5.3 | 86.2 | 2.5 | 32.2 | 51.5 | 13.8 | 11.3 | 2.5 |
| Salford | 527 | 41.1 | 21.6 | 84.1 | 5.9 | 20.1 | 58.1 | 15.9 | 7.4 | 8.5 |
| Sheff | 692 | 29.1 | 6.2 | 88.2 | 8.1 | 44.5 | 35.6 | 11.9 | 3.8 | 8.1 |
| Shrew | 271 | 29.2 | 5.3 | 81.2 | 13.7 | 39.5 | 28.0 | 18.8 | 1.5 | 17.0 |
| Stevng | 604 | 32.5 | 7.9 | 94.0 | 6.5 | 50.5 | 37.1 | 6.0 | 2.8 | 3.2 |
| Stoke | 413 | 31.4 | 4.8 | 74.1 | 9.9 | 42.1 | 22.0 | 25.9 | 3.2 | 18.2 |
| Sund | 262 | 31.0 | 7.5 | 85.9 | 3.8 | 48.5 | 33.6 | 14.1 | 1.5 | 12.6 |
| Truro | 211 | 31.3 | 6.1 | 89.6 | 2.4 | 49.3 | 37.9 | 10.4 | 4.3 | 6.2 |
| Wirral | 218 | 31.0 | 12.7 | 90.8 | 2.8 | 40.8 | 47.3 | 9.2 | 0.9 | 8.3 |
| Wolve | 448 | 28.9 | 4.7 | 85.7 | 8.5 | 70.3 | 6.9 | 14.3 | 2.0 | 11.2 |
| York | 234 | 37.1 | 7.3 | 88.5 | 7.3 | 30.8 | 50.4 | 11.5 | 2.1 | 9.4 |

**Table 3.7** Continued

| Centre | N on dialysis | % Tx wait-listed <65 yrs | % Tx wait-listed ≥65 yrs | % on HD | | | | % on PD | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | All HD | HHD | Hospital | Satellite | All PD | CAPD | APD |
| N IRELAND[1] | | | | | | | | | | |
| Antrim | 135 | 20.0 | 5.7 | 86.7 | 1.5 | 85.2 | 0.0 | 13.3 | 3.7 | 8.2 |
| Belfast | 167 | 25.9 | 6.1 | 83.8 | 4.8 | 79.0 | 0.0 | 16.2 | 0.6 | 15.6 |
| Newry | 102 | 24.3 | 7.7 | 87.3 | 2.9 | 84.3 | 0.0 | 12.8 | 2.0 | 8.8 |
| Ulster | 102 | 30.4 | . | 97.1 | 0.0 | 97.1 | 0.0 | 2.9 | 0.0 | 2.0 |
| West NI | 114 | 34.1 | 4.3 | 94.7 | 2.6 | 92.1 | 0.0 | 5.3 | 1.8 | 3.5 |
| SCOTLAND[2] | | | | | | | | | | |
| Abrdn | 211 | 29.8 | 8.5 | 90.5 | 1.0 | 89.6 | 0.0 | 9.5 | 7.6 | 1.9 |
| Airdrie | 224 | 46.0 | 13.0 | 87.1 | 0.0 | 87.1 | 0.0 | 13.0 | 5.4 | 7.6 |
| D&Gall | 62 | 46.2 | 11.1 | 87.1 | 1.6 | 85.5 | 0.0 | 12.9 | 3.2 | 9.7 |
| Dundee | 171 | 30.4 | 4.3 | 90.6 | 3.5 | 87.1 | 0.0 | 9.4 | 1.8 | 7.6 |
| Edinb | 323 | 42.9 | 8.9 | 89.8 | 2.2 | 87.6 | 0.0 | 10.2 | 3.4 | 6.8 |
| Glasgw | 623 | 48.1 | 12.7 | 93.9 | 1.6 | 92.3 | 0.0 | 6.1 | 1.1 | 5.0 |
| Inverns | 106 | 43.5 | 6.7 | 89.6 | 1.9 | 87.7 | 0.0 | 10.4 | 5.7 | 4.7 |
| Klmarnk | 187 | 30.6 | 12.7 | 82.4 | 8.6 | 73.8 | 0.0 | 17.7 | 2.1 | 15.5 |
| Krkcldy | 174 | 31.1 | 5.0 | 96.0 | 1.7 | 94.3 | 0.0 | 4.0 | 1.7 | 2.3 |
| WALES | | | | | | | | | | |
| Bangor | 110 | 32.0 | 3.3 | 88.2 | 19.1 | 50.9 | 18.2 | 11.8 | 5.5 | 6.4 |
| Cardff | 640 | 28.2 | 6.7 | 90.9 | 8.0 | 10.0 | 73.0 | 9.1 | 4.5 | 4.5 |
| Clwyd | 100 | 20.0 | 4.9 | 89.1 | 0.0 | 89.1 | 0.0 | 9.9 | 7.9 | 2.0 |
| Swanse | 494 | 27.3 | 6.8 | 90.1 | 8.1 | 46.8 | 35.2 | 9.9 | 4.5 | 5.5 |
| Wrexm | 119 | 21.1 | 12.9 | 86.6 | 2.5 | 68.9 | 15.1 | 13.5 | 0.8 | 12.6 |
| TOTALS | | | | | | | | | | |
| England | 25,578 | 33.6 | 7.7 | 86.6 | 4.7 | 31.7 | 50.2 | 13.4 | 5.4 | 7.8 |
| N Ireland | 620 | 26.9 | 4.7 | 89.2 | 2.6 | 86.6 | 0.0 | 10.8 | 1.6 | 8.4 |
| Scotland | 2,081 | 41.0 | 9.9 | 90.6 | 2.3 | 88.4 | 0.0 | 9.4 | 3.1 | 6.3 |
| Wales | 1,463 | 27.2 | 6.8 | 90.0 | 7.9 | 35.7 | 46.4 | 10.0 | 4.5 | 5.5 |
| **UK** | **29,742** | **33.7** | **7.7** | **87.1** | **4.6** | **37.0** | **45.5** | **12.9** | **5.1** | **7.6** |

Blank cells – no data returned by the centre

[1]There were no satellite units in Northern Ireland

[2]All HD patients in Scotland were shown as receiving treatment at home or in hospital because no data were available regarding satellite dialysis

APD – automated PD; CAPD – continuous ambulatory PD

Prevalence

The proportion of patients on HHD versus satellite HD is shown in figure 3.10, with the remaining patients on hospital HD.
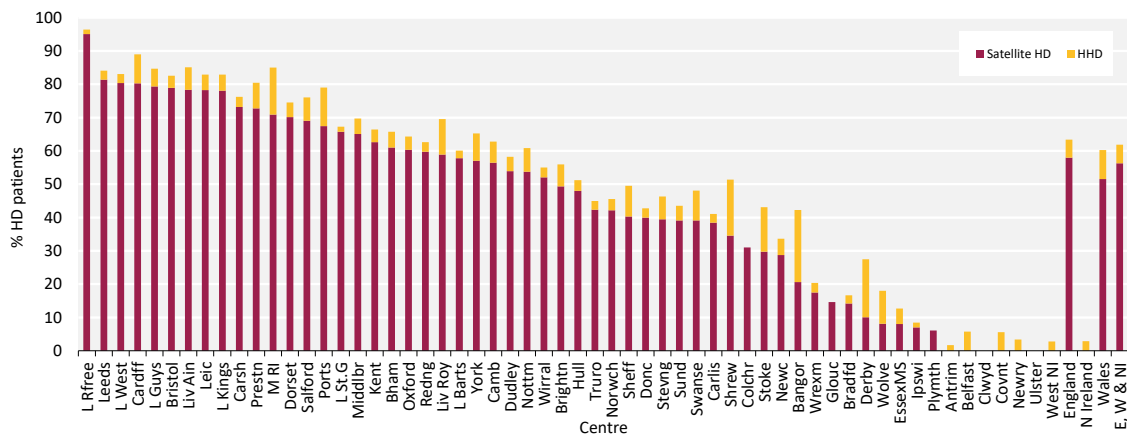


**Figure 3.10** Adult patients prevalent to HD on 31/12/2021 treated with satellite HD or HHD by centre

There were no satellite units in Northern Ireland and Scottish centres were excluded because data on satellite HD were not available

## Dialysis access in prevalent adult dialysis patients

The type of dialysis access used by the prevalent dialysis population is described in chapter 5.

## Survival in adult dialysis patients

Survival was analysed in prevalent patients receiving dialysis on 31/12/2020 and followed-up for one year in 2021. Survival in patients with a Tx is presented in chapter 4.

Survival analyses, where stated, were adjusted to age 60 years to allow comparisons between centres with different age distributions. Centre-specific survival rates were further adjusted for not only age (figure 3.11), but also sex and comorbidities for centres with at least 85% completeness (figure 3.12). UKRR comorbidity data were augmented using diagnostic and procedure codes from Hospital Episode Statistics (HES) in England and Patient Episode Database for Wales (PEDW) in Wales (see appendix A for details). Centres are identifiable from the x-axis by using the number of prevalent dialysis patients by centre in table 3.8.

**Table 3.8** 1 year adjusted survival (age and case-mix) of adult patients prevalent to dialysis on 31/12/2020 by centre

| Centre | Age-adjusted survival | | | | Case-mix adjusted survival1 | | | |
|---|---|---|---|---|---|---|---|---|
| | N on dialysis | 1 yr (%) | Lower 95% limit | Upper 95% limit | N on dialysis | 1 yr (%) | Lower 95% limit | Upper 95% limit |
| D&Gall | 63 | 88.4 | 76.2 | 93.3 | | | | |
| Newry | 82 | 84.4 | 77.8 | 92.7 | 79 | 83.0 | 80.3 | 94.5 |
| Clwyd | 95 | 84.4 | 78.6 | 92.4 | 95 | 87.6 | 81.3 | 94.1 |
| Inverns | 97 | 85.3 | 78.7 | 92.3 | | | | |
| Bangor | 102 | 85.8 | 78.9 | 92.2 | 102 | 89.0 | 81.7 | 94.0 |
| Ulster | 112 | 89.9 | 79.3 | 92.0 | 108 | 88.3 | 81.9 | 93.9 |
| Antrim | 133 | 88.4 | 80.1 | 91.7 | 125 | 87.1 | 82.6 | 93.6 |
| West NI | 138 | 87.0 | 80.2 | 91.6 | 124 | 84.7 | 82.5 | 93.6 |
| Wrexm | 138 | 79.3 | 80.2 | 91.6 | 138 | 82.4 | 82.9 | 93.5 |
| Carlis | 143 | 85.6 | 80.4 | 91.5 | 140 | 87.4 | 83.0 | 93.4 |
| Colchr | 144 | 87.6 | 80.4 | 91.5 | 142 | 90.0 | 83.1 | 93.4 |
| Krkcldy | 147 | 90.8 | 80.5 | 91.5 | | | | |
| Ipswi | 169 | 84.8 | 81.0 | 91.2 | 164 | 87.8 | 83.6 | 93.2 |
| Truro | 171 | 84.3 | 81.0 | 91.2 | 168 | 87.9 | 83.6 | 93.2 |
| Dundee | 172 | 86.9 | 81.0 | 91.2 | | | | |
| Plymth | 173 | 82.6 | 81.1 | 91.2 | 173 | 87.0 | 83.7 | 93.1 |
| Klmarnk | 181 | 88.3 | 81.2 | 91.1 | | | | |
| Liv Ain | 184 | 85.2 | 81.3 | 91.1 | 160 | 87.7 | 83.5 | 93.2 |
| Belfast | 193 | 85.2 | 81.4 | 91.0 | | | | |
| Donc | 195 | 85.7 | 81.4 | 91.0 | 193 | 88.1 | 84.1 | 92.9 |
| Abrdn | 207 | 86.9 | 81.6 | 90.9 | | | | |
| Wirral | 208 | 82.6 | 81.6 | 90.9 | 207 | 86.5 | 84.3 | 92.8 |
| York | 221 | 90.0 | 81.8 | 90.8 | 221 | 91.7 | 84.5 | 92.7 |
| Airdrie | 221 | 85.2 | 81.8 | 90.8 | | | | |
| Glouc | 235 | 86.1 | 82.0 | 90.7 | 233 | 88.8 | 84.6 | 92.7 |
| Dudley | 244 | 88.5 | 82.1 | 90.6 | 244 | 90.5 | 84.8 | 92.6 |
| Shrew | 248 | 89.4 | 82.1 | 90.6 | 248 | 91.6 | 84.8 | 92.6 |
| Sund | 252 | 87.7 | 82.2 | 90.6 | 251 | 91.1 | 84.8 | 92.6 |
| Bradfd | 299 | 86.6 | 82.6 | 90.3 | 297 | 89.1 | 85.2 | 92.3 |
| Edinb | 318 | 89.1 | 82.8 | 90.2 | | | | |
| Norwch | 336 | 86.6 | 82.9 | 90.1 | 331 | 87.8 | 85.5 | 92.2 |
| Redng | 344 | 87.0 | 82.9 | 90.1 | 344 | 90.0 | 85.6 | 92.2 |
| Middlbr | 347 | 85.4 | 83.0 | 90.1 | 347 | 88.4 | 85.6 | 92.1 |
| Dorset | 349 | 89.2 | 83.0 | 90.1 | 349 | 90.8 | 85.6 | 92.1 |
| Derby | 352 | 89.2 | 83.0 | 90.1 | 352 | 91.2 | 85.6 | 92.1 |
| Camb | 361 | 86.7 | 83.1 | 90.0 | 361 | 88.3 | 85.7 | 92.1 |
| Stoke | 365 | 85.8 | 83.1 | 90.0 | 364 | 88.3 | 85.7 | 92.1 |
| L St.G | 366 | 89.4 | 83.1 | 90.0 | 359 | 91.7 | 85.7 | 92.1 |
| Newc | 383 | 87.5 | 83.2 | 90.0 | 383 | 90.4 | 85.8 | 92.0 |
| Hull | 389 | 87.9 | 83.2 | 89.9 | 389 | 89.8 | 85.8 | 92.0 |
| Wolve | 396 | 85.8 | 83.2 | 89.9 | 395 | 88.7 | 85.8 | 92.0 |
| Liv Roy | 436 | 86.7 | 83.4 | 89.8 | 406 | 89.2 | 85.9 | 92.0 |
| Covnt | 437 | 86.6 | 83.4 | 89.8 | 433 | 88.1 | 86.0 | 91.9 |
| Nottm | 455 | 87.5 | 83.5 | 89.7 | 454 | 90.2 | 86.1 | 91.8 |
| Kent | 468 | 84.1 | 83.6 | 89.7 | 468 | 86.3 | 86.2 | 91.8 |
| Swanse | 472 | 87.8 | 83.6 | 89.7 | 472 | 90.5 | 86.2 | 91.8 |
| Brightn | 486 | 84.5 | 83.6 | 89.7 | 476 | 86.7 | 86.2 | 91.8 |
| Bristol | 516 | 85.4 | 83.7 | 89.6 | 510 | 88.5 | 86.3 | 91.7 |
| EssexMS | 517 | 87.6 | 83.8 | 89.6 | 515 | 89.7 | 86.3 | 91.7 |
| Oxford | 517 | 83.6 | 83.8 | 89.6 | 511 | 87.2 | 86.3 | 91.7 |
| Salford | 539 | 81.4 | 83.8 | 89.5 | 539 | 86.2 | 86.4 | 91.6 |
| Prestn | 559 | 84.0 | 83.9 | 89.5 | 540 | 87.9 | 86.4 | 91.6 |
| Glasgw | 567 | 83.5 | 83.9 | 89.5 | | | | |
| Stevng | 576 | 85.4 | 83.9 | 89.5 | 573 | 88.3 | 86.5 | 91.6 |

**Table 3.8** Continued

| Centre | Age-adjusted survival | | | | Case-mix adjusted survival1 | | | |
|---|---|---|---|---|---|---|---|---|
| | N on dialysis | 1 yr (%) | Lower 95% limit | Upper 95% limit | N on dialysis | 1 yr (%) | Lower 95% limit | Upper 95% limit |
| Cardff | 576 | 88.4 | 83.9 | 89.5 | 576 | 90.7 | 86.5 | 91.6 |
| Leeds | 604 | 86.8 | 84.0 | 89.4 | 603 | 89.8 | 86.6 | 91.5 |
| M RI | 627 | 88.3 | 84.1 | 89.4 | 619 | 90.5 | 86.6 | 91.5 |
| Sheff | 655 | 85.7 | 84.1 | 89.3 | 655 | 88.1 | 86.7 | 91.4 |
| L Kings | 702 | 88.4 | 84.2 | 89.2 | 698 | 90.8 | 86.8 | 91.4 |
| Ports | 753 | 87.1 | 84.3 | 89.2 | 744 | 89.6 | 86.9 | 91.3 |
| L Guys | 764 | 87.8 | 84.4 | 89.1 | 764 | 89.5 | 86.9 | 91.3 |
| L Rfree | 858 | 86.1 | 84.5 | 89.0 | 845 | 88.8 | 87.0 | 91.2 |
| Carsh | 949 | 88.4 | 84.6 | 88.9 | 932 | 90.3 | 87.1 | 91.1 |
| Leic | 1,078 | 85.6 | 84.8 | 88.8 | 1,070 | 87.7 | 87.3 | 91.0 |
| L Barts | 1,281 | 90.6 | 85.0 | 88.7 | 1,161 | 91.5 | 87.4 | 90.9 |
| L West | 1,398 | 87.7 | 85.1 | 88.6 | 1,359 | 90.0 | 87.5 | 90.8 |
| Bham | 1,587 | 89.6 | 85.2 | 88.5 | 1,576 | 91.3 | 87.7 | 90.7 |

Centres are ordered by increasing number of patients
[1]Centres excluded if <85% comorbidity data were available – this included Belfast and all Scottish kidney centres
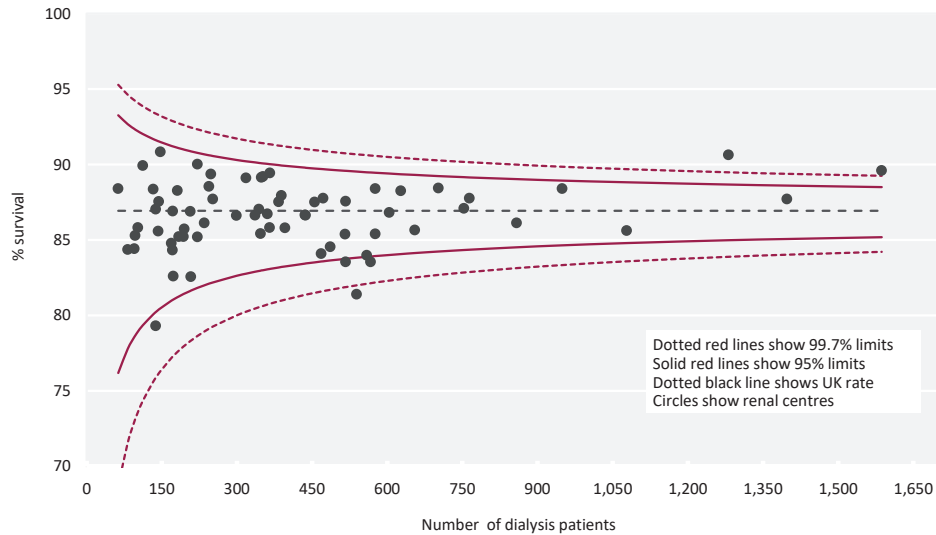


**Figure 3.11** 1 year survival (adjusted to age 60 years) of adult patients prevalent to dialysis on 31/12/2020 by centre
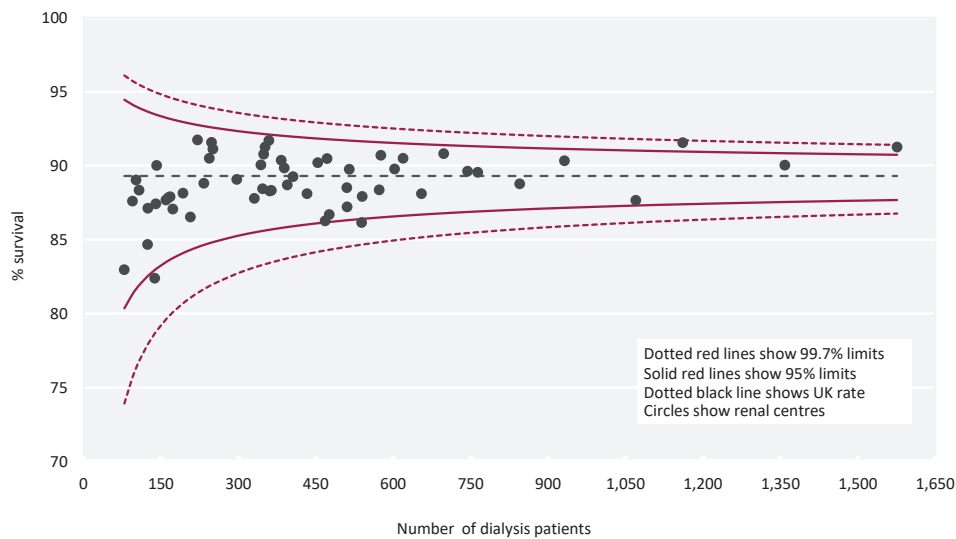
Figure 3.12 1 year survival (adjusted to 60 years, male and median comorbidity score) of adult patients prevalent to dialysis on 31/12/2020 by centre
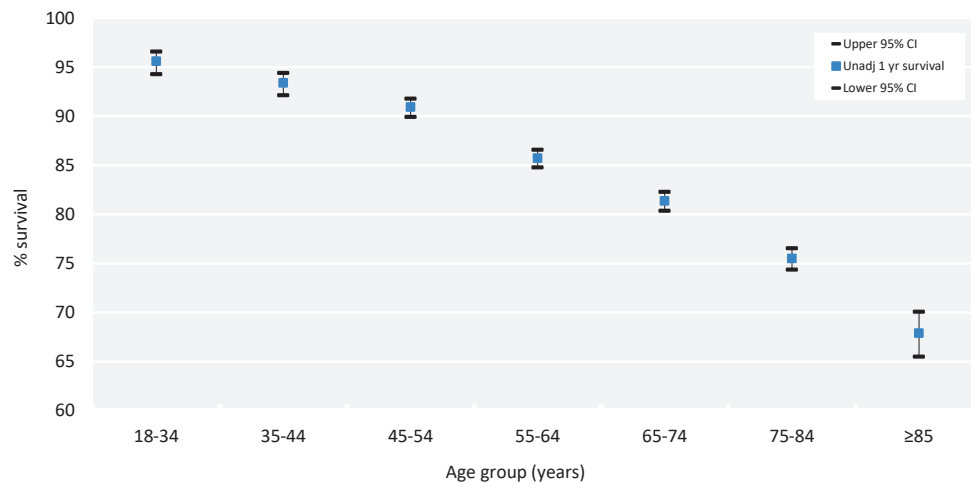


Figure 3.13 1 year survival (unadjusted) of adult patients prevalent to dialysis on 31/12/2020 by age group

CI – confidence interval
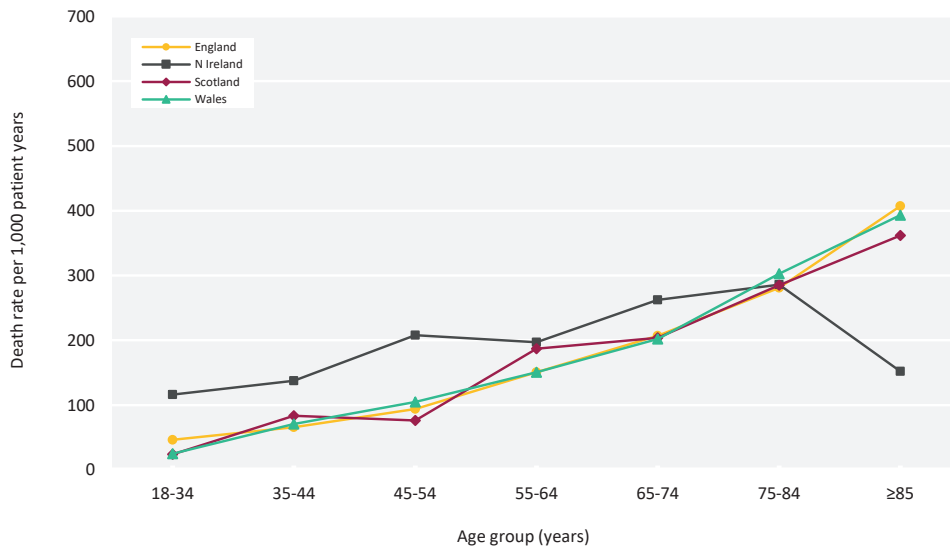
**Figure 3.14** 1 year death rate per 1,000 patient years for adult patients prevalent to dialysis on 31/12/2020 by country and age group

The serial one year death rate in prevalent adult dialysis patients by country is shown in figure 3.15, adjusted to age 60 years.



**Figure 3.15** 1 year survival (adjusted to age 60 years) for prevalent adult dialysis patients by country between 2011 and 2020

CI – confidence interval

The relative risk of death by age group for prevalent KRT patients compared to the general population's risk of death, calculated using Office for National Statistics UK population and deaths data, is shown in table 3.9.

**Table 3.9** Death rate by age group for adult patients prevalent to KRT on 31/12/2020 followed-up for 1 year compared with the general population and with previous analyses in the 1998–2001 cohort

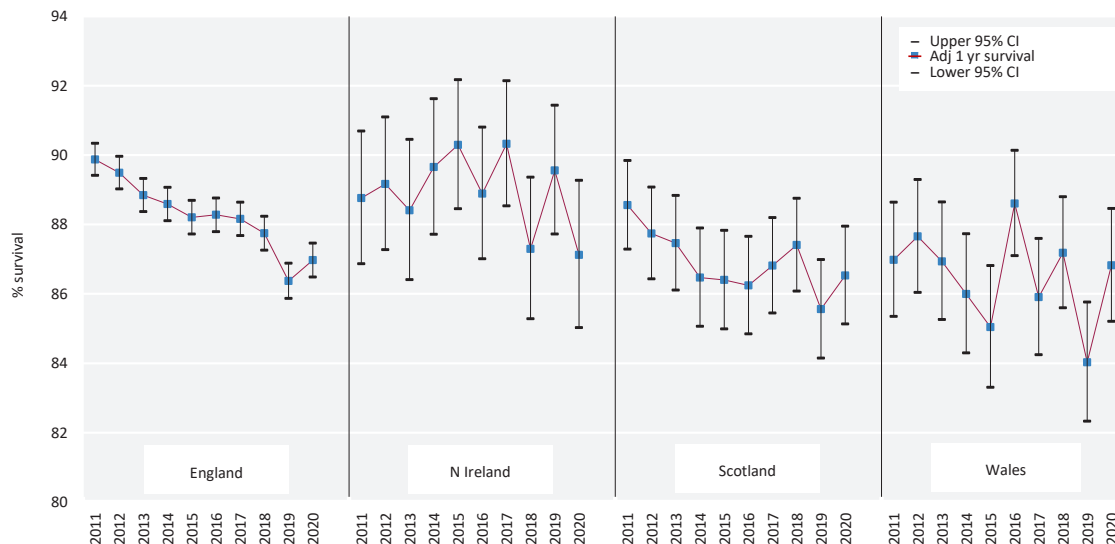| Age group (yrs) | UK population mid-2021 (thousands) | UK deaths in 2021 | Death rate per 1,000 population | Expected number of deaths in UKRR population | UKRR deaths in 2021 | UKRR death rate per 1,000 prevalent KRT patients | Relative risk of death in 2021 | Relative risk of death 1998-2001 cohort |
|---|---|---|---|---|---|---|---|---|
| 20-24 | 4,035 | 1,601 | 0.4 | 0 | 7 | 7 | 18.7 | 41.1 |
| 25-29 | 4,367 | 2,178 | 0.5 | 1 | 20 | 13 | 25.0 | 41.8 |
| 30-34 | 4,655 | 3,255 | 0.7 | 2 | 60 | 24 | 33.7 | 31.2 |
| 35-39 | 4,477 | 4,929 | 1.1 | 4 | 82 | 25 | 22.4 | 26.0 |
| 40-44 | 4,227 | 6,908 | 1.6 | 7 | 130 | 31 | 19.1 | 22.6 |
| 45-49 | 4,215 | 10,693 | 2.5 | 14 | 212 | 40 | 15.7 | 19.0 |
| 50-54 | 4,641 | 17,332 | 3.7 | 27 | 346 | 48 | 12.7 | 12.8 |
| 55-59 | 4,574 | 25,060 | 5.5 | 46 | 591 | 71 | 12.9 | 10.1 |
| 60-64 | 3,956 | 33,867 | 8.6 | 68 | 783 | 99 | 11.5 | 10.4 |
| 65-69 | 3,354 | 44,434 | 13.2 | 92 | 781 | 112 | 8.5 | 7.9 |
| 70-74 | 3,345 | 68,579 | 20.5 | 133 | 1,025 | 158 | 7.7 | 7.2 |
| 75-79 | 2,490 | 86,264 | 34.6 | 159 | 982 | 214 | 6.2 | 5.3 |
| 80-84 | 1,698 | 105,622 | 62.2 | 179 | 839 | 291 | 4.7 | 4.0 |
| ≥85 | 1,649 | 252,104 | 152.9 | 214 | 542 | 388 | 2.0 | 3.0 |
| **Total** | **51,683** | **662,826** | **12.8** | **945** | **6,400** | **100** | **6.8** | **7.7** |

## Cause of death in adult KRT patients

Cause of death was analysed in prevalent patients receiving KRT on 31/12/2020 and followed-up for one year in 2021. The proportion of KRT patients with each cause of death is shown for patients with cause of death data and these total 100% of patients with data. The proportion of patients with no cause of death data is shown on a separate line.

**Table 3.10** Cause of death in adult patients prevalent to KRT on 31/12/2020 followed-up in 2021 by age group

| Cause of death | KRT all ages | | KRT <65 yrs | | KRT ≥65 yrs | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| Cardiac disease | 715 | 17.9 | 283 | 20.7 | 432 | 16.5 |
| Cerebrovascular disease | 97 | 2.4 | 42 | 3.1 | 55 | 2.1 |
| Infection | 1,119 | 28.1 | 416 | 30.4 | 703 | 26.8 |
| Malignancy | 263 | 6.6 | 86 | 6.3 | 177 | 6.8 |
| Treatment withdrawal | 437 | 11.0 | 72 | 5.3 | 365 | 13.9 |
| Other | 1,032 | 25.9 | 351 | 25.6 | 681 | 26.0 |
| Uncertain aetiology | 327 | 8.2 | 120 | 8.8 | 207 | 7.9 |
| **Total (with data)** | **3,990** | **100.0** | **1,370** | **100.0** | **2,620** | **100.0** |
| Missing | 2,411 | 37.7 | 862 | 38.6 | 1,549 | 37.2 |
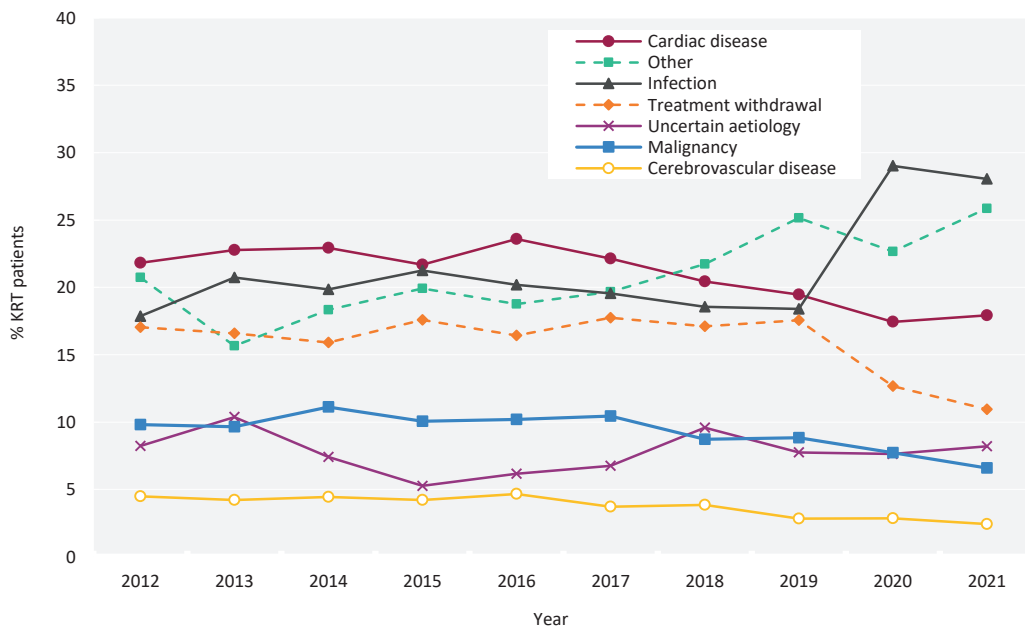
Prevalence

**Figure 3.16** Cause of death between 2012 and 2021 for adult patients prevalent to KRT at the beginning of the year

Adults on KRT in the UK at the end of 2021

*Chapter 4*

# Adults with a kidney transplant (Tx) in the UK at the end of 2021

# Contents

# Introduction

This chapter describes the population of patients with end-stage kidney disease (ESKD) who had a functioning kidney transplant (Tx) in the UK at the end of 2021 (figure 4.1). Patients can receive their first Tx either pre-emptively, i.e. without spending any time on dialysis, or while on dialysis. Donors in both pathways may be either a living kidney donor (LKD) or a deceased kidney donor – receiving a kidney from a donor after brain death (DBD) or a donor after circulatory death (DCD). If a Tx begins to fail a patient may be considered for a second (or subsequent) Tx, which again can come from a living or deceased donor.

Potential Tx recipients who pass rigorous assessments are wait-listed, which can occur before or after they have started dialysis. The majority of kidneys received through wait-listing are from deceased donors. The cohort of patients living with a kidney Tx in a centre not only reflects differences in underlying population case-mix, but also differences in the rates of acceptance onto kidney replacement therapy (KRT). This includes wait-listing rates and live donor programmes, survival of the Tx graft and its recipient, as well as the care and survival of patients on dialysis therapies, as described in other chapters of this report.
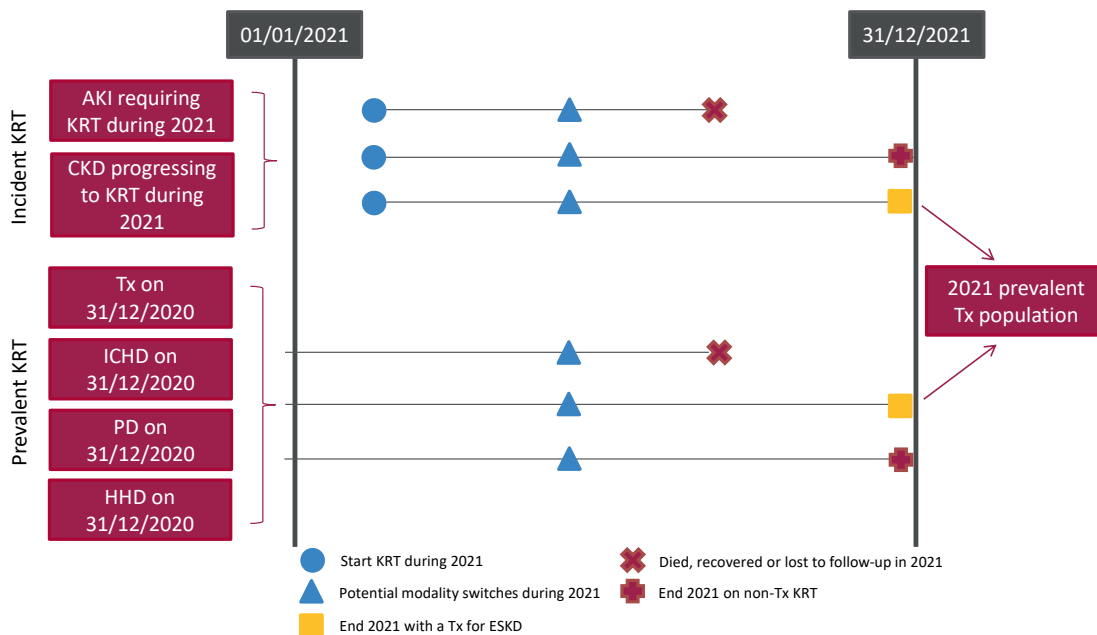


**Figure 4.1** Pathways adult patients could follow to be included in the UK 2021 prevalent Tx population

Note that patients receiving dialysis for acute kidney injury (AKI) are only included in this chapter if they had a timeline or KRT modality code for Tx at the end of 2021 or if they had been on KRT for ≥90 days and were on Tx at the end of 2021

AKI – acute kidney injury; CKD – chronic kidney disease; HHD – home haemodialysis; ICHD – in-centre haemodialysis; PD – peritoneal dialysis; Tx - Transplantation

Patient survival, graft survival and cause of death analyses were undertaken on historic incident and prevalent cohorts to allow sufficient follow-up time.

The analyses were undertaken using UK Renal Registry (UKRR) data combined with NHS Blood and Transplant (NHSBT) data through a data sharing agreement.

This chapter addresses the following key aspects of the care of patients with a functioning kidney Tx for which there are UK Kidney Association guidelines (table 4.1):

- **Complications associated with CKD and kidney transplantation:** these include anaemia, mineral bone disorders and dyslipidaemia.

- **Blood pressure:** attainment of blood pressure targets are reported, although data completeness does not allow differentiation based on levels of proteinuria.

# Rationale for analyses

The analyses begin with a brief summary of the number and type of kidney Tx undertaken in recent years in the UK as well as early graft and patient survival. More detailed results are available at organdonation.nhs.uk/helping-you-to-decide/about-organ-donation/statistics-about-organ-donation. The 2021 prevalent adult Tx population is described, including the number transplanted per million population (pmp).

The UK Kidney Association guidelines (ukkidney.org/health-professionals/guidelines/guidelines-commentaries) provide audit measures relevant to the care of patients with a Tx, and where data permit, their attainment by UK kidney centres in 2021 is reported in this chapter (table 4.1). Audit measures in guidelines that have been archived are not included.

Some audit measures in current guidelines cannot be reported because the completeness of the required data items is too low. Further detail about the completeness of data returned to the UKRR is available through the UKRR data portal (ukkidney.org/audit-research/data-portals). Audit measures that cannot be reported because the required data items were not collected by the UKRR are omitted. The chapter includes analyses carried out by Getting It Right First Time (GIRFT), a national programme designed to reduce unwarranted variation in medical care provided by the NHS by sharing best practice. The GIRFT metrics for kidney services, analysed in collaboration with the UKRR, were based on data derived from multiple sources and included equity of access to services, outcomes and pathways in nephrology, dialysis and transplantation.

**Table 4.1** The UK Kidney Association audit measures relevant to Tx that are reported in this chapter

| The UK Kidney Association guideline | Audit criteria | Related analysis/analyses |
|---|---|---|
| Post-operative care in the kidney Tx recipient (2017) | Proportion of patients receiving a target blood pressure of 140/90 mmHg or 130/80 mmHg in the presence of proteinuria – protein:creatinine ratio >100 mg/mmol or albumin:creatinine ratio >70 mg/mmol | Table 4.8, figures 4.13–4.14 (proteinuria was not adequately collected) |
| | Proportion of patients achieving dyslipidaemia targets | Table 4.8 |
| | Incidence of hyperparathyroidism | Table 4.8 |
| | Prevalence of anaemia | Table 4.8, figures 4.11–4.12 |
| Anaemia (2020) | Treatment guidelines for anaemia in kidney Tx patients should be similar to those for CKD patients not on dialysis | Table 4.8, figures 4.11–4.12 |

In 2021, 23 of the 68 adult kidney centres in the UK were Tx centres – 19 in England, two in Scotland and one in each of Northern Ireland and Wales.

For definitions and methods relating to this chapter see appendix A. Centres were excluded from caterpillar plots and cells were blanked in tables where data completeness for a biochemical variable was <70% and/or the number of patients reported was <10. The number preceding the centre name in each caterpillar plot indicates the percentage of missing data for that centre.

As Colchester kidney centre did not have any Tx patients they were excluded from some of the analyses, although their dialysis patients were included in the relevant dialysis population denominators. Exeter was unable to submit patient level data for 2021. Aggregate numbers by modality were provided, enabling inclusion in Tables 4.5 and 4.6. Exeter is excluded from all other analyses.

Transplant

# Key findings

- 39,189 adult patients had a kidney Tx for ESKD in the UK on 31/12/2021, which represented 56.4% of the KRT population.

- The median age of kidney Tx patients was 56.5 years and 60.8% were male.

- There was a 15% increase in overall kidney Tx performed in 2021 compared to 2020, with a increase in kidney Tx from LKDs by 36%, DCDs by 24% and a 1% decrease in DBDs. Transplant activity has not yet recovered to pre-pandemic levels.

- The median eGFR for kidney Tx patients 1 year after transplantation was 56.5 mL/min/1.73m$^2$ from LKD, 51.5 mL/min/1.73m$^2$ from DBD and 47.1 mL/min/1.73m$^2$ from DCD.

- 16.3% of kidney Tx patients had eGFR <30 mL/min/1.73m$^2$.

- The median decline in eGFR slope beyond the first year after transplantation was 0.8 mL/min/1.73m$^2$/year.

- There was no cause of death data available for 39.6% of deaths on Tx. For those Tx patients with data, the leading cause of death was infection (37.1%) compared to 32% in 2020 and 18.7% the previous year. The continuing increase is most likely due to COVID related deaths.

# Analyses

## Kidney Tx activity

NHSBT provided the UKRR with summary data on kidney Tx activity (table 4.2). More detailed results are available at organdonation.nhs.uk/helping-you-to-decide/about-organ-donation/statistics-about-organ-donation. The number of patients receiving a pre-emptive Tx is reported by centre in chapter 2.

**Table 4.2** Number of kidney and kidney plus other organ Tx (adult and paediatric) in the UK, 2019–2021 calendar years

| Organ | 2019 | 2020 | 2021 | % change 2020-2021 |
|---|---|---|---|---|
| Kidney DBD[1] | 1,417 | 1,220 | 1,209 | -1 |
| Kidney DCD[2] | 1024 | 683 | 845 | 24 |
| Kidney LKD | 1,042 | 587 | 801 | 36 |
| Kidney and liver[3] | 18 | 5 | 9 | 80 |
| Kidney and heart | 1 | 0 | 2 | |
| Kidney and pancreas[4] | 157 | 97 | 111 | 14 |
| Kidney and pancreas islets[5] | 7 | 4 | 7 | |
| Small bowel (inc kidney) | 4 | 0 | 0 | 50 |
| **Total kidney Tx** | **3,670** | **2,596** | **2,983** | **15** |

[1]Includes en bloc transplants (5 in 2019, 2 in 2020, and 2 in 2021) and double kidney transplants (18 in 2019, 10 in 2020, 10 in 2021)
[2]Includes en bloc transplants (3 in 2019, 2 in 2020, and 5 in 2021) and double kidney transplants (24 in 2019, 9 in 2020, and 18 in 2021)
[3]Includes DCD transplants (45 in 2019, 23 in 2020, and 31 in 2021)
[4]Includes DCD transplants (1 in 2021)
[5]Includes DCD transplants (2 in 2019 and 2 in 2021)
DBD – donor after brain death; DCD – donor after circulatory death; LKD – living kidney donor

Variation in the proportion of patients who received an LKD Tx or were on the Tx waiting list within two years of KRT start, is shown for patients incident to KRT in 2019, adjusted by sex, age and primary renal disease (PRD) (figure 4.2). The analysis for LKD transplantation only is shown separately (figure 4.3).



**Figure 4.2** Percentage of adult patients incident to KRT in 2019 who were waitlisted or received a living kidney donor (LKD) Tx within 2 years of KRT start adjusted by age, sex and primary renal disease by centre

Adults with a kidney Tx in the UK at the end of 2021

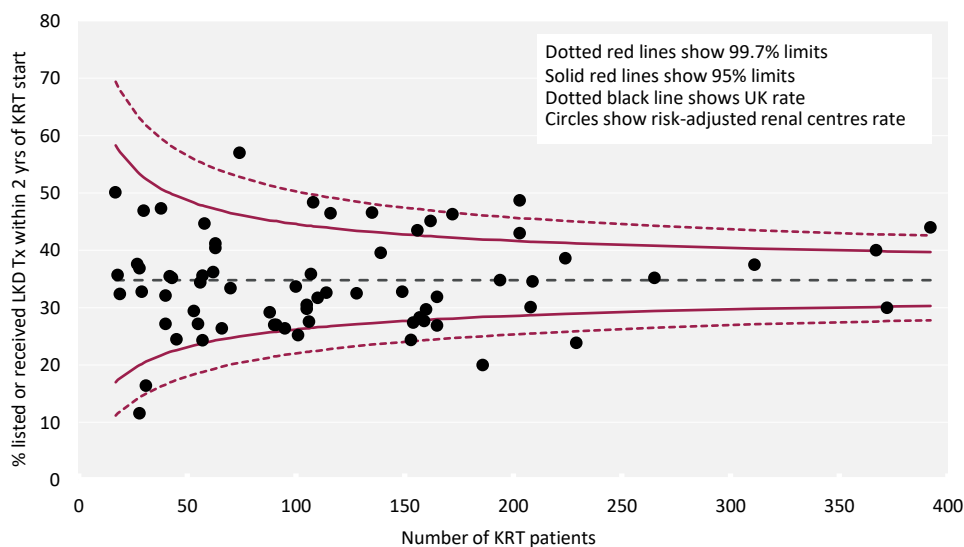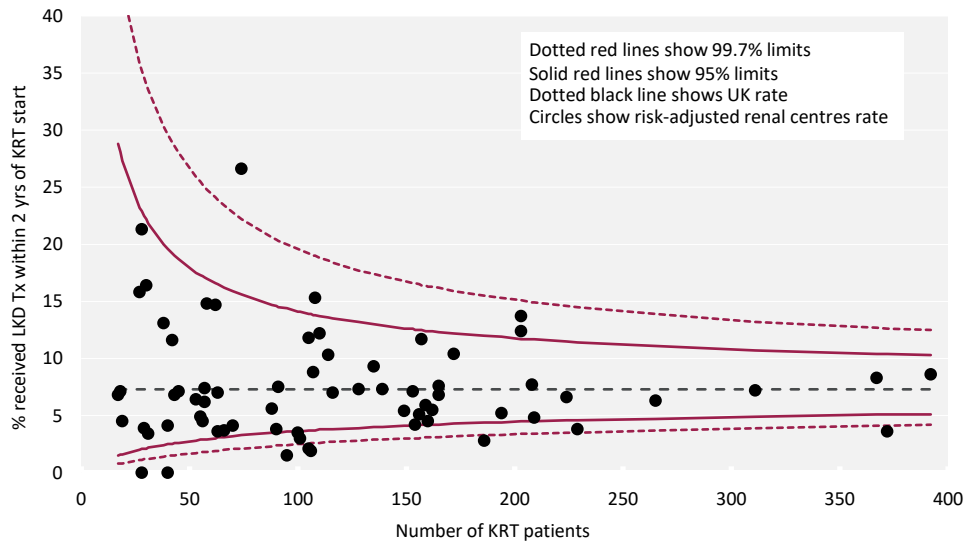**Figure 4.3** Percentage of adult patients incident to KRT in 2019 who received a living kidney donor (LKD) Tx within 2 years of KRT start adjusted by age, sex and primary renal disease by centre

Adults with a kidney Tx in the UK at the end of 2021

# Early kidney Tx outcomes

Kidney Tx recipient outcome data from NHSBT were reported against the Tx centre rather than the referring centre (table 4.3). Note that the survival rates were risk-adjusted and used financial year cohorts as per NHSBT methodology (see table footnote).

**Table 4.3** Risk-adjusted first adult kidney-only Tx, graft and patient survival by Tx type and Tx centre[1] (cohorts detailed in footnote)

| | Deceased donor | | | | Living donor | | | |
| | Adj 1 yr survival (%) | | Adj 5 yr survival (%) | | Adj 1 yr survival (%) | | Adj 5 yr survival (%) | |
| Centre | Graft | Patient | Graft | Patient | Graft | Patient | Graft | Patient |
|---|---|---|---|---|---|---|---|---|
| Bham | 93 | 97 | 85 | 88 | 98 | 100 | 93 | 91 |
| Belfast | 94 | 97 | 86 | 87 | 99 | 99 | 91 | 94 |
| Bristol | 95 | 94 | 89 | 85 | 97 | 100 | 91 | 93 |
| Camb | 96 | 98 | 91 | 87 | 99 | 100 | 95 | 93 |
| Cardff | 95 | 97 | 86 | 85 | 97 | 100 | N/A | N/A |
| Covnt | 94 | 97 | 92 | 89 | 97 | 100 | 92 | 98 |
| Edin | 97 | 99 | 89 | 94 | | | | |
| Glasgw | 96 | 96 | 83 | 85 | 98 | 99 | 92 | 96 |
| L Barts | 94 | 92 | 81 | 87 | 99 | 100 | 90 | 93 |
| L Guy's | 98 | 98 | 85 | 91 | 100 | 100 | 94 | 97 |
| L Rfree | 96 | 97 | 85 | 92 | 100 | 100 | 92 | 98 |
| L St.G | 96 | 97 | 88 | 92 | 99 | 99 | 95 | 97 |
| L West | 95 | 97 | 88 | 85 | 99 | 98 | 91 | 94 |
| Leeds | 95 | 96 | 84 | 88 | 98 | 99 | 90 | 96 |
| Leic | 98 | 97 | 88 | 89 | 99 | 100 | 93 | 94 |
| Liv Roy | 94 | 95 | 84 | 86 | 98 | 99 | 93 | 94 |
| M RI | 96 | 95 | 89 | 85 | 98 | 98 | 92 | 94 |
| Newc | 97 | 96 | 84 | 85 | 99 | 99 | 93 | 91 |
| Nottm | 97 | 95 | 91 | 90 | 98 | 100 | 96 | 92 |
| Oxford | 97 | 96 | 90 | 90 | 98 | 99 | 94 | 96 |
| Plymth | 93 | 91 | N/A | N/A | 97 | 98 | | |
| Ports | | | N/A | N/A | | | | |
| Sheff | 94 | 98 | 90 | 91 | 98 | 100 | 98 | 95 |
| **UK total** | **95** | **97** | **86** | **88** | **98** | **99** | **93** | **94** |

Cohorts for survival rate estimation: 1 year survival: 1/4/2017–31/03/2021; 5 year survival: 1/4/2013–31/3/2017; first grafts only – re-grafts excluded for patient survival estimation

Since the cohorts to estimate 1 and 5 year survival are different, some centres may appear to have 5 year survival better than 1 year survival

Centres have been omitted where less than 75% of the data was reported

[1]Information courtesy of NHSBT: number of Tx, patients and 95% confidence intervals (CI) for each estimate; statistical methodology for computing risk-adjusted estimates can be obtained from NHSBT (https://nhsbtdbe.blob.core.windows.net/umbraco-assets-corp/26790/kidney-annual-report-2020-21.pdf)

Kidney graft function at one year post-Tx was assessed using median eGFR by donor type and by centre using a seven year cohort (patients with graft failure including death with a functioning graft were excluded). The data completeness at one year after Tx (for Tx occurring 2014–2020) was 97.0%.
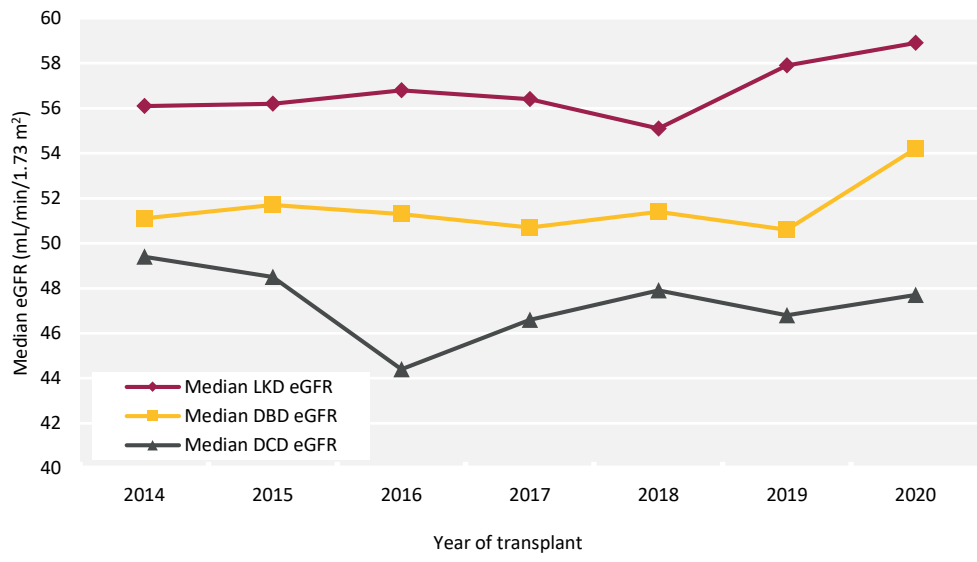
**Figure 4.4** Median estimated glomerular filtration rate (eGFR) for kidney Tx at 1 year by donor type and year of transplantation between 2014 and 2020

DBD – donor after brain death; DCD – donor after circulatory death; LKD – living kidney donor
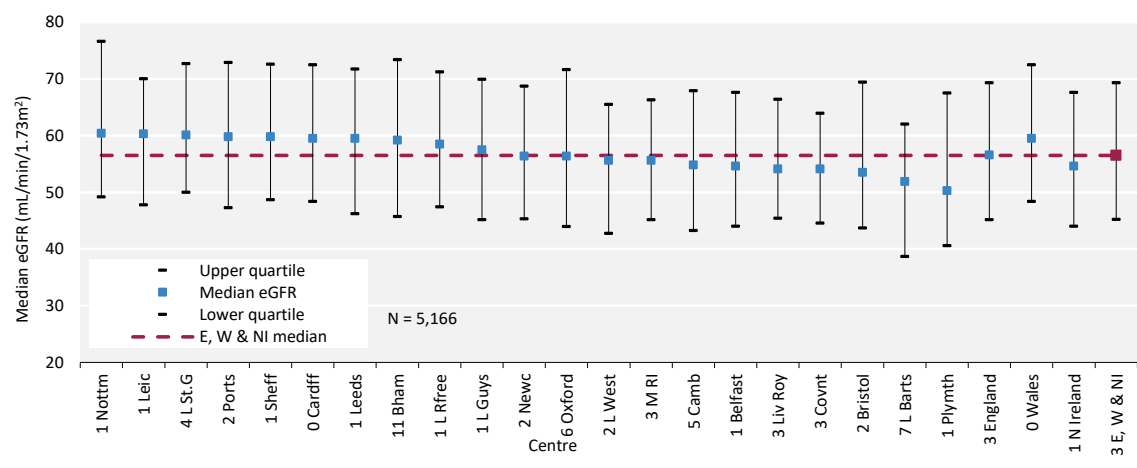
**Figure 4.5** Median estimated glomerular filtration rate (eGFR) at 1 year post-living kidney donor (LKD) Tx by transplanting centre for transplantation that occured between 2014 and 2020

Adults with a kidney Tx in the UK at the end of 2021

**Figure 4.6** Median estimated glomerular filtration rate (eGFR) at 1 year post-donor after brain death (DBD) Tx by transplanting centre for transplantation that occured between 2014 and 2020



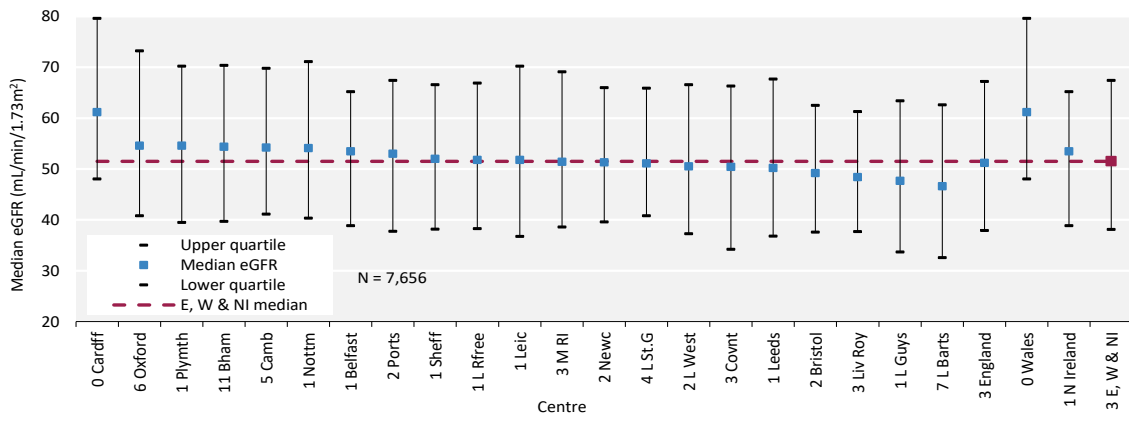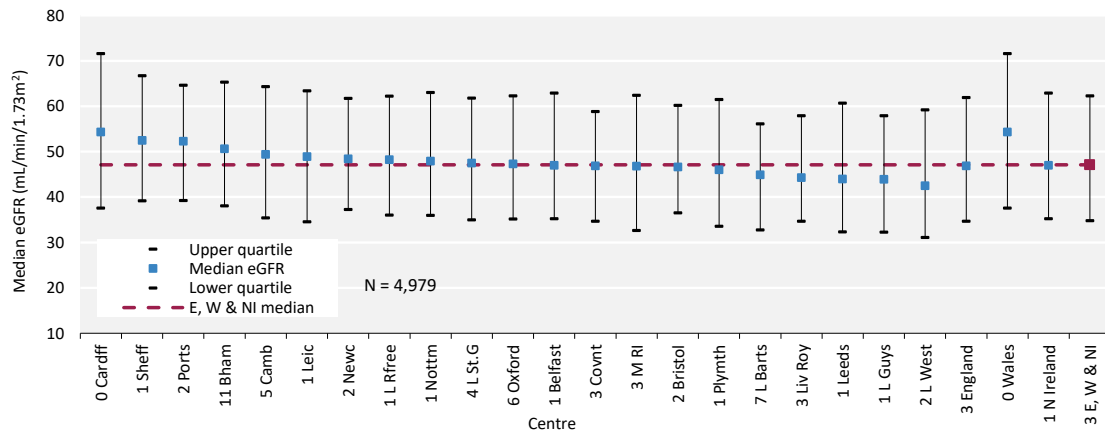**Figure 4.7** Median estimated glomerular filtration rate (eGFR) at 1 year post-donor after circulatory death (DCD) Tx by transplanting centre for transplantation that occured between 2014 and 2020

# Changes to the prevalent adult kidney Tx population

Tx recipients are under the care of a Tx centre around the time of transplantation, but the policy of when to repatriate to the referring centre varies. When data entries for patients were received from more than one centre they were attributed to the referring centre.

**Table 4.4** Percentage completeness of estimated glomerular filtration rate (eGFR), blood pressure, haemoglobin, total cholesterol, adjusted calcium, phosphate and parathyroid hormone (PTH) by centre for adult patients prevalent to Tx on 31/12/2021

| Centre | N with Tx | Data completeness (%) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | eGFR | Blood pressure | Haemoglobin | Total cholesterol | Adjusted calcium | Phosphate | PTH |
| TX CENTRES | | | | | | | | |
| Bham | 1,574 | 90.9 | 75.7 | 90.7 | 81.5 | 89.8 | 89.5 | 1.8 |
| Belfast | 720 | 98.9 | 95.0 | 98.3 | 98.9 | 98.3 | 98.3 | 26.9 |
| Bristol | 902 | 98.9 | 85.5 | 98.2 | 93.1 | 98.5 | 98.0 | 96.7 |
| Camb | 1,167 | 93.2 | 0.0 | 93.3 | 76.4 | 89.1 | 88.4 | 83.0 |
| Cardff | 1,032 | 98.1 | 93.3 | 97.6 | 64.1 | 97.5 | 97.5 | 13.7 |
| Covnt | 629 | 94.6 | 54.4 | 95.6 | 68.2 | 94.9 | 41.2 | 38.6 |
| L Barts | 1,322 | 90.5 | 0.2 | 90.2 | 91.2 | 89.5 | 89.6 | 90.2 |
| L Guys | 1,451 | 94.3 | 0.0 | 93.6 | 41.5 | 91.0 | 91.0 | 24.1 |
| L Rfree | 1,418 | 93.4 | 78.8 | 92.8 | 65.0 | 88.9 | 88.7 | 62.6 |
| L St.G | 467 | 93.8 | 75.2 | 93.8 | 69.4 | 89.3 | 89.3 | 87.6 |
| L West | 1,957 | 93.0 | 0.0 | 92.7 | 33.9 | 91.7 | 92.5 | 27.9 |
| Leeds | 1,108 | 98.1 | 83.8 | 97.8 | 95.8 | 96.5 | 89.3 | 43.3 |
| Leic | 1,432 | 96.0 | 0.6 | 96.3 | 93.2 | 95.0 | 94.4 | 40.1 |
| Liv Roy | 742 | 95.7 | 1.2 | 65.6 | 55.4 | 92.9 | 94.3 | 0.9 |
| M RI | 1,317 | 92.6 | 5.4 | 92.4 | 72.7 | 92.3 | 92.3 | 71.3 |
| Newc | 781 | 93.5 | 58.0 | 93.2 | 38.7 | 93.0 | 92.8 | 60.3 |
| Nottm | 705 | 98.3 | 92.9 | 95.6 | 72.5 | 96.7 | 96.0 | 82.0 |
| Oxford | 1,399 | 84.9 | 0.0 | 85.0 | 42.9 | 82.3 | 82.2 | 40.5 |
| Plymth | 341 | 97.7 | 90.9 | 97.4 | 79.8 | 97.1 | 95.0 | 70.4 |
| Ports | 1,091 | 92.4 | 16.7 | 92.1 | 48.1 | 90.1 | 83.8 | 35.6 |
| Sheff | 782 | 96.9 | 77.4 | 96.4 | 38.0 | 96.2 | 96.2 | 18.3 |
| DIALYSIS CENTRES | | | | | | | | |
| Antrim | 161 | 99.4 | 41.6 | 99.4 | 99.4 | 98.1 | 98.1 | 36.0 |
| Bangor | 103 | 95.2 | 38.8 | 95.2 | 99.0 | 95.2 | 95.2 | 35.0 |
| Bradfd | 406 | 97.8 | 2.0 | 97.3 | 81.0 | 88.7 | 85.0 | 55.7 |
| Brightn | 554 | 98.0 | 22.6 | 98.0 | 79.6 | 96.8 | 96.6 | 61.4 |
| Carlis | 156 | 81.4 | 0.0 | 80.1 | 54.5 | 77.6 | 75.0 | 43.0 |
| Carsh | 840 | 80.2 | 3.7 | 79.5 | 38.7 | 78.8 | 78.7 | 32.4 |
| Clwyd | 102 | 99.0 | 1.0 | 98.0 | 99.0 | 97.1 | 97.1 | 72.6 |
| Derby | 297 | 98.3 | 92.9 | 98.3 | 96.0 | 97.6 | 97.6 | 87.5 |
| Donc | 144 | 100.0 | 75.0 | 99.3 | 58.3 | 97.9 | 96.5 | 11.8 |
| Dorset | 438 | 74.4 | 23.1 | 80.8 | 61.9 | 81.1 | 62.1 | 48.4 |
| Dudley | 127 | 97.6 | 11.0 | 97.6 | 84.3 | 97.6 | 96.9 | 0.0 |
| EssexMS | 338 | 89.4 | 17.8 | 92.3 | 63.3 | 80.5 | 74.9 | 12.1 |
| Exeter | | | | | | | | |
| Glouc | 276 | 95.3 | 54.0 | 94.9 | 49.6 | 92.0 | 88.8 | 26.8 |
| Hull | 484 | 98.4 | 1.2 | 98.6 | 37.2 | 95.3 | 95.0 | 14.9 |
| Ipswi | 240 | 91.3 | 9.2 | 90.4 | 62.9 | 90.0 | 89.6 | 59.6 |
| Kent | 626 | 97.6 | 91.7 | 97.8 | 38.3 | 96.8 | 96.8 | 10.9 |
| L Kings | 506 | 96.8 | 0.2 | 96.6 | 77.9 | 96.8 | 96.6 | 81.6 |
| Liv Ain | 44 | 95.5 | 4.6 | 54.6 | 61.4 | 93.2 | 93.2 | 2.3 |
| Middlbr | 561 | 85.0 | 0.0 | 84.1 | 46.0 | 81.3 | 78.6 | 8.4 |
| Newry | 172 | 97.7 | 66.9 | 96.5 | 98.8 | 94.8 | 95.4 | 98.3 |

**Table 4.4** Continued

| Centre | N with Tx | Data completeness (%) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | eGFR | Blood pressure | Haemoglobin | Total cholesterol | Adjusted calcium | Phosphate | PTH |
| Norwch | 442 | 97.5 | 0.5 | 96.8 | 96.2 | 88.7 | 88.5 | 20.1 |
| Prestn | 757 | 95.9 | 0.0 | 95.9 | 62.4 | 92.1 | 91.3 | 32.2 |
| Redng | 504 | 98.4 | 63.7 | 98.4 | 38.1 | 97.6 | 97.2 | 19.6 |
| Salford | 679 | 98.5 | 0.0 | 98.1 | 97.4 | 97.9 | 97.8 | 0.2 |
| Shrew | 163 | 82.8 | 26.4 | 82.8 | 67.5 | 71.8 | 71.8 | 14.1 |
| Stevng | 391 | 97.4 | 79.0 | 95.9 | 40.2 | 92.8 | 91.8 | 50.9 |
| Stoke | 424 | 97.2 | 0.0 | 97.6 | 98.4 | 96.9 | 96.9 | 72.6 |
| Sund | 280 | 96.8 | 0.0 | 96.4 | 52.9 | 96.8 | 96.4 | 60.7 |
| Swanse | 342 | 99.4 | 95.6 | 99.1 | 63.5 | 98.8 | 98.8 | 74.9 |
| Truro | 247 | 98.4 | 0.0 | 98.0 | 59.1 | 96.8 | 96.8 | 58.7 |
| Ulster | 100 | 95.0 | 93.0 | 95.0 | 100.0 | 95.0 | 95.0 | 13.0 |
| West NI | 219 | 98.2 | 60.7 | 96.4 | 100.0 | 96.8 | 96.8 | 93.6 |
| Wirral | 187 | 94.1 | 1.6 | 67.9 | 75.4 | 79.7 | 87.2 | 8.0 |
| Wolve | 237 | 94.5 | 62.0 | 91.1 | 87.3 | 93.7 | 46.0 | 59.1 |
| Wrexm | 175 | 97.1 | 76.6 | 97.1 | 98.3 | 96.6 | 96.6 | 97.7 |
| York | 338 | 98.2 | 66.3 | 97.9 | 68.3 | 95.6 | 94.4 | 19.8 |
| TOTALS | | | | | | | | |
| England | 31,271 | 93.6 | 30.5 | 92.4 | 64.8 | 91.5 | 89.0 | 43.6 |
| N Ireland | 1,372 | 98.4 | 79.6 | 97.7 | 99.2 | 97.4 | 97.5 | 46.6 |
| Wales | 1,754 | 98.1 | 83.5 | 97.7 | 71.4 | 97.5 | 97.5 | 38.7 |
| **E, W & NI** | **34,397** | **94.0** | **35.1** | **92.9** | **66.5** | **92.0** | **89.8** | **43.5** |

Blank cells – no data returned by the centre

Patients who had been on Tx for <3 months were excluded from this analysis, including N with Tx

Exeter was unable to submit patient level data for 2021

For the 67 adult kidney centres, the number of prevalent patients with a Tx was calculated as both a proportion of the prevalent patients on KRT and as a proportion of the estimated centre catchment population (calculated as detailed in appendix A).

Transplant

**Table 4.5** Number of prevalent adult Tx patients and proportion of adult KRT patients with a Tx by year and by centre; number of Tx patients as a proportion of the catchment population

| Centre | N with Tx | | | | | % with Tx | | | | | Estimated catchment population (millions) | 2021 crude rate (pmp) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2017 | 2018 | 2019 | 2020 | 2021 | 2017 | 2018 | 2019 | 2020 | 2021 | | |
| TX CENTRES | | | | | | | | | | | | |
| Belfast | 641 | 673 | 692 | 721 | 744 | 76.0 | 76.7 | 78.6 | 81.0 | 81.7 | 0.53 | 1,393 |
| Bham | 1,517 | 1,575 | 1,630 | 1,603 | 1,615 | 47.8 | 48.5 | 49.2 | 49.2 | 48.8 | 2.05 | 786 |
| Bristol | 907 | 925 | 939 | 928 | 926 | 61.6 | 62.9 | 63.2 | 62.9 | 61.9 | 1.22 | 758 |
| Camb | 978 | 1,019 | 1,109 | 1,181 | 1,221 | 73.2 | 73.5 | 76.2 | 78.3 | 75.0 | 0.94 | 1,303 |
| Cardff | 1,044 | 1,073 | 1,083 | 1,066 | 1,060 | 62.0 | 62.4 | 62.6 | 63.5 | 62.4 | 1.16 | 916 |
| Covnt | 567 | 579 | 620 | 636 | 646 | 58.7 | 60.4 | 57.6 | 57.7 | 57.7 | 0.80 | 812 |
| Edinb | 482 | 522 | 546 | 565 | 603 | 58.4 | 60.6 | 61.7 | 63.6 | 65.1 | 0.84 | 717 |
| Glasgw | 1,136 | 1,156 | 1,216 | 1,240 | 1,242 | 64.1 | 63.8 | 65.6 | 67.1 | 66.6 | 1.37 | 904 |
| L Barts | 1,200 | 1,266 | 1,379 | 1,349 | 1,373 | 48.0 | 48.7 | 51.9 | 50.2 | 49.9 | 1.59 | 863 |
| L Guys | 1,416 | 1,458 | 1,550 | 1,512 | 1,481 | 65.4 | 65.4 | 66.8 | 65.3 | 63.8 | 1.01 | 1,472 |
| L Rfree | 1,346 | 1,374 | 1,426 | 1,426 | 1,462 | 61.4 | 61.5 | 60.8 | 61.0 | 61.4 | 1.33 | 1,101 |
| L St.G | 487 | 494 | 501 | 478 | 486 | 58.1 | 59.2 | 58.8 | 56.1 | 56.1 | 0.67 | 731 |
| L West | 1,894 | 1,975 | 2,042 | 2,025 | 2,014 | 54.5 | 55.5 | 56.6 | 57.4 | 56.6 | 1.96 | 1,025 |
| Leeds | 999 | 1,054 | 1,082 | 1,117 | 1,135 | 61.7 | 62.6 | 62.7 | 63.8 | 63.6 | 1.37 | 827 |
| Leic | 1,290 | 1,363 | 1,442 | 1,494 | 1,452 | 54.7 | 55.6 | 55.9 | 57.0 | 55.0 | 2.09 | 696 |
| Liv Roy | 792 | 815 | 814 | 769 | 761 | 63.2 | 64.1 | 64.7 | 63.7 | 63.1 | 0.81 | 937 |
| M RI | 1,407 | 1,422 | 1,400 | 1,326 | 1,385 | 68.6 | 68.8 | 68.4 | 66.8 | 66.7 | 1.33 | 1,038 |
| Newc | 710 | 732 | 765 | 781 | 799 | 63.6 | 63.5 | 65.3 | 65.3 | 65.2 | 0.95 | 838 |
| Nottm | 727 | 743 | 751 | 734 | 726 | 61.4 | 62.1 | 61.7 | 60.7 | 59.5 | 0.93 | 781 |
| Oxford | 1,346 | 1,407 | 1,435 | 1,456 | 1,455 | 71.6 | 72.4 | 72.7 | 72.2 | 72.6 | 1.45 | 1,006 |
| Plymth | 341 | 362 | 360 | 359 | 349 | 63.0 | 67.0 | 67.3 | 66.2 | 63.7 | 0.40 | 869 |
| Ports | 1,053 | 1,070 | 1,133 | 1,108 | 1,117 | 60.3 | 60.7 | 60.2 | 58.4 | 57.6 | 1.75 | 638 |
| Sheff | 787 | 821 | 835 | 804 | 804 | 54.6 | 55.4 | 56.1 | 54.0 | 53.7 | 1.13 | 709 |
| DIALYSIS CENTRES | | | | | | | | | | | | |
| Abrdn | 311 | 328 | 343 | 349 | 367 | 55.2 | 57.3 | 61.5 | 61.8 | 63.5 | 0.50 | 733 |
| Airdrie | 257 | 274 | 296 | 292 | 280 | 55.2 | 56.2 | 56.5 | 56.5 | 55.6 | 0.46 | 610 |
| Antrim | 120 | 131 | 145 | 161 | 161 | 47.1 | 47.8 | 50.9 | 56.1 | 54.4 | 0.25 | 655 |
| Bangor | 94 | 100 | 106 | 107 | 107 | 48.2 | 49.3 | 52.7 | 49.5 | 49.3 | 0.16 | 653 |
| Bradfd | 376 | 392 | 412 | 416 | 416 | 55.8 | 57.0 | 56.3 | 57.5 | 56.6 | 0.49 | 847 |
| Brightn | 487 | 510 | 545 | 556 | 569 | 48.1 | 48.3 | 51.2 | 51.6 | 52.1 | 1.08 | 528 |
| Carlis | 156 | 162 | 155 | 152 | 158 | 55.5 | 55.3 | 51.5 | 51.2 | 51.8 | 0.26 | 619 |
| Carsh | 724 | 766 | 834 | 843 | 860 | 42.7 | 43.7 | 46.8 | 45.6 | 45.1 | 1.63 | 528 |
| Clwyd | 94 | 98 | 104 | 107 | 103 | 52.5 | 51.6 | 50.7 | 52.5 | 50.5 | 0.18 | 569 |
| D&Gall | 76 | 83 | 87 | 89 | 92 | 56.3 | 57.2 | 58.4 | 57.1 | 59.7 | 0.12 | 751 |
| Derby | 234 | 258 | 296 | 300 | 306 | 42.2 | 44.0 | 45.3 | 44.4 | 44.4 | 0.56 | 545 |
| Donc | 117 | 119 | 132 | 140 | 146 | 35.1 | 36.1 | 38.6 | 41.1 | 43.1 | 0.38 | 389 |
| Dorset | 394 | 422 | 436 | 449 | 445 | 54.0 | 55.2 | 56.4 | 56.3 | 56.6 | 0.73 | 610 |
| Dudley | 95 | 106 | 111 | 123 | 128 | 26.0 | 29.4 | 30.3 | 33.1 | 32.2 | 0.34 | 372 |
| Dundee | 232 | 254 | 259 | 253 | 240 | 53.3 | 57.1 | 57.7 | 58.8 | 58.4 | 0.37 | 652 |
| EssexMS | 312 | 331 | 328 | 351 | 352 | 37.6 | 39.2 | 38.5 | 39.7 | 39.3 | 0.99 | 354 |
| Exeter | 514 | 537 | 541 | 535 | 512 | 48.6 | 49.6 | 49.7 | 49.0 | 47.5 | 0.95 | 537 |
| Glouc | 216 | 243 | 269 | 266 | 284 | 42.3 | 46.6 | 50.7 | 51.0 | 52.0 | 0.51 | 557 |
| Hull | 461 | 480 | 498 | 498 | 494 | 52.9 | 54.6 | 55.1 | 54.5 | 53.8 | 0.80 | 617 |
| Inverns | 164 | 169 | 171 | 170 | 172 | 62.6 | 60.6 | 60.6 | 62.7 | 61.9 | 0.22 | 769 |
| Ipswi | 236 | 232 | 240 | 255 | 246 | 54.1 | 54.2 | 56.1 | 59.9 | 58.4 | 0.31 | 787 |
| Kent | 595 | 633 | 649 | 639 | 644 | 54.5 | 56.9 | 57.0 | 55.9 | 54.0 | 1.07 | 602 |
| Klmarnk | 159 | 167 | 182 | 181 | 178 | 47.2 | 49.1 | 50.7 | 49.1 | 48.8 | 0.29 | 609 |
| Krkcldy | 149 | 153 | 143 | 136 | 121 | 49.0 | 51.3 | 48.5 | 46.7 | 41.0 | 0.27 | 442 |
| L Kings | 461 | 480 | 525 | 513 | 530 | 39.9 | 40.6 | 42.1 | 41.0 | 39.7 | 0.93 | 567 |
| Liv Ain | 15 | 20 | 29 | 41 | 48 | 7.1 | 9.2 | 12.8 | 16.9 | 18.2 | 0.43 | 111 |
| Middlbr | 537 | 539 | 558 | 573 | 569 | 59.4 | 58.0 | 58.6 | 60.6 | 59.6 | 0.81 | 705 |

Adults with a kidney Tx in the UK at the end of 2021

**Table 4.5** Continued

| Centre | N with Tx | | | | | % with Tx | | | | | Estimated catchment population (millions) | 2021 crude rate (pmp) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2017 | 2018 | 2019 | 2020 | 2021 | 2017 | 2018 | 2019 | 2020 | 2021 | | |
| Newry | 138 | 152 | 162 | 173 | 179 | 57.3 | 60.3 | 64.0 | 65.5 | 63.7 | 0.24 | 761 |
| Norwch | 422 | 445 | 454 | 461 | 445 | 54.0 | 56.5 | 56.1 | 57.1 | 56.8 | 0.69 | 645 |
| Prestn | 672 | 721 | 745 | 771 | 781 | 52.8 | 54.5 | 55.5 | 56.4 | 56.6 | 1.23 | 633 |
| Redng | 448 | 468 | 483 | 500 | 514 | 56.4 | 57.5 | 56.0 | 57.5 | 58.6 | 0.70 | 736 |
| Salford | 572 | 621 | 687 | 690 | 688 | 51.2 | 52.9 | 55.3 | 54.4 | 56.6 | 1.15 | 597 |
| Shrew | 139 | 146 | 151 | 166 | 171 | 35.9 | 34.0 | 34.6 | 38.9 | 38.7 | 0.41 | 417 |
| Stevng | 366 | 378 | 381 | 380 | 410 | 41.4 | 40.3 | 39.7 | 39.0 | 40.4 | 1.11 | 369 |
| Stoke | 409 | 419 | 439 | 430 | 432 | 50.4 | 52.0 | 54.5 | 52.9 | 51.1 | 0.73 | 590 |
| Sund | 264 | 278 | 280 | 296 | 285 | 48.5 | 49.6 | 49.1 | 53.2 | 52.1 | 0.55 | 521 |
| Swanse | 334 | 346 | 358 | 353 | 359 | 42.3 | 41.9 | 41.2 | 41.5 | 42.1 | 0.76 | 473 |
| Truro | 243 | 249 | 261 | 259 | 250 | 57.2 | 57.0 | 58.0 | 58.2 | 54.2 | 0.36 | 698 |
| Ulster | 67 | 75 | 81 | 102 | 101 | 36.6 | 39.3 | 43.8 | 50.8 | 49.8 | 0.20 | 497 |
| West NI | 188 | 202 | 207 | 223 | 225 | 60.1 | 61.8 | 63.1 | 63.5 | 66.4 | 0.25 | 896 |
| Wirral | 159 | 169 | 183 | 195 | 194 | 40.8 | 42.3 | 44.0 | 47.1 | 47.1 | 0.47 | 413 |
| Wolve | 195 | 204 | 228 | 239 | 243 | 33.5 | 33.5 | 37.1 | 36.5 | 35.2 | 0.55 | 443 |
| Wrexm | 171 | 171 | 175 | 177 | 181 | 52.9 | 54.5 | 56.3 | 54.8 | 60.3 | 0.21 | 870 |
| York | 325 | 340 | 349 | 338 | 347 | 58.4 | 59.8 | 60.0 | 59.1 | 59.7 | 0.49 | 714 |
| TOTALS | | | | | | | | | | | | |
| England | 29,908 | 31,122 | 32,412 | 32,461 | 32,674 | 54.7 | 55.5 | 56.3 | 56.1 | 55.6 | 44.77 | 730 |
| N Ireland | 1,154 | 1,233 | 1,287 | 1,380 | 1,410 | 62.9 | 64.2 | 66.6 | 69.2 | 69.5 | 1.47 | 959 |
| Scotland | 2,966 | 3,106 | 3,243 | 3,275 | 3,295 | 58.2 | 59.3 | 60.6 | 61.4 | 61.3 | 4.45 | 740 |
| Wales | 1,737 | 1,788 | 1,826 | 1,810 | 1,810 | 54.8 | 55.0 | 55.1 | 55.3 | 55.3 | 2.49 | 727 |
| **UK** | **35,765** | **37,249** | **38,768** | **38,926** | **39,189** | **55.2** | **56.0** | **56.8** | **56.9** | **56.4** | **53.19** | **737** |

Country Tx populations were calculated by summing the Tx patients from centres in each country. Estimated country populations were derived from Office for National Statistics figures (see appendix A for details on estimated catchment population by kidney centre)

Exeter was unable to submit 2021 patient level data but provided aggregate numbers of patients on KRT at the end of 2021 by treatment modality

pmp – per million population

# Demographics of prevalent adult kidney Tx patients

The proportion of Tx patients from each ethnic group is shown for patients with ethnicity data – the proportion of centre patients with no ethnicity data is shown separately.

**Table 4.6** Demographics of adult patients prevalent to Tx on 31/12/2021 by centre

| Centre | N on KRT | N with Tx | % with Tx | Median age (yrs) | % male | % White | % South Asian | % Black | % Other | % missing |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | | | | | | TX CENTRES | | | | |
| Belfast | 911 | 744 | 81.7 | 56.6 | 60.5 | 97.7 | 1.9 | 0.3 | 0.1 | 2.7 |
| Bham | 3,309 | 1,615 | 48.8 | 53.5 | 58.0 | 61.1 | 28.8 | 7.2 | 2.8 | 0.8 |
| Bristol | 1,497 | 926 | 61.9 | 56.7 | 59.5 | 89.6 | 3.7 | 4.8 | 2.0 | 0.2 |
| Camb | 1,629 | 1,221 | 75.0 | 55.6 | 62.2 | 89.3 | 6.5 | 2.6 | 1.7 | 0.5 |
| Cardff | 1,700 | 1,060 | 62.4 | 56.3 | 62.9 | 92.2 | 5.2 | 0.9 | 1.8 | 1.0 |
| Covnt | 1,119 | 646 | 57.7 | 55.3 | 61.3 | 78.1 | 17.2 | 4.3 | 0.3 | 0.2 |
| Edinb | 926 | 603 | 65.1 | 57.0 | 64.3 | | | | | 76.1 |
| Glasgw | 1,865 | 1,242 | 66.6 | 56.6 | 58.9 | | | | | 44.5 |
| L Barts | 2,750 | 1,373 | 49.9 | 54.5 | 59.2 | 39.1 | 34.4 | 19.6 | 6.9 | 0.6 |
| L Guys | 2,322 | 1,481 | 63.8 | 54.4 | 60.4 | 65.4 | 10.7 | 19.3 | 4.6 | 1.2 |
| L Rfree | 2,380 | 1,462 | 61.4 | 55.9 | 60.8 | 46.6 | 22.6 | 18.5 | 12.4 | 4.5 |
| L St.G | 866 | 486 | 56.1 | 58.0 | 56.2 | 48.3 | 25.6 | 17.3 | 8.8 | 3.7 |
| L West | 3,556 | 2,014 | 56.6 | 58.4 | 63.0 | 43.1 | 34.4 | 15.1 | 7.4 | 0.1 |
| Leeds | 1,784 | 1,135 | 63.6 | 55.7 | 60.3 | 79.5 | 15.1 | 4.2 | 1.2 | 0.0 |
| Leic | 2,640 | 1,452 | 55.0 | 57.2 | 58.0 | 72.5 | 21.0 | 4.9 | 1.7 | 1.4 |
| Liv Roy | 1,207 | 761 | 63.0 | 56.1 | 62.3 | 92.9 | 2.5 | 2.6 | 2.0 | 0.5 |
| M RI | 2,077 | 1,385 | 66.7 | 55.5 | 59.9 | 76.2 | 14.6 | 7.1 | 2.3 | 0.7 |
| Newc | 1,226 | 799 | 65.2 | 57.4 | 58.6 | 94.0 | 4.5 | 0.8 | 0.8 | 0.1 |
| Nottm | 1,220 | 726 | 59.5 | 55.4 | 59.9 | 85.3 | 6.8 | 5.0 | 3.0 | 0.0 |
| Oxford | 2,003 | 1,455 | 72.6 | 56.3 | 62.3 | 79.9 | 11.6 | 4.1 | 4.3 | 9.6 |
| Plymth | 548 | 349 | 63.7 | 58.7 | 67.1 | 96.6 | 1.2 | 0.3 | 2.0 | 0.0 |
| Ports | 1,941 | 1,117 | 57.5 | 56.9 | 58.1 | 93.9 | 3.8 | 0.7 | 1.7 | 2.5 |
| Sheff | 1,496 | 804 | 53.7 | 55.8 | 63.2 | 89.3 | 6.6 | 1.6 | 2.5 | 1.4 |
| | | | | | | DIALYSIS CENTRES | | | | |
| Abrdn | 578 | 367 | 63.5 | 53.8 | 57.8 | | | | | 58.3 |
| Airdrie | 504 | 280 | 55.6 | 55.6 | 59.3 | 95.8 | 2.3 | 0.4 | 1.5 | 5.7 |
| Antrim | 296 | 161 | 54.4 | 57.5 | 60.9 | 99.4 | 0.0 | 0.6 | 0.0 | 1.2 |
| Bangor | 217 | 107 | 49.3 | 57.5 | 65.4 | 99.1 | 0.0 | 0.0 | 1.0 | 1.9 |
| Bradfd | 735 | 416 | 56.6 | 52.3 | 60.8 | 52.9 | 44.0 | 2.4 | 0.7 | 0.0 |
| Brightn | 1,092 | 569 | 52.1 | 57.0 | 62.2 | 91.3 | 5.5 | 1.1 | 2.1 | 0.9 |
| Carlis | 305 | 158 | 51.8 | 57.8 | 62.7 | 98.1 | 1.9 | 0.0 | 0.0 | 0.0 |
| Carsh | 1,907 | 860 | 45.1 | 58.1 | 62.3 | 70.6 | 16.8 | 8.7 | 3.9 | 0.6 |
| Colchr | 145 | 0 | | | | | | | | |
| Clwyd | 204 | 103 | 50.5 | 58.2 | 61.2 | 97.0 | 2.0 | 1.0 | 0.0 | 1.9 |
| D&Gall | 154 | 92 | 59.7 | 58.5 | 63.0 | 97.2 | 1.4 | 0.0 | 1.4 | 22.8 |
| Derby | 689 | 306 | 44.4 | 58.5 | 62.1 | 82.0 | 12.4 | 2.6 | 2.9 | 0.0 |
| Donc | 339 | 146 | 43.1 | 57.8 | 65.1 | 95.9 | 2.8 | 0.7 | 0.7 | 0.7 |
| Dorset | 786 | 445 | 56.6 | 60.2 | 59.3 | 96.6 | 1.6 | 0.5 | 1.4 | 0.0 |
| Dudley | 398 | 128 | 32.2 | 57.3 | 68.8 | 80.5 | 14.1 | 3.1 | 2.3 | 0.0 |
| Dundee | 411 | 240 | 58.4 | 57.3 | 59.6 | | | | | 58.8 |
| EssexMS | 895 | 352 | 39.3 | 58.0 | 63.1 | 87.1 | 4.9 | 4.0 | 4.0 | 0.6 |
| Exeter | 1,077 | 512 | 47.5 | | | | | | | |
| Glouc | 546 | 284 | 52.0 | 59.4 | 59.5 | 92.9 | 4.2 | 1.1 | 1.8 | 0.4 |
| Hull | 919 | 494 | 53.8 | 55.8 | 64.4 | 96.6 | 1.4 | 0.6 | 1.4 | 0.2 |
| Inverns | 278 | 172 | 61.9 | 55.6 | 57.6 | | | | | 37.8 |
| Ipswi | 421 | 246 | 58.4 | 59.0 | 61.0 | 83.7 | 3.3 | 4.5 | 8.6 | 0.4 |
| Kent | 1,192 | 644 | 54.0 | 57.3 | 59.0 | 91.6 | 3.9 | 1.4 | 3.1 | 0.3 |

Transplant

**Table 4.6** Continued

| Centre | N on KRT | N with Tx | % with Tx | Median age (yrs) | % male | Ethnicity | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | % White | % South Asian | % Black | % Other | % missing |
| Klmarnk | 365 | 178 | 48.8 | 57.1 | 61.2 | | | | | 43.8 |
| Krkcldy | 295 | 121 | 41.0 | 57.9 | 61.2 | | | | | 75.2 |
| L Kings | 1,334 | 530 | 39.7 | 57.3 | 62.3 | 49.3 | 17.4 | 28.7 | 4.5 | 0.2 |
| Liv Ain | 264 | 48 | 18.2 | 52.9 | 62.5 | 91.7 | 0.0 | 2.1 | 6.3 | 0.0 |
| Middlbr | 955 | 569 | 59.6 | 57.7 | 62.4 | 94.9 | 3.3 | 0.7 | 1.1 | 0.0 |
| Newry | 281 | 179 | 63.7 | 56.7 | 59.2 | 98.3 | 0.6 | 0.6 | 0.6 | 1.1 |
| Norwch | 784 | 445 | 56.8 | 58.5 | 60.2 | 97.8 | 1.1 | 0.7 | 0.5 | 0.0 |
| Prestn | 1,379 | 781 | 56.6 | 56.8 | 60.4 | 84.8 | 14.0 | 0.9 | 0.4 | 0.0 |
| Redng | 877 | 514 | 58.6 | 58.5 | 62.7 | 65.7 | 23.6 | 4.9 | 5.8 | 5.3 |
| Salford | 1,215 | 688 | 56.6 | 57.0 | 60.5 | 82.0 | 14.4 | 2.2 | 1.5 | 0.0 |
| Shrew | 442 | 171 | 38.7 | 55.3 | 62.6 | 93.0 | 3.5 | 2.3 | 1.2 | 0.0 |
| Stevng | 1,014 | 410 | 40.4 | 57.2 | 63.7 | 69.0 | 20.2 | 8.3 | 2.4 | 0.0 |
| Stoke | 845 | 432 | 51.1 | 54.3 | 63.4 | 91.5 | 5.4 | 1.4 | 1.7 | 1.6 |
| Sund | 547 | 285 | 52.1 | 57.2 | 60.0 | 95.1 | 3.2 | 0.7 | 1.1 | 0.4 |
| Swanse | 853 | 359 | 42.1 | 57.0 | 61.8 | 96.9 | 2.0 | 0.0 | 1.1 | 0.3 |
| Truro | 461 | 250 | 54.2 | 58.5 | 58.0 | 97.6 | 0.8 | 0.0 | 1.6 | 0.0 |
| Ulster | 203 | 101 | 49.8 | 57.4 | 58.4 | 92.1 | 4.0 | 3.0 | 1.0 | 0.0 |
| West NI | 339 | 225 | 66.4 | 55.5 | 59.6 | 99.1 | 0.5 | 0.5 | 0.0 | 0.4 |
| Wirral | 412 | 194 | 47.1 | 59.0 | 67.0 | 95.9 | 3.1 | 0.5 | 0.5 | 0.0 |
| Wolve | 691 | 243 | 35.2 | 56.0 | 58.4 | 67.5 | 24.7 | 6.6 | 1.2 | 0.0 |
| Wrexm | 300 | 181 | 60.3 | 54.5 | 65.8 | 95.0 | 1.7 | 0.6 | 2.8 | 0.6 |
| York | 581 | 347 | 59.7 | 57.5 | 60.2 | 95.7 | 1.7 | 0.3 | 2.3 | 0.3 |
| TOTALS | | | | | | | | | | |
| England | 58,817 | 32,674 | 55.6 | 56.5 | 60.8 | 75.3 | 14.5 | 6.9 | 3.4 | 1.3 |
| N Ireland | 2,030 | 1,410 | 69.5 | 56.6 | 60.1 | 97.8 | 1.4 | 0.6 | 0.2 | 1.8 |
| Scotland | 5,376 | 3,295 | 61.3 | 56.3 | 60.1 | | | | | 49.7 |
| Wales | 3,274 | 1,810 | 55.3 | 56.4 | 63.0 | 94.1 | 3.7 | 0.6 | 1.6 | 0.9 |
| **UK** | **69,497** | **39,189** | **56.4** | **56.5** | **60.8** | **77.6** | **13.1** | **6.2** | **3.1** | **5.4** |

Blank cells – no data returned by the centre or data completeness <70%

Breakdown by ethnicity is not shown for centres with <70% data completeness, but these centres were included in national averages

Exeter was unable to submit 2021 patient level data but provided aggregate numbers of patients on KRT at the end of 2021 by treatment modality
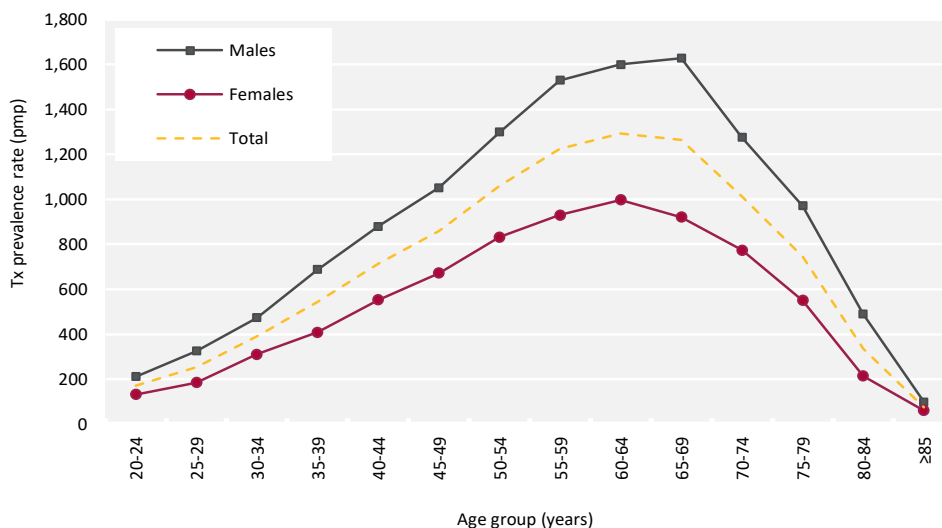
**Figure 4.8** Adult Tx prevalence rate on 31/12/2021 by age group and sex
pmp – per million population

The distribution of primary renal diseases (PRDs) as a cause of ESKD in the incident Tx population is compared to the prevalent Tx population (table 4.7). Comparison to dialysis populations is shown in chapter 3. PRDs were grouped into categories, with the mapping of disease codes into groups explained in more detail in appendix A. The proportion of Tx patients with each PRD is shown for patients with PRD data and these total 100% of patients with data. The proportion of patients with no PRD data is shown on a separate line.

**Table 4.7** Primary renal diseases (PRDs) of adult patients incident to Tx in 2021 and adult patients prevalent to Tx on 31/12/2021

| | Incident Tx | | Prevalent Tx | |
|---|---|---|---|---|
| PRD | N | % | N | % |
| Diabetes | 496 | 18.7 | 4,565 | 12.0 |
| Glomerulonephritis | 631 | 23.7 | 8,934 | 23.5 |
| Hypertension | 168 | 6.3 | 2,047 | 5.4 |
| Polycystic kidney disease | 294 | 11.1 | 5,152 | 13.5 |
| Pyelonephritis | 227 | 8.5 | 4,262 | 11.2 |
| Renal vascular disease | 49 | 1.8 | 472 | 1.2 |
| Other | 473 | 17.8 | 7,339 | 19.3 |
| Uncertain aetiology | 321 | 12.1 | 5,302 | 13.9 |
| **Total (with data)** | **2,659** | **100.0** | **38,073** | **100.0** |
| | | | | |
| Missing | 140 | 5.0 | 604 | 1.6 |

# Graft function and anaemia in prevalent adult kidney Tx patients

Accepting the limitations of interpreting eGFR in the post-Tx population, analyses by centres were divided into the proportion of patients with eGFR greater or less than 30 mL/min/1.73m$^2$ and the proportion of patients achieving an adequate haemoglobin level (defined as a haemoglobin ≥100 g/L).
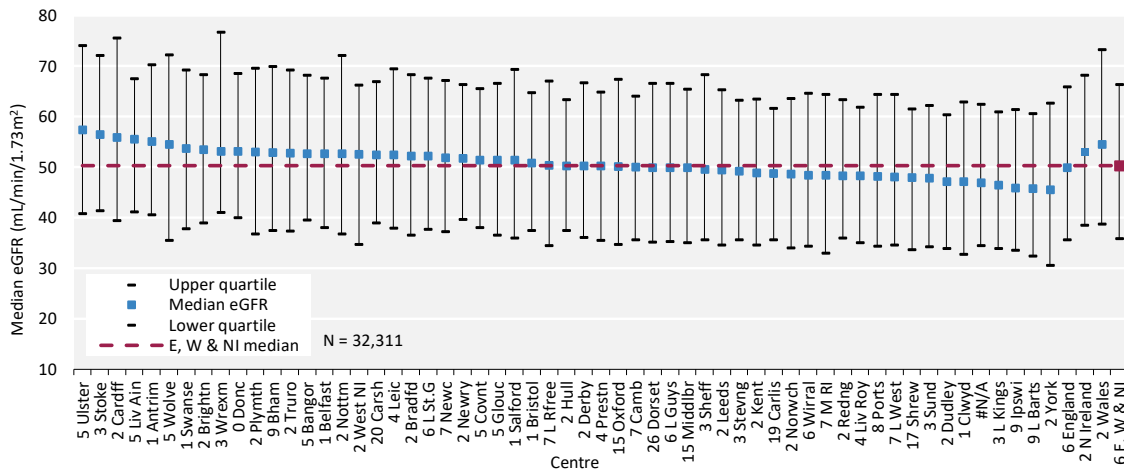


**Figure 4.9** Median estimated glomerular filtration rate (eGFR) in adult patients prevalent to Tx on 31/12/2021 by centre



**Figure 4.10** Percentage of adult patients prevalent to Tx on 31/12/2021 with an estimated glomerular filtration rate (eGFR) <30mL/min/1.73m$^2$ by centre
CI – confidence interval

**Figure 4.11** Percentage of adult patients prevalent to Tx on 31/12/2021 with an estimated glomerular filtration rate (eGFR) ≥30mL/min/1.73m² achieving haemoglobin (Hb) ≥100g/L by centre

CI – confidence interval



**Figure 4.12** Percentage of adult patients prevalent to Tx on 31/12/2021 with an estimated glomerular filtration rate (eGFR) <30mL/min/1.73m² achieving haemoglobin (Hb) ≥100g/L by centre

CI – confidence interval

Transplant

# Blood pressure in prevalent adult kidney Tx patients

Blood pressure data completeness was variable (table 4.4) and only centres with ≥70% data completeness were included in the analysis. It is possible that bias may be introduced if blood pressure readings in particular ranges were more frequently reported. A lack of data on proteinuria did not allow differentiation for the purposes of reporting against the audit measure.
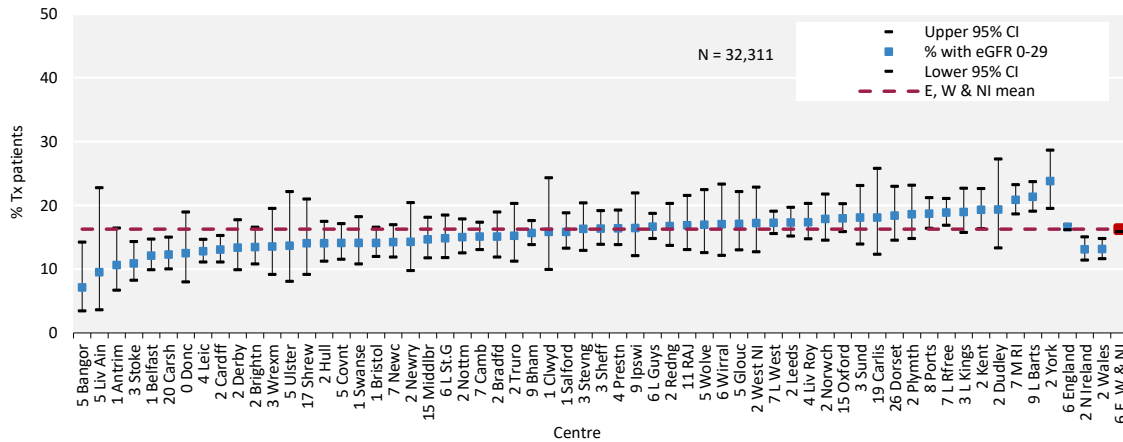


**Figure 4.13** Percentage of adult patients prevalent to Tx on 31/12/2021 with estimated glomerular filtration rate (eGFR) ≥30 mL/min/1.73m² achieving blood pressure of <140/90 mmHg by centre
CI – confidence interval; DBP – diastolic blood pressure; SBP – systolic blood pressure



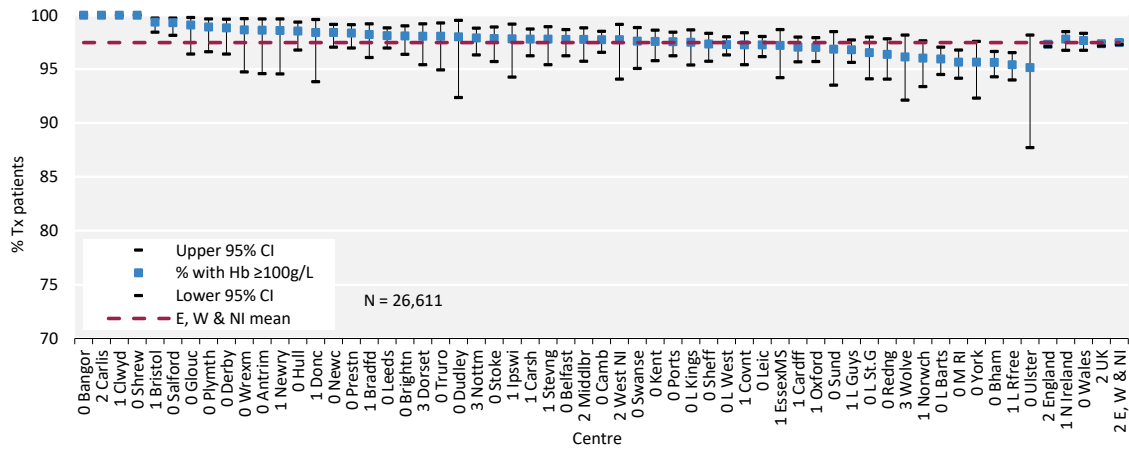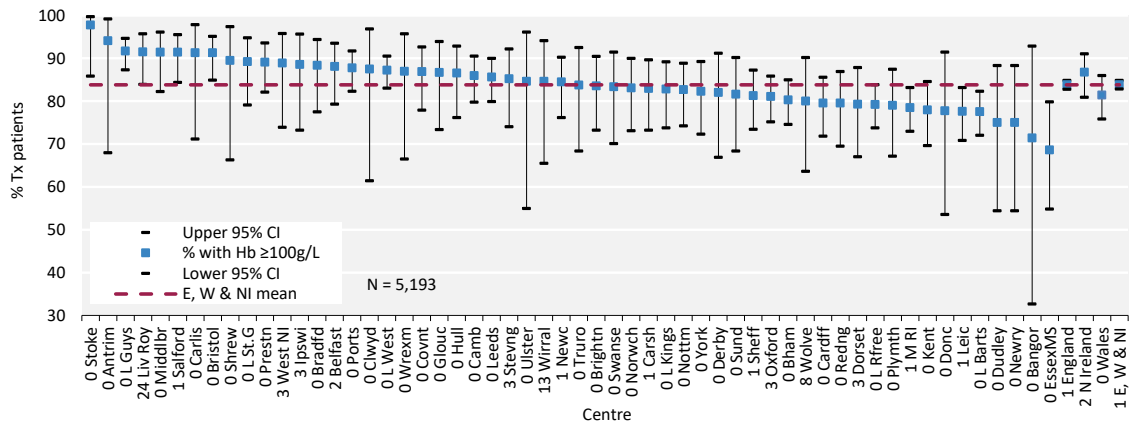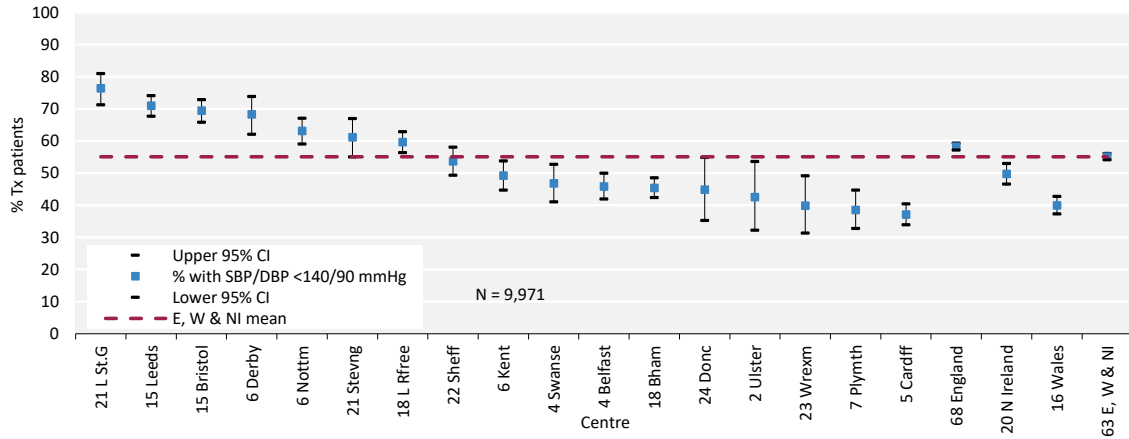**Figure 4.14** Percentage of adult patients prevalent to Tx on 31/12/2021 with estimated glomerular filtration rate (eGFR) <30 mL/min/1.73m² achieving blood pressure of <140/90 mmHg by centre
CI – confidence interval; DBP – diastolic blood pressure; SBP – systolic blood pressure
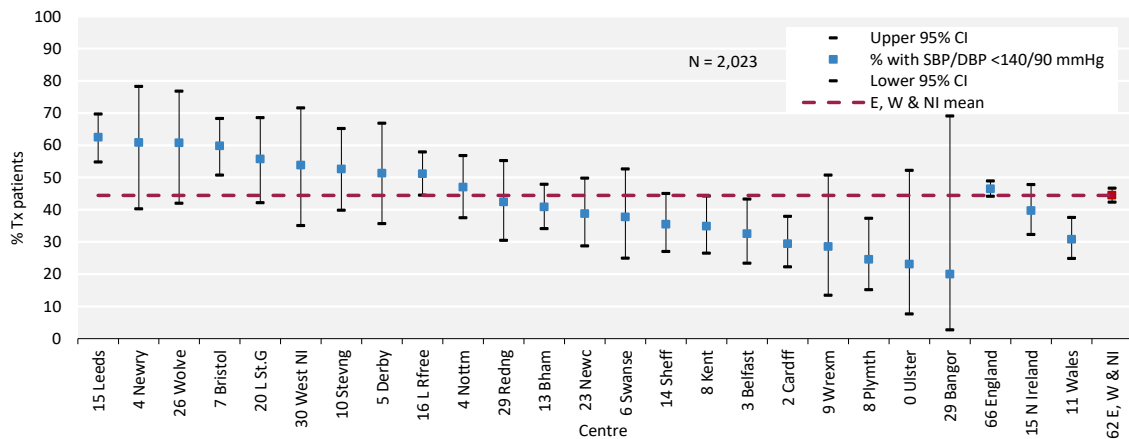
Adults with a kidney Tx in the UK at the end of 2021

# Biochemistry parameters in prevalent adult kidney Tx patients

The attainment of audit standards is shown by stage of Tx kidney function in the prevalent Tx population and by comparing to the prevalent dialysis population.

**Table 4.8** Estimated glomerular filtration rate (eGFR), blood pressure and biochemical parameters in adult patients prevalent to Tx on 31/12/2021 compared with adult patients prevalent to dialysis on 31/12/2021 by CKD stage

| Characteristic | Tx CKD stage (eGFR) | | | | Prevalent dialysis Stage 5D |
| --- | --- | --- | --- | --- | --- |
| | Stage 1-2T (≥60 mL/min/1.73 m²) | Stage 3T (30-59 mL/min/1.73 m²) | Stage 4T (15-29 mL/min/1.73 m²) | Stage 5T (<15 mL/min/1.73 m²) | |
| N | 10,919 | 16,147 | 4,463 | 796 | 22,343 |
| % | 33.8 | 50.0 | 13.8 | 2.5 | |
| **eGFR (mL/min/1.73m²)** | | | | | |
| mean ± SD | 77.0 ± 13.4 | 45.3 ± 8.4 | 23.6 ± 4.2 | 11.5 ± 2.4 | |
| median | 73.9 | 45.5 | 24.1 | 12.0 | |
| **SBP (mmHg)** | | | | | |
| mean ± SD | 136 ± 17 | 138 ± 18 | 142 ± 19 | 147 ± 22 | 137 ± 25 |
| % ≥140 mmHg | 37.4 | 41.8 | 51.0 | 59.3 | 43.6 |
| **DBP (mmHg)** | | | | | |
| mean ± SD | 81 ± 10 | 80 ± 11 | 80 ± 13 | 83 ± 13 | 71 ± 15 |
| % ≥90 mmHg | 18.1 | 18.5 | 19.4 | 24.2 | 10.7 |
| **Total cholesterol (mmol/L)** | | | | | |
| mean ± SD | 4.4 ± 1.0 | 4.5 ± 1.1 | 4.5 ± 1.2 | 4.5 ± 1.3 | 3.9 ± 1.1 |
| % ≥4.0 mmol/L | 65.0 | 66.6 | 65.2 | 62.6 | 40.1 |
| **Haemoglobin (g/L)** | | | | | |
| mean ± SD | 138 ± 16 | 129 ± 17 | 116 ± 16 | 107 ± 16 | 110 ± 14 |
| % <100 g/L | 1.5 | 3.5 | 13.4 | 31.7 | 20.1 |
| **Phosphate (mmol/L)** | | | | | |
| mean ± SD | 1.0 ± 0.2 | 1.0 ± 0.2 | 1.1 ± 0.3 | 1.5 ± 0.4 | 1.7 ± 0.5 |
| % >1.7 mmol/L | 0.2 | 0.3 | 2.3 | 21.1 | 43.5 |
| **Adjusted Ca (mmol/L)** | | | | | |
| mean ± SD | 2.4 ± 0.1 | 2.4 ± 0.1 | 2.4 ± 0.1 | 2.4 ± 0.2 | 2.4 ± 0.2 |
| % >2.5 mmol/L | 26.7 | 27.2 | 20.5 | 15.3 | 16.6 |
| % <2.2 mmol/L | 2.0 | 2.7 | 5.6 | 17.9 | 16.6 |
| **PTH (pmol/L)** | | | | | |
| median | 8.4 | 9.8 | 15.9 | 30.9 | 34.1 |
| % >72 pmol/L | 0.5 | 0.7 | 3.2 | 13.4 | 18.9 |

Ca – adjusted calcium; DBP – diastolic blood pressure; PTH – parathyroid hormone; SBP – systolic blood pressure; SD – standard deviation

Transplant

Differences in the median eGFR slope in Tx patients is reported by patient and Tx graft characteristics. All UK patients aged at least 18 years receiving their first kidney Tx between 01/01/2011 and 31/12/2019 were considered for inclusion. A minimum duration of 18 months graft function was required and three or more creatinine measurements from the second year of graft function onwards were used to plot eGFR slope. If a Tx failed, but there were at least three creatinine measurements between one year post-Tx and graft failure, the patient was included, but no creatinine measurements after the quarter preceding the recorded date of Tx failure were analysed.

**Table 4.9** Differences in median estimated glomerular filtration rate (eGFR) slope between demographic subgroups of adult patients who received their first kidney Tx between 01/01/2011 and 31/12/2019

| Characteristic | N | Median slope | Lower quartile | Upper quartile |
|---|---|---|---|---|
| **Age at Tx (yrs)** | | | | |
| <40 | 4,916 | -1.33 | -4.56 | 0.86 |
| 40-55 | 8,461 | -0.68 | -3.09 | 1.14 |
| >55 | 7,411 | -0.67 | -3.08 | 1.11 |
| | | | | |
| **Ethnicity** | | | | |
| White | 14,634 | -0.70 | -3.11 | 1.08 |
| Asian | 2,882 | -1.22 | -4.07 | 1.02 |
| Black | 1,587 | -1.41 | -4.62 | 0.75 |
| Other | 622 | -0.94 | -3.37 | 0.80 |
| | | | | |
| **Sex** | | | | |
| Male | 12,843 | -0.58 | -3.04 | 1.23 |
| Female | 7,945 | -1.24 | -3.94 | 0.78 |
| | | | | |
| **Diabetes** | | | | |
| No Diabetes | 16,996 | -0.71 | -3.19 | 1.10 |
| Diabetes | 3,483 | -1.37 | -4.27 | 0.85 |
| | | | | |
| **Tx donor** | | | | |
| Deceased | 14,159 | -0.85 | -3.47 | 1.11 |
| Living | 6,629 | -0.76 | -3.20 | 1.01 |
| | | | | |
| **Year of Tx** | | | | |
| 2011 | 1,970 | -0.87 | -2.91 | 0.44 |
| 2012 | 2,178 | -1.02 | -3.04 | 0.36 |
| 2013 | 2,395 | -1.02 | -3.10 | 0.53 |
| 2014 | 2,329 | -0.82 | -2.98 | 0.71 |
| 2015 | 2,314 | -0.69 | -2.90 | 0.99 |
| 2016 | 2,387 | -0.78 | -3.36 | 1.25 |
| 2017 | 2,543 | -0.69 | -3.59 | 1.52 |
| 2018 | 2,463 | -0.47 | -3.92 | 2.48 |
| 2019 | 2,209 | -0.67 | -5.85 | 4.11 |
| | | | | |
| **Status of Tx patients at end of follow-up** | | | | |
| Died | 2,223 | -1.28 | -4.30 | 1.02 |
| Graft failed | 1,825 | -6.09 | -11.77 | -3.10 |
| Re-transplanted | 75 | -3.07 | -6.72 | -1.31 |
| Graft functioning | 16,740 | -0.46 | -2.58 | 1.27 |
| | | | | |
| **Total** | **20,788** | **-0.82** | **-3.39** | **1.07** |

# Survival of adult kidney Tx patients

Survival of incident and prevalent KRT patients is described in detail in chapters 2 and 3, respectively. Survival of incident Tx patients is reported in table 4.3. NHSBT reports the survival of Tx recipients.

## Cause of death in adult kidney Tx patients

Cause of death was analysed in patients prevalent to KRT on 31/12/2020 and followed-up for one year in 2021, with comparisons between Tx and dialysis presented in table 4.10. Work is being undertaken to better understand and code the cause of death in Tx recipients. The proportion of KRT patients with each cause of death is shown for patients with cause of death data and these total 100% of patients with data. The proportion of patients with no cause of death data is shown on a separate line.

**Table 4.10** Cause of death in adult patients prevalent to KRT on 31/12/2020 followed-up in 2021 by modality

| Cause of death | All modalities | | Dialysis | | Tx | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| Cardiac disease | 715 | 17.9 | 613 | 20.7 | 102 | 9.9 |
| Cerebrovascular disease | 97 | 2.4 | 73 | 2.5 | 24 | 2.3 |
| Infection | 1,119 | 28.0 | 735 | 24.9 | 384 | 37.1 |
| Malignancy | 263 | 6.6 | 144 | 4.9 | 119 | 11.5 |
| Treatment withdrawal | 437 | 11.0 | 422 | 14.3 | 15 | 1.5 |
| Other | 1,032 | 25.9 | 747 | 25.3 | 285 | 27.6 |
| Uncertain aetiology | 327 | 8.2 | 222 | 7.5 | 105 | 10.2 |
| **Total (with data)** | **3,990** | **100.0** | **2,956** | **100.0** | **1,034** | **100.0** |
| Missing | 2,411 | 37.7 | 1,734 | 37.0 | 677 | 39.6 |
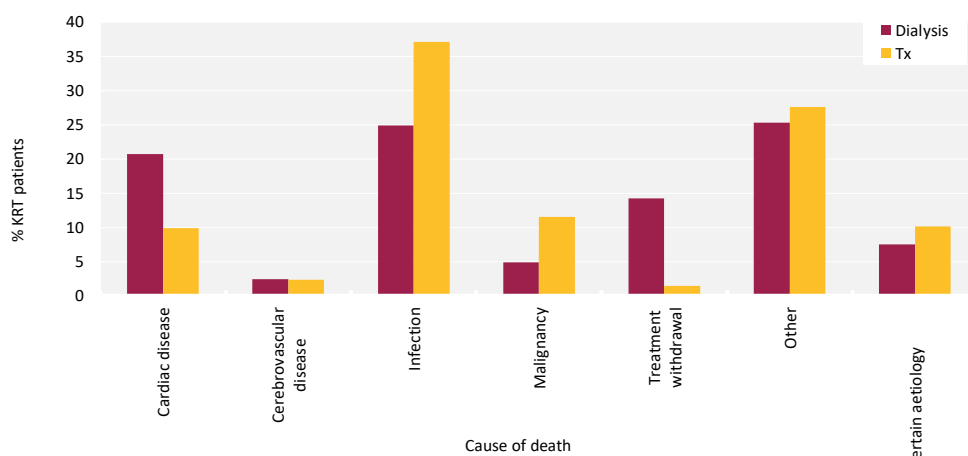
**Figure 4.15** Cause of death for adult patients prevalent to KRT on 31/12/2020 followed-up in 2021 by modality

Adults with a kidney Tx in the UK at the end of 2021
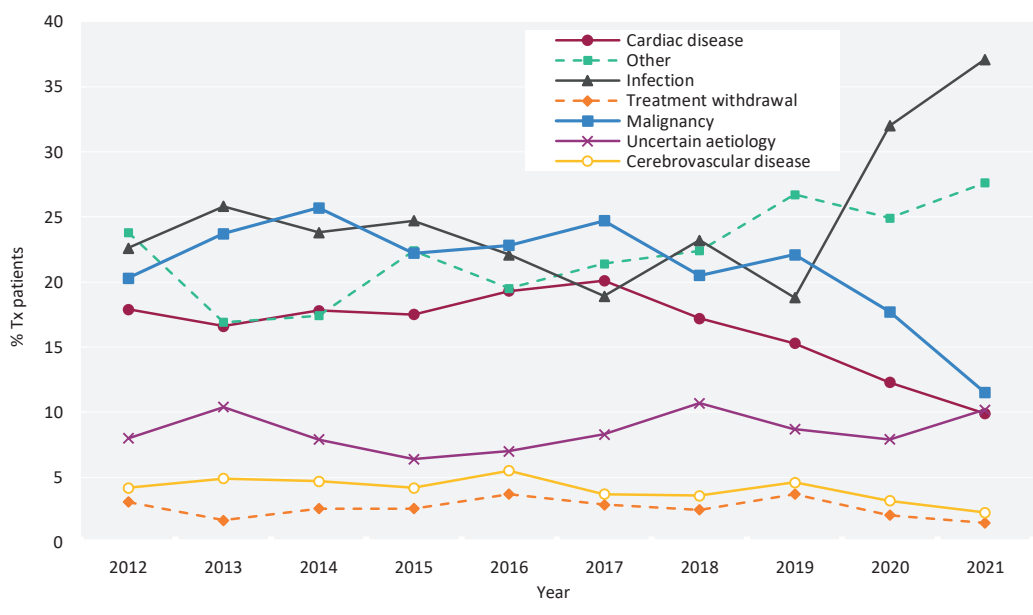
**Figure 4.16** Cause of death between 2012 and 2021 for adult patients prevalent year

Adults with a kidney Tx in the UK at the end of 2021

*Chapter 5*

# Adults on in-centre haemodialysis (ICHD) in the UK at the end of 2021

# Contents

# Introduction

This chapter describes the population of adult patients with end-stage kidney disease (ESKD) who were receiving regular in-centre haemodialysis (ICHD) in the UK at the end of 2021(figure 5.1). This population comprises patients who were on ICHD at the end of 2020 and remained on ICHD throughout 2021, as well as patients who commenced/re-commenced ICHD in 2021. This latter group includes both incident kidney replacement therapy (KRT) patients who ended 2021 on ICHD and prevalent KRT patients who switched to ICHD from home haemodialysis (HHD), peritoneal dialysis (PD), or a transplant (Tx) in 2021. Consequently, the cohort of patients receiving ICHD in a centre not only reflects differences in underlying population case-mix, but also differences in the rates of acceptance onto KRT, survival on ICHD, transplantation and home therapies (HHD and PD), and the care of patients on those other modalities, as described in other chapters of this report.
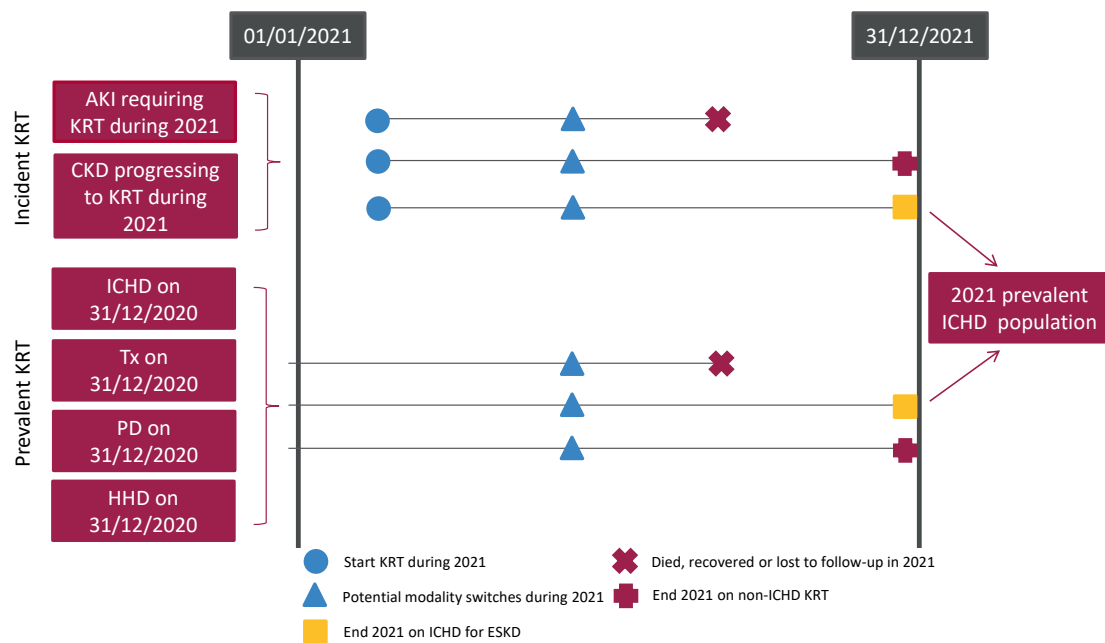


**Figure 5.1** Pathways adult patients could follow to be included in the UK 2021 prevalent ICHD population

Note that patients receiving dialysis for acute kidney injury (AKI) are only included in this chapter if they had a timeline or KRT modality code for chronic ICHD at the end of 2021 or if they had been on KRT for ≥90 days and were on ICHD at the end of 2021

CKD – chronic kidney disease

The cause of death analyses were undertaken on historic prevalent cohorts to allow sufficient follow-up time.

This chapter addresses the following key aspects of the care of patients on ICHD for which there are UK Kidney Association guidelines (table 5.1):

- **Complications associated with ESKD and ICHD:** these include anaemia and mineral bone disorders.

- **Adequacy of ICHD:** measures of dialysis care include urea clearance and frequency and length of dialysis sessions. Currently, the urea reduction ratio (URR) is the only urea clearance measure routinely reported to the UK Renal Registry (UKRR).

- **Type of ICHD access:** definitive access – either a surgically created arteriovenous fistula (AVF) or arteriovenous graft (AVG). Alternatively, more temporary access can be provided through a central venous catheter – either a tunnelled line (TL) or a non-tunnelled line (NTL).

- **Infections associated with haemodialysis (ICHD and HHD):** analysis of infections is presented for ICHD and HHD combined because kidney centres are not required to submit changes in dialysis modality that last <30 days. It is therefore not possible to attribute accurately an infection to HHD or ICHD. Rates of the four infections subject to mandatory reporting to the UK Health Security Agency (UKHSA) – methicillin-resistant *Staphylococcus aureus* (MRSA), methicillin-sensitive *Staphylococcus aureus* (MSSA), *Escherichia coli* bacteraemia and *Clostridium difficile* - will be added to the UKRR data portal (ukkidney.org/audit-research/data-portals) when 2021 data becomes available.

ICHD

# Rationale for analyses

The analyses begin with a description of the 2021 prevalent adult ICHD population, including the number on ICHD per million population (pmp), dialysis duration and frequency.

The UK Kidney Association guidelines (ukkidney.org/health-professionals/guidelines/guidelines-commentaries) provide audit measures relevant to the care of patients on ICHD and, where data permit, their attainment by UK kidney centres in 2021 is reported in this chapter (table 5.1). Audit measures in guidelines that have been archived are not included.

Some audit measures – for example, the target for glycated haemoglobin (HbA1c) in those on hypoglycaemia-inducing treatment – cannot be reported because the completeness of the required data items is too low. Further detail about the completeness of data returned to the UKRR is available through the UKRR data portal (ukkidney.org/audit-research/data-portals). Audit measures that cannot be reported because the required data items were not collected by the UKRR are omitted.

For definitions and methods relating to this chapter see appendix A. Centres were excluded from caterpillar plots and cells were blanked in tables where data completeness for a biochemical variable was <70% and/or the number of patients reported was <10. The number preceding the centre name in each caterpillar plot indicates the percentage of missing data for that centre.

Exeter was unable to submit patient level data for 2021. Aggregate numbers by modality were provided enabling inclusion in tables 5.2 and 5.3. Exeter is excluded from all other analyses.

ICHD

**Table 5.1** The UK Kidney Association audit measures relevant to ICHD that are reported in this chapter

| The UK Kidney Association guideline | Audit criteria | Related analysis/analyses |
| --- | --- | --- |
| CKD mineral bone disorder (2018) | Percentage of patients with serum calcium above the normal reference range of 2.2–2.5 mmol/L | Table 5.6, figure 5.6 |
| HD (2019) | Proportion of patients with pre-dialysis bicarbonate 18–26 mmol/L | Table 5.7, figure 5.8 |
| | Proportion of patients with pre-dialysis potassium 4.0–6.0 mmol/L | Table 5.7, figure 5.9 |
| Anaemia (2020) | Proportion of patients who are not iron replete with a serum ferritin <200 µg/L | Table 5.8, figure 5.13 |
| | Proportion of patients with  haemoglobin 100–120 g/L | |
| Vascular access (2015) | Proportion of prevalent dialysis patients with definitive access (AVF/AVG/PD catheter) – ≥80% | Figure 5.16 |
| Planning, initiating and withdrawing KRT (2014) | Number of patients withdrawing from ICHD as a proportion of all deaths on ICHD | Table 5.9, figure 5.17 |

AVF – arteriovenous fistula; AVG – arteriovenous graft

# Key findings

- 25,009 adult patients were receiving ICHD for ESKD in the UK on 31/12/2021, which represented 36.0% of the KRT population. The number of people on ICHD has increased by 2.9% since 2020 following the reduction due to the COVID pandemic.

- The median age of ICHD patients was 66.1 years and 62.1% were male.

- 82.8% of ICHD patients achieved a dialysis adequacy of URR >65%.

- 92.7% of ICHD patients had dialysis 3 times a week and a further 1.5% had dialysis more frequently than this.

- 66.6% of ICHD patients had dialysis for 4–5 hours per session compared to 66.4% last year and 70.9% in 2019 (suggesting that COVID related disruption continues).

- The median adjusted calcium for ICHD patients was 2.3 mmol/L and 10.4% were above the target range 2.2–2.5 mmol/L.

- The median pre-dialysis bicarbonate for ICHD patients was 23 mmol/L and 83.1% were within the target range 18–26 mmol/L.

- The median pre-dialysis potassium for ICHD patients was 4.8 mmol/L and 13.8% had a pre-dialysis potassium of >6 mmol/L.

- The median haemoglobin and ferritin for ICHD patients was 111 g/L and 483 µg/L, respectively.

- 20.3% of ICHD patients had a haemoglobin <100 g/L and 20.9% had a haemoglobin >120 g/L.

- Of the 54 centres that provided adequate data on long term dialysis access in England, Northern Ireland and Wales, 5 centres achieved the 80% target for definitive access amongst prevalent dialysis patients (AVF/AVG/PD catheter).

- There was no cause of death data available for 36.9% of deaths. For those with data, the leading cause of death in patients under 65 years was cardiac disease at 26.1% , with infection accounting for 23.1% of deaths. In those older than 65 years, the leading cause of death was infection  (25.1%), with a likely contribution from Covid related deaths.

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# Analyses

## Changes to the prevalent adult ICHD population

For the 68 adult kidney centres, the number of prevalent patients on ICHD was calculated as both a proportion of the prevalent patients on KRT and as a proportion of the estimated centre catchment population (calculated as detailed in appendix A).

**Table 5.2** Number of prevalent adult ICHD patients and proportion of adult KRT patients on ICHD by year and by centre; number of ICHD patients as a proportion of the catchment population

| Centre | N on ICHD | | | | | % on ICHD | | | | | Estimated catchment population (millions) | 2021 crude rate (pmp) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2017 | 2018 | 2019 | 2020 | 2021 | 2017 | 2018 | 2019 | 2020 | 2021 | | |
| ENGLAND | | | | | | | | | | | | |
| Bham | 1,333 | 1,349 | 1,349 | 1,314 | 1,348 | 42.0 | 41.5 | 40.7 | 40.3 | 40.7 | 2.05 | 656 |
| Bradfd | 269 | 261 | 280 | 276 | 275 | 39.9 | 37.9 | 38.3 | 38.1 | 37.4 | 0.49 | 560 |
| Brightn | 425 | 446 | 432 | 425 | 424 | 42.0 | 42.3 | 40.6 | 39.5 | 38.8 | 1.08 | 393 |
| Bristol | 491 | 475 | 469 | 463 | 476 | 33.3 | 32.3 | 31.5 | 31.4 | 31.8 | 1.22 | 390 |
| Camb | 306 | 304 | 287 | 276 | 355 | 22.9 | 21.9 | 19.7 | 18.3 | 21.8 | 0.94 | 379 |
| Carlis | 98 | 101 | 111 | 111 | 114 | 34.9 | 34.5 | 36.9 | 37.4 | 37.4 | 0.26 | 446 |
| Carsh | 849 | 858 | 840 | 858 | 885 | 50.1 | 49.0 | 47.2 | 46.4 | 46.4 | 1.63 | 543 |
| Colchr | 129 | 122 | 145 | 150 | 145 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 0.29 | 497 |
| Covnt | 333 | 306 | 355 | 362 | 370 | 34.5 | 31.9 | 33.0 | 32.8 | 33.1 | 0.80 | 465 |
| Derby | 191 | 197 | 238 | 244 | 262 | 34.4 | 33.6 | 36.4 | 36.1 | 38.0 | 0.56 | 467 |
| Donc | 178 | 179 | 180 | 177 | 175 | 53.5 | 54.2 | 52.6 | 51.9 | 51.6 | 0.38 | 466 |
| Dorset | 291 | 291 | 289 | 299 | 304 | 39.9 | 38.1 | 37.4 | 37.5 | 38.7 | 0.73 | 417 |
| Dudley | 201 | 204 | 207 | 208 | 220 | 54.9 | 56.7 | 56.6 | 55.9 | 55.3 | 0.34 | 640 |
| EssexMS | 411 | 409 | 414 | 422 | 429 | 49.5 | 48.5 | 48.6 | 47.7 | 47.9 | 0.99 | 432 |
| Exeter | 455 | 450 | 443 | 454 | 476 | 43.0 | 41.6 | 40.7 | 41.6 | 44.2 | 0.95 | 499 |
| Glouc | 245 | 242 | 231 | 226 | 226 | 47.9 | 46.4 | 43.5 | 43.3 | 41.4 | 0.51 | 443 |
| Hull | 349 | 350 | 350 | 352 | 361 | 40.0 | 39.8 | 38.7 | 38.5 | 39.3 | 0.80 | 451 |
| Ipswi | 147 | 151 | 142 | 135 | 140 | 33.7 | 35.3 | 33.2 | 31.7 | 33.3 | 0.31 | 448 |
| Kent | 424 | 418 | 420 | 424 | 458 | 38.9 | 37.6 | 36.9 | 37.1 | 38.4 | 1.07 | 428 |
| L Barts | 1,031 | 1,061 | 1,032 | 1,045 | 1,094 | 41.3 | 40.8 | 38.8 | 38.9 | 39.8 | 1.59 | 688 |
| L Guys | 669 | 692 | 673 | 693 | 730 | 30.9 | 31.0 | 29.0 | 29.9 | 31.4 | 1.01 | 725 |
| L Kings | 577 | 597 | 610 | 616 | 672 | 50.0 | 50.5 | 48.9 | 49.2 | 50.4 | 0.93 | 719 |
| L Rfree | 685 | 684 | 742 | 722 | 735 | 31.3 | 30.6 | 31.7 | 30.9 | 30.9 | 1.33 | 553 |
| L St.G | 310 | 294 | 302 | 320 | 322 | 36.9 | 35.3 | 35.4 | 37.6 | 37.2 | 0.67 | 484 |
| L West | 1,449 | 1,430 | 1,381 | 1,271 | 1,292 | 41.7 | 40.2 | 38.3 | 36.0 | 36.3 | 1.96 | 658 |
| Leeds | 538 | 542 | 552 | 549 | 580 | 33.2 | 32.2 | 32.0 | 31.3 | 32.5 | 1.37 | 422 |
| Leic | 899 | 917 | 958 | 957 | 1,002 | 38.1 | 37.4 | 37.1 | 36.5 | 38.0 | 2.09 | 480 |
| Liv Ain | 160 | 154 | 160 | 163 | 181 | 76.2 | 71.0 | 70.8 | 67.4 | 68.6 | 0.43 | 419 |
| Liv Roy | 352 | 360 | 370 | 360 | 370 | 28.1 | 28.3 | 29.4 | 29.8 | 30.7 | 0.81 | 456 |
| M RI | 497 | 501 | 497 | 505 | 511 | 24.2 | 24.2 | 24.3 | 25.4 | 24.6 | 1.33 | 383 |
| Middlbr | 332 | 349 | 344 | 327 | 349 | 36.7 | 37.5 | 36.1 | 34.6 | 36.5 | 0.81 | 432 |
| Newc | 327 | 339 | 329 | 355 | 351 | 29.3 | 29.4 | 28.1 | 29.7 | 28.6 | 0.95 | 368 |
| Norwch | 302 | 294 | 296 | 289 | 284 | 38.7 | 37.3 | 36.5 | 35.8 | 36.2 | 0.69 | 412 |
| Nottm | 354 | 350 | 359 | 349 | 363 | 29.9 | 29.2 | 29.5 | 28.8 | 29.8 | 0.93 | 391 |
| Oxford | 451 | 445 | 455 | 475 | 463 | 24.0 | 22.9 | 23.1 | 23.6 | 23.1 | 1.45 | 320 |
| Plymth | 141 | 128 | 126 | 150 | 165 | 26.1 | 23.7 | 23.6 | 27.7 | 30.1 | 0.40 | 411 |
| Ports | 544 | 529 | 591 | 607 | 649 | 31.2 | 30.0 | 31.4 | 32.0 | 33.4 | 1.75 | 371 |
| Prestn | 516 | 519 | 505 | 500 | 501 | 40.6 | 39.3 | 37.6 | 36.5 | 36.3 | 1.23 | 406 |
| Redng | 302 | 297 | 315 | 300 | 304 | 38.0 | 36.5 | 36.5 | 34.5 | 34.7 | 0.70 | 436 |
| Salford | 387 | 402 | 395 | 432 | 412 | 34.6 | 34.3 | 31.8 | 34.1 | 33.9 | 1.15 | 358 |
| Sheff | 550 | 551 | 539 | 548 | 554 | 38.1 | 37.2 | 36.2 | 36.8 | 37.0 | 1.13 | 488 |

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**Table 5.2** Continued

| Centre | N on ICHD | | | | | % on ICHD | | | | | Estimated catchment population (millions) | 2021 crude rate (pmp) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2017 | 2018 | 2019 | 2020 | 2021 | 2017 | 2018 | 2019 | 2020 | 2021 | | |
| Shrew | 184 | 206 | 204 | 174 | 183 | 47.5 | 47.9 | 46.7 | 40.7 | 41.4 | 0.41 | 446 |
| Stevng | 465 | 489 | 507 | 538 | 529 | 52.6 | 52.1 | 52.8 | 55.2 | 52.2 | 1.11 | 476 |
| Stoke | 301 | 281 | 265 | 250 | 265 | 37.1 | 34.9 | 32.9 | 30.8 | 31.4 | 0.73 | 362 |
| Sund | 243 | 243 | 252 | 219 | 215 | 44.7 | 43.4 | 44.2 | 39.4 | 39.3 | 0.55 | 393 |
| Truro | 158 | 168 | 164 | 159 | 184 | 37.2 | 38.4 | 36.4 | 35.7 | 39.9 | 0.36 | 514 |
| Wirral | 202 | 203 | 207 | 194 | 192 | 51.8 | 50.8 | 49.8 | 46.9 | 46.6 | 0.47 | 409 |
| Wolve | 301 | 317 | 304 | 326 | 346 | 51.6 | 52.1 | 49.5 | 49.8 | 50.1 | 0.55 | 630 |
| York | 184 | 183 | 184 | 192 | 190 | 33.0 | 32.2 | 31.6 | 33.6 | 32.7 | 0.49 | 391 |
| N IRELAND | | | | | | | | | | | | |
| Antrim | 117 | 119 | 117 | 110 | 115 | 45.9 | 43.4 | 41.1 | 38.3 | 38.9 | 0.25 | 468 |
| Belfast | 179 | 173 | 158 | 144 | 132 | 21.2 | 19.7 | 17.9 | 16.2 | 14.5 | 0.53 | 247 |
| Newry | 77 | 82 | 78 | 78 | 86 | 32.0 | 32.5 | 30.8 | 29.5 | 30.6 | 0.24 | 366 |
| Ulster | 109 | 106 | 96 | 96 | 99 | 59.6 | 55.5 | 51.9 | 47.8 | 48.8 | 0.20 | 487 |
| West NI | 113 | 114 | 106 | 118 | 105 | 36.1 | 34.9 | 32.3 | 33.6 | 31.0 | 0.25 | 418 |
| SCOTLAND | | | | | | | | | | | | |
| Abrdn | 226 | 214 | 190 | 192 | 189 | 40.1 | 37.4 | 34.1 | 34.0 | 32.7 | 0.50 | 378 |
| Airdrie | 191 | 192 | 207 | 196 | 195 | 41.0 | 39.3 | 39.5 | 37.9 | 38.7 | 0.46 | 425 |
| D&Gall | 51 | 55 | 52 | 56 | 53 | 37.8 | 37.9 | 34.9 | 35.9 | 34.4 | 0.12 | 432 |
| Dundee | 183 | 161 | 162 | 158 | 149 | 42.1 | 36.2 | 36.1 | 36.7 | 36.3 | 0.37 | 405 |
| Edinb | 306 | 301 | 296 | 288 | 283 | 37.1 | 34.9 | 33.4 | 32.4 | 30.6 | 0.84 | 337 |
| Glasgw | 573 | 587 | 575 | 551 | 575 | 32.3 | 32.4 | 31.0 | 29.8 | 30.8 | 1.37 | 418 |
| Inverns | 83 | 90 | 92 | 89 | 93 | 31.7 | 32.3 | 32.6 | 32.8 | 33.5 | 0.22 | 416 |
| Klmarnk | 144 | 141 | 139 | 147 | 138 | 42.7 | 41.5 | 38.7 | 39.8 | 37.8 | 0.29 | 472 |
| Krkcldy | 144 | 135 | 138 | 146 | 164 | 47.4 | 45.3 | 46.8 | 50.2 | 55.6 | 0.27 | 599 |
| WALES | | | | | | | | | | | | |
| Bangor | 73 | 70 | 66 | 78 | 76 | 37.4 | 34.5 | 32.8 | 36.1 | 35.0 | 0.16 | 463 |
| Cardff | 530 | 554 | 551 | 512 | 531 | 31.5 | 32.2 | 31.8 | 30.5 | 31.2 | 1.16 | 459 |
| Clwyd | 71 | 75 | 86 | 84 | 90 | 39.7 | 39.5 | 42.0 | 41.2 | 44.1 | 0.18 | 497 |
| Swanse | 347 | 373 | 389 | 394 | 405 | 44.0 | 45.2 | 44.8 | 46.4 | 47.5 | 0.76 | 534 |
| Wrexm | 120 | 113 | 106 | 114 | 100 | 37.2 | 36.0 | 34.1 | 35.3 | 33.3 | 0.21 | 481 |
| TOTALS | | | | | | | | | | | | |
| England | 20,536 | 20,638 | 20,800 | 20,761 | 21,431 | 37.5 | 36.8 | 36.1 | 35.9 | 36.4 | 44.77 | 479 |
| N Ireland | 595 | 594 | 555 | 546 | 537 | 32.4 | 30.9 | 28.7 | 27.4 | 26.5 | 1.47 | 365 |
| Scotland | 1,901 | 1,876 | 1,851 | 1,823 | 1,839 | 37.3 | 35.8 | 34.6 | 34.2 | 34.2 | 4.45 | 413 |
| Wales | 1,141 | 1,185 | 1,198 | 1,182 | 1,202 | 36.0 | 36.4 | 36.1 | 36.1 | 36.7 | 2.49 | 483 |
| **UK** | **24,173** | **24,293** | **24,404** | **24,312** | **25,009** | **37.3** | **36.5** | **35.8** | **35.5** | **36.0** | **53.19** | **470** |

Country ICHD populations were calculated by summing the ICHD patients from centres in each country. Estimated country populations were derived from Office for National Statistics figures (see appendix A for details on estimated catchment population by kidney centre)

Exeter was unable to submit patient level data but provided aggregate numbers of patients on KRT at the end of 2021 by treatment modality

pmp – per million population

ICHD

# Demographics of prevalent adult ICHD patients

The proportion of ICHD patients from each ethnic group is shown for patients with ethnicity data – the proportion of patients in each centre with no ethnicity data is shown separately.

**Table 5.3** Demographics of adult patients prevalent to ICHD on 31/12/2021 by centre

| Centre | N on KRT | N on ICHD | % on ICHD | Median age (yrs) | % male | Ethnicity % White | % Asian | % Black | % Other | % missing |
|--------|----------|-----------|-----------|------------------|--------|---------|---------|---------|---------|-----------|
| ENGLAND | | | | | | | | | | |
| Bham | 3,309 | 1,348 | 40.7 | 65.5 | 59.4 | 50.8 | 31.0 | 15.1 | 3.1 | 2.0 |
| Bradfd | 735 | 275 | 37.4 | 62.9 | 58.2 | 45.5 | 46.2 | 3.6 | 4.7 | 0.0 |
| Brightn | 1,092 | 424 | 38.8 | 68.4 | 61.6 | 86.1 | 7.1 | 3.8 | 3.0 | 6.6 |
| Bristol | 1,497 | 476 | 31.8 | 64.6 | 63.9 | 84.7 | 5.2 | 8.4 | 1.7 | 2.3 |
| Camb | 1,629 | 355 | 21.8 | 72.5 | 64.5 | 92.0 | 4.2 | 1.9 | 1.9 | 12.4 |
| Carlis | 305 | 114 | 37.4 | 62.2 | 57.9 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Carsh | 1,907 | 885 | 46.4 | 67.7 | 60.1 | 60.0 | 18.4 | 14.3 | 7.3 | 6.7 |
| Colchr | 145 | 145 | 100.0 | 73.7 | 64.8 | 96.4 | 0.7 | 0.7 | 2.2 | 4.8 |
| Covnt | 1,119 | 370 | 33.1 | 69.8 | 62.2 | 74.8 | 19.0 | 6.2 | 0.0 | 0.3 |
| Derby | 689 | 262 | 38.0 | 67.1 | 63.7 | 80.2 | 12.7 | 4.0 | 3.2 | 3.8 |
| Donc | 339 | 175 | 51.6 | 68.5 | 60.6 | 91.4 | 3.4 | 1.7 | 3.4 | 0.6 |
| Dorset | 786 | 304 | 38.7 | 72.0 | 61.5 | 96.1 | 2.0 | 0.3 | 1.6 | 0.0 |
| Dudley | 398 | 220 | 55.3 | 69.9 | 63.2 | 76.4 | 15.5 | 7.7 | 0.5 | 0.0 |
| EssexMS | 895 | 429 | 47.9 | 68.0 | 69.5 | 82.7 | 6.7 | 7.4 | 3.2 | 5.8 |
| Exeter | 1,077 | 476 | 44.2 | | | | | | | |
| Glouc | 546 | 226 | 41.4 | 72.1 | 65.5 | 89.6 | 3.2 | 5.0 | 2.3 | 1.8 |
| Hull | 919 | 361 | 39.3 | 64.0 | 64.8 | 95.0 | 3.4 | 1.4 | 0.3 | 1.1 |
| Ipswi | 421 | 140 | 33.3 | 71.6 | 65.0 | 79.7 | 0.8 | 4.5 | 15.0 | 5.0 |
| Kent | 1,192 | 458 | 38.4 | 66.6 | 64.4 | 92.2 | 2.9 | 2.7 | 2.2 | 2.0 |
| L Barts | 2,750 | 1,094 | 39.8 | 62.1 | 58.9 | 24.5 | 35.2 | 32.4 | 7.9 | 4.3 |
| L Guys | 2,322 | 730 | 31.4 | 63.1 | 58.1 | 41.9 | 9.4 | 44.2 | 4.5 | 9.5 |
| L Kings | 1,334 | 672 | 50.4 | 62.3 | 58.5 | 35.8 | 13.0 | 47.4 | 3.8 | 2.7 |
| L Rfree | 2,380 | 735 | 30.9 | 64.3 | 59.5 | 35.6 | 21.9 | 31.3 | 11.3 | 12.9 |
| L St.G | 866 | 322 | 37.2 | 64.8 | 63.4 | 27.2 | 25.2 | 34.4 | 13.2 | 6.2 |
| L West | 3,556 | 1,292 | 36.3 | 65.5 | 61.1 | 30.3 | 39.0 | 25.7 | 5.0 | 0.0 |
| Leeds | 1,784 | 580 | 32.5 | 63.0 | 64.3 | 69.8 | 20.6 | 7.3 | 2.3 | 0.5 |
| Leic | 2,640 | 1,002 | 38.0 | 66.5 | 65.3 | 71.8 | 20.6 | 5.8 | 1.8 | 9.1 |
| Liv Ain | 264 | 181 | 68.6 | 66.2 | 63.0 | 94.9 | 1.7 | 1.1 | 2.3 | 2.8 |
| Liv Roy | 1,207 | 370 | 30.7 | 64.0 | 61.4 | 85.3 | 5.1 | 5.1 | 4.5 | 4.3 |
| M RI | 2,077 | 511 | 24.6 | 65.4 | 59.1 | 40.2 | 12.3 | 45.7 | 1.8 | 4.5 |
| Middlbr | 955 | 349 | 36.5 | 66.0 | 67.0 | 90.9 | 7.0 | 0.9 | 1.2 | 2.3 |
| Newc | 1,226 | 351 | 28.6 | 65.9 | 62.7 | 91.2 | 4.3 | 2.0 | 2.6 | 0.0 |
| Norwch | 784 | 284 | 36.2 | 71.9 | 59.9 | 95.0 | 1.2 | 1.5 | 2.3 | 8.5 |
| Nottm | 1,220 | 363 | 29.8 | 67.6 | 65.6 | 73.4 | 10.8 | 13.3 | 2.5 | 0.6 |
| Oxford | 2,003 | 463 | 23.1 | 66.4 | 60.0 | 74.6 | 10.6 | 8.0 | 6.8 | 26.8 |
| Plymth | 548 | 165 | 30.1 | 67.0 | 65.5 | 98.2 | 0.0 | 0.6 | 1.2 | 0.0 |
| Ports | 1,941 | 649 | 33.4 | 66.7 | 62.9 | 87.4 | 5.9 | 2.1 | 4.6 | 19.1 |
| Prestn | 1,379 | 501 | 36.3 | 65.8 | 62.7 | 78.8 | 19.0 | 1.0 | 1.2 | 0.0 |
| Redng | 877 | 304 | 34.7 | 66.8 | 63.2 | 61.4 | 25.4 | 5.7 | 7.5 | 7.9 |
| Salford | 1,215 | 412 | 33.9 | 61.9 | 62.1 | 65.3 | 25.2 | 6.3 | 3.2 | 0.0 |
| Sheff | 1,496 | 554 | 37.0 | 65.9 | 63.2 | 84.3 | 8.0 | 4.6 | 3.1 | 2.5 |
| Shrew | 442 | 183 | 41.4 | 70.8 | 66.7 | 87.2 | 4.4 | 2.8 | 5.6 | 1.6 |
| Stevng | 1,014 | 529 | 52.2 | 67.5 | 62.8 | 71.9 | 15.4 | 9.8 | 3.0 | 5.3 |
| Stoke | 845 | 265 | 31.4 | 70.0 | 64.9 | 86.6 | 7.5 | 2.8 | 3.2 | 4.5 |
| Sund | 547 | 215 | 39.3 | 66.0 | 60.0 | 95.3 | 3.3 | 0.5 | 0.9 | 0.0 |
| Truro | 461 | 184 | 39.9 | 70.5 | 59.8 | 98.4 | 0.5 | 0.0 | 1.1 | 0.0 |
| Wirral | 412 | 192 | 46.6 | 64.5 | 62.0 | 96.4 | 0.5 | 2.1 | 1.0 | 0.0 |

Adults on ICHD in the UK at the end of 2021

**Table 5.3** Continued

| Centre | N on KRT | N on ICHD | % on ICHD | Median age (yrs) | % male | Ethnicity | | | | |
|--------|----------|-----------|-----------|------------------|--------|-----------|---|---|---|---|
| | | | | | | % White | % Asian | % Black | % Other | % missing |
| Wolve | 691 | 346 | 50.1 | 63.9 | 63.3 | 51.0 | 34.5 | 12.2 | 2.3 | 0.3 |
| York | 581 | 190 | 32.7 | 71.4 | 58.9 | 95.2 | 1.1 | 0.5 | 3.2 | 1.1 |
| N IRELAND | | | | | | | | | | |
| Antrim | 296 | 115 | 38.9 | 75.8 | 64.3 | 100.0 | 0.0 | 0.0 | 0.0 | 19.1 |
| Belfast | 911 | 132 | 14.5 | 65.4 | 61.4 | 96.7 | 1.6 | 0.8 | 0.8 | 6.8 |
| Newry | 281 | 86 | 30.6 | 68.4 | 58.1 | 98.7 | 1.3 | 0.0 | 0.0 | 9.3 |
| Ulster | 203 | 99 | 48.8 | 76.3 | 59.6 | 96.0 | 4.0 | 0.0 | 0.0 | 0.0 |
| West NI | 339 | 105 | 31.0 | 71.5 | 61.9 | 99.0 | 1.0 | 0.0 | 0.0 | 3.8 |
| SCOTLAND | | | | | | | | | | |
| Abrdn | 578 | 189 | 32.7 | 67.4 | 60.8 | | | | | 93.1 |
| Airdrie | 504 | 195 | 38.7 | 62.8 | 56.4 | | | | | 50.8 |
| D&Gall | 154 | 53 | 34.4 | 71.5 | 64.2 | | | | | 69.8 |
| Dundee | 411 | 149 | 36.3 | 68.0 | 66.4 | | | | | 83.9 |
| Edinb | 926 | 283 | 30.6 | 63.7 | 65.7 | | | | | 86.6 |
| Glasgw | 1,865 | 575 | 30.8 | 64.8 | 60.9 | | | | | 81.7 |
| Inverns | 278 | 93 | 33.5 | 72.5 | 63.4 | | | | | 83.9 |
| Klmarnk | 365 | 138 | 37.8 | 69.0 | 63.8 | | | | | 80.4 |
| Krkcldy | 295 | 164 | 55.6 | 68.0 | 64.6 | | | | | 92.1 |
| WALES | | | | | | | | | | |
| Bangor | 217 | 76 | 35.0 | 71.4 | 60.5 | 97.3 | 0.0 | 0.0 | 2.7 | 1.3 |
| Cardff | 1,700 | 531 | 31.2 | 64.5 | 62.7 | 87.9 | 8.9 | 1.6 | 1.6 | 5.1 |
| Clwyd | 204 | 90 | 44.1 | 68.8 | 68.9 | 97.4 | 2.6 | 0.0 | 0.0 | 14.4 |
| Swanse | 853 | 405 | 47.5 | 69.1 | 64.4 | 97.5 | 1.5 | 0.7 | 0.2 | 0.2 |
| Wrexm | 300 | 100 | 33.3 | 66.4 | 66.0 | 97.9 | 0.0 | 1.0 | 1.0 | 4.0 |
| TOTALS | | | | | | | | | | |
| England | 58,817 | 21,431 | 36.4 | 66.0 | 62.0 | 66.2 | 16.4 | 13.5 | 3.9 | 4.7 |
| N Ireland | 2,030 | 537 | 26.5 | 71.9 | 61.3 | 98.0 | 1.6 | 0.2 | 0.2 | 8.0 |
| Scotland | 5,376 | 1,839 | 34.2 | 65.8 | 62.4 | | | | | 81.1 |
| Wales | 3,274 | 1,202 | 36.7 | 66.7 | 63.9 | 93.3 | 4.6 | 1.0 | 1.0 | 3.8 |
| **UK** | **69,497** | **25,009** | **36.0** | **66.1** | **62.1** | **68.6** | **15.3** | **12.4** | **3.6** | **10.5** |

Blank cells – no data returned by the centre or data completeness <70%

Breakdown by ethnicity is not shown for centres with <70% data completeness, but these centres were included in national averages

Exeter was unable to submit patient level data but provided aggregate numbers of patients on KRT at the end of 2021 by treatment modality

Primary renal diseases (PRDs) were grouped into categories as shown in table 5.4, with the mapping of disease codes into groups explained in more detail in appendix A. The proportion of ICHD patients with each PRD is shown for patients with PRD data and these total 100% of patients with data. The proportion of patients with no PRD data is shown on a separate line.

**Table 5.4** Primary renal diseases (PRDs) of adult patients prevalent to ICHD on 31/12/2021

| PRD | N on ICHD | % ICHD population | Age <65 yrs | | Age ≥65 yrs | | M/F ratio |
|---|---|---|---|---|---|---|---|
| | | | N | % | N | % | |
| Diabetes | 6,710 | 29.0 | 3,244 | 29.3 | 3,466 | 28.6 | 1.7 |
| Glomerulonephritis | 3,148 | 13.6 | 1,838 | 16.6 | 1,310 | 10.8 | 2.0 |
| Hypertension | 1,809 | 7.8 | 876 | 7.9 | 933 | 7.7 | 2.3 |
| Polycystic kidney disease | 1,342 | 5.8 | 711 | 6.4 | 631 | 5.2 | 1.1 |
| Pyelonephritis | 1,580 | 6.8 | 799 | 7.2 | 781 | 6.4 | 1.6 |
| Renal vascular disease | 1,076 | 4.6 | 185 | 1.7 | 891 | 7.4 | 1.9 |
| Other | 4,008 | 17.3 | 2,014 | 18.2 | 1,994 | 16.5 | 1.3 |
| Uncertain aetiology | 3,495 | 15.1 | 1,386 | 12.5 | 2,109 | 17.4 | 1.6 |
| **Total (with data)** | **23,168** | **100.0** | **11,053** | **100.0** | **12,115** | **100.0** | |
| | | | | | | | |
| Missing | 1,365 | 5.6 | 575 | 4.9 | 790 | 6.1 | 1.7 |

## Adequacy of dialysis in prevalent adult ICHD patients

URR and session duration were calculated only for patients who were undertaking ICHD three times per week. Patients who had missing data for the number of dialysis sessions per week were assumed to be dialysing three times per week for the purposes of calculating the median URR.

**Table 5.5** Median urea reduction ratio (URR) and distribution of session frequency and time for adult patients prevalent to ICHD on 31/12/2021 using end of third quarter data (30/09/2021)

| Centre | Median URR (%) | % URR >65% | % session frequency/week | | | % session time | | | % data completeness | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | <3 sessions | 3 sessions | >3 sessions | <4 hours | 4–5 hours | >5 hours | URR | Session frequency | Session time |
| ENGLAND | | | | | | | | | | | |
| Bham | 79 | 90.9 | 10.6 | 87.8 | 1.6 | 20.0 | 79.1 | 0.9 | 98.6 | 95.1 | 95.2 |
| Bradfd | 71 | 72.3 | 10.5 | 88.8 | 0.7 | 32.5 | 67.5 | 0.0 | 89.4 | 100.0 | 100.0 |
| Brightn | 73 | 87.3 | 4.9 | 94.8 | 0.2 | 17.4 | 82.6 | 0.0 | 97.9 | 99.8 | 100.0 |
| Bristol | 74 | 79.2 | 3.9 | 95.2 | 0.9 | 27.7 | 72.3 | 0.0 | 99.8 | 100.0 | 100.0 |
| Camb | | | | | | | | | 0.0 | 0.0 | 0.0 |
| Carlis | 73 | 80.2 | 7.3 | 92.7 | 0.0 | 23.7 | 76.3 | 0.0 | 98.9 | 83.7 | 82.6 |
| Carsh | 75 | 84.4 | 2.0 | 98.0 | 0.0 | 5.6 | 94.4 | 0.0 | 84.6 | 99.9 | 97.2 |
| Colchr | 77 | 89.2 | 0.8 | 99.2 | 0.0 | 27.7 | 72.3 | 0.0 | 99.2 | 100.0 | 100.0 |
| Covnt | 76 | 86.7 | 10.2 | 89.5 | 0.3 | 39.2 | 60.8 | 0.0 | 97.3 | 99.1 | 97.6 |
| Derby | 75 | 85.9 | 1.3 | 97.5 | 1.3 | | | | 83.1 | 99.6 | 13.9 |
| Donc | 75 | 88.6 | 0.7 | 99.3 | 0.0 | 31.9 | 68.1 | 0.0 | 97.4 | 92.9 | 94.1 |
| Dorset | 76 | 90.4 | 5.4 | 93.9 | 0.7 | 18.4 | 81.6 | 0.0 | 83.2 | 99.3 | 99.6 |
| Dudley | 75 | 79.9 | 5.5 | 94.0 | 0.5 | 17.0 | 83.0 | 0.0 | 93.2 | 98.0 | 97.9 |
| EssexMS | 71 | 78.2 | 15.5 | 83.5 | 1.0 | 37.1 | 62.9 | 0.0 | 97.9 | 99.2 | 99.1 |
| Exeter | | | | | | | | | | | |
| Glouc | 75 | 90.9 | 7.1 | 92.4 | 0.5 | | | | 100.0 | 97.5 | 0.0 |
| Hull | 77 | 90.7 | | | | | | | 99.1 | 0.9 | 1.8 |
| Ipswi | 73 | 79.5 | 14.4 | 84.8 | 0.8 | 11.9 | 88.1 | 0.0 | 76.2 | 97.7 | 92.7 |
| Kent | 70 | 74.3 | 3.7 | 93.9 | 2.4 | 81.9 | 18.1 | 0.0 | 84.5 | 99.3 | 99.7 |
| L Barts | | | 6.6 | 93.0 | 0.3 | 67.7 | 32.3 | 0.0 | 0.0 | 97.6 | 97.4 |
| L Guys | 75 | 86.7 | | | | | | | 89.7 | 0.0 | 0.0 |
| L Kings | 74 | 85.1 | 3.3 | 96.5 | 0.2 | 54.7 | 45.3 | 0.0 | 98.0 | 99.8 | 99.8 |
| L Rfree | | | | | | | | | 0.0 | 0.0 | 0.0 |
| L St.G | | | 2.0 | 98.0 | 0.0 | | | | 4.4 | 99.0 | 63.8 |
| L West | 77 | 89.6 | 11.1 | 88.4 | 0.5 | 37.2 | 62.2 | 0.6 | 92.7 | 98.5 | 98.4 |
| Leeds | 72 | 80.4 | 8.4 | 91.0 | 0.6 | 27.6 | 72.4 | 0.0 | 99.4 | 99.8 | 100.0 |
| Leic | 73 | 80.3 | 1.5 | 97.9 | 0.7 | 18.3 | 79.2 | 2.5 | 99.7 | 99.5 | 99.8 |

Adults on ICHD in the UK at the end of 2021

**Table 5.5** Continued

| Centre | Median URR (%) | % URR >65% | % session frequency/week | | | % session time | | | % data completeness | | |
| | | | <3 sessions | 3 sessions | >3 sessions | <4 hours | 4–5 hours | >5 hours | URR | Session frequency | Session time |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Liv Ain | | | 1.6 | 93.7 | 4.7 | 10.1 | 89.1 | 0.8 | 0.0 | 96.2 | 96.0 |
| Liv Roy | | | 1.8 | 94.6 | 3.6 | 8.0 | 91.6 | 0.4 | 0.0 | 99.3 | 98.9 |
| M RI | | | 3.1 | 95.0 | 1.9 | 5.4 | 94.3 | 0.2 | 63.3 | 90.2 | 90.4 |
| Middlbr | 72 | 83.7 | 3.2 | 95.5 | 1.3 | | | | 97.3 | 100.0 | 0.0 |
| Newc | 71 | 76.5 | 10.5 | 88.0 | 1.5 | 52.3 | 47.7 | 0.0 | 100.0 | 100.0 | 100.0 |
| Norwch | 73 | 77.2 | 4.5 | 94.4 | 1.1 | 62.2 | 37.8 | 0.0 | 87.0 | 97.1 | 97.0 |
| Nottm | 75 | 90.8 | 0.9 | 94.4 | 4.7 | 8.3 | 91.4 | 0.3 | 92.4 | 99.1 | 99.0 |
| Oxford | 74 | 81.0 | 0.0 | 100.0 | 0.0 | 19.3 | 80.7 | 0.0 | 75.8 | 98.8 | 98.8 |
| Plymth | 74 | 88.9 | 2.2 | 97.8 | 0.0 | | | | 98.5 | 97.1 | 0.0 |
| Ports | | | 4.6 | 94.2 | 1.2 | 49.0 | 50.3 | 0.7 | 0.0 | 99.7 | 99.6 |
| Prestn | 70 | 68.9 | | | | | | | 84.8 | 0.0 | 0.2 |
| Redng | 74 | 83.5 | 5.1 | 94.5 | 0.4 | 23.8 | 76.2 | 0.0 | 100.0 | 99.3 | 98.1 |
| Salford | 68 | 63.5 | 8.1 | 77.7 | 14.2 | 28.0 | 72.0 | 0.0 | 70.7 | 98.3 | 96.8 |
| Sheff | 72 | 79.3 | 4.0 | 93.3 | 2.8 | 85.4 | 14.6 | 0.0 | 99.0 | 98.6 | 98.5 |
| Shrew | 75 | 89.9 | 0.6 | 92.4 | 7.0 | 13.2 | 86.8 | 0.0 | 99.4 | 99.4 | 99.4 |
| Stevng | 71 | 68.9 | 10.0 | 87.9 | 2.1 | 42.7 | 57.3 | 0.0 | 98.8 | 98.7 | 98.8 |
| Stoke | | | 9.3 | 86.9 | 3.8 | 22.0 | 78.0 | 0.0 | 65.9 | 100.0 | 100.0 |
| Sund | 76 | 86.8 | 3.1 | 88.7 | 8.2 | 23.6 | 76.4 | 0.0 | 100.0 | 99.0 | 92.5 |
| Truro | 74 | 87.3 | 3.1 | 96.9 | 0.0 | | | | 94.3 | 100.0 | 0.0 |
| Wirral | 73 | 82.1 | 4.3 | 93.2 | 2.5 | 30.3 | 69.7 | 0.0 | 98.1 | 94.7 | 95.6 |
| Wolve | 74 | 82.3 | 2.3 | 97.4 | 0.3 | | | | 98.7 | 99.4 | 3.6 |
| York | 79 | 94.7 | 1.7 | 96.0 | 2.3 | 17.9 | 82.1 | 0.0 | 100.0 | 97.7 | 98.8 |
| N IRELAND | | | | | | | | | | | |
| Antrim | 73 | 90.1 | 0.0 | 98.1 | 1.9 | 14.9 | 85.1 | 0.0 | 99.0 | 99.0 | 99.0 |
| Belfast | 74 | 82.8 | 2.6 | 95.7 | 1.7 | 16.5 | 83.5 | 0.0 | 100.0 | 95.9 | 99.1 |
| Newry | 73 | 81.4 | 21.3 | 78.8 | 0.0 | 55.6 | 44.4 | 0.0 | 92.2 | 98.8 | 98.4 |
| Ulster | 68 | 64.8 | 3.2 | 96.8 | 0.0 | 24.2 | 75.8 | 0.0 | 100.0 | 98.9 | 100.0 |
| West NI | 70 | 69.6 | 4.9 | 91.2 | 3.9 | 67.0 | 33.0 | 0.0 | 96.8 | 98.1 | 99.0 |
| SCOTLAND | | | | | | | | | | | |
| Abrdn | 71 | 81.9 | | | | | | | 100.0 | | |
| Airdrie | 70 | 74.8 | | | | | | | 87.1 | | |
| D&Gall | 71 | 70.2 | | | | | | | 92.2 | | |
| Dundee | 74 | 88.4 | | | | | | | 89.6 | | |
| Edinb | 73 | 87.8 | | | | | | | 97.3 | | |
| Glasgw | 70 | 75.0 | | | | | | | 93.7 | | |
| Inverns | 72 | 84.4 | | | | | | | 87.5 | | |
| Klmarnk | 72 | 76.8 | | | | | | | 89.6 | | |
| Krkcldy | 71 | 80.8 | | | | | | | 98.7 | | |
| WALES | | | | | | | | | | | |
| Bangor | 71 | 79.1 | 5.4 | 90.5 | 4.1 | 59.7 | 40.3 | 0.0 | 100.0 | 100.0 | 100.0 |
| Cardff | 74 | 90.1 | | | | | | | 98.8 | 0.0 | 0.0 |
| Clwyd | 70 | 79.5 | | | | | | | 98.7 | 0.0 | 0.0 |
| Swanse | 75 | 81.1 | 5.6 | 93.6 | 0.8 | 35.0 | 65.0 | 0.0 | 99.4 | 100.0 | 100.0 |
| Wrexm | 71 | 72.7 | 2.9 | 97.1 | 0.0 | 21.0 | 77.0 | 2.0 | 95.2 | 96.3 | 96.2 |
| TOTALS | | | | | | | | | | | |
| England | 74 | 83.2 | 5.7 | 92.7 | 1.6 | 33.0 | 66.7 | 0.3 | 76.2 | 85.6 | 76.9 |
| N Ireland | 72 | 78.0 | 5.7 | 92.7 | 1.6 | 33.2 | 66.8 | 0.0 | 98.1 | 98.0 | 99.2 |
| Scotland | 72 | 79.6 | | | | | | | 93.7 | | |
| Wales | 73 | 84.1 | | | | | | | 98.7 | 49.7 | 48.1 |
| **UK** | **74** | **82.8** | **5.7** | **92.7** | **1.5** | **33.1** | **66.6** | **0.3** | **79.3** | **84.0** | **75.9** |

Blank cells – no data returned by the centre or data completeness <70%

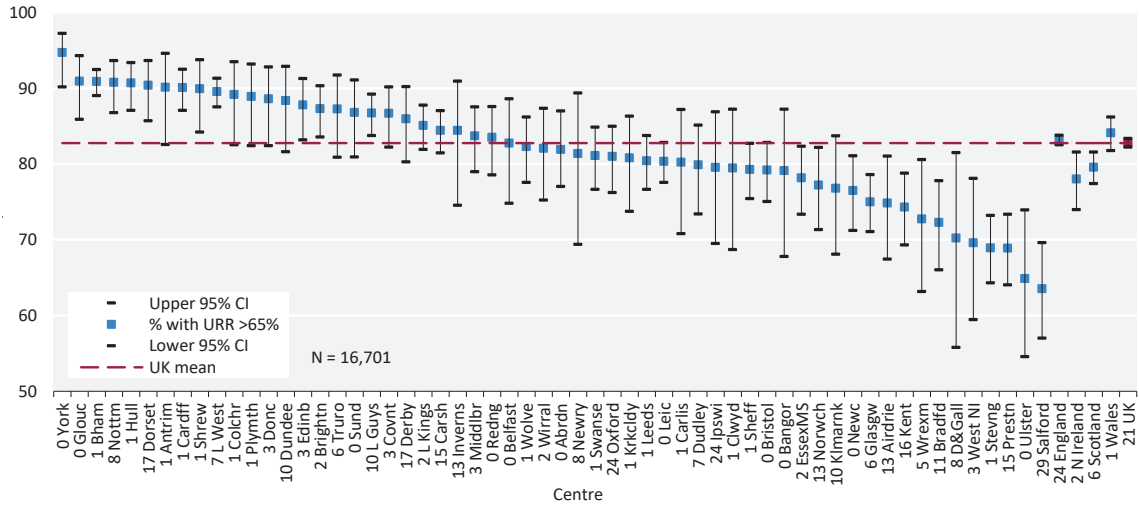UK National averages for session frequency and time do not include Scotland

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**Figure 5.2** Percentage of adult patients prevalent to ICHD on 31/12/2021 with urea reduction ratio (URR) >65% by centre
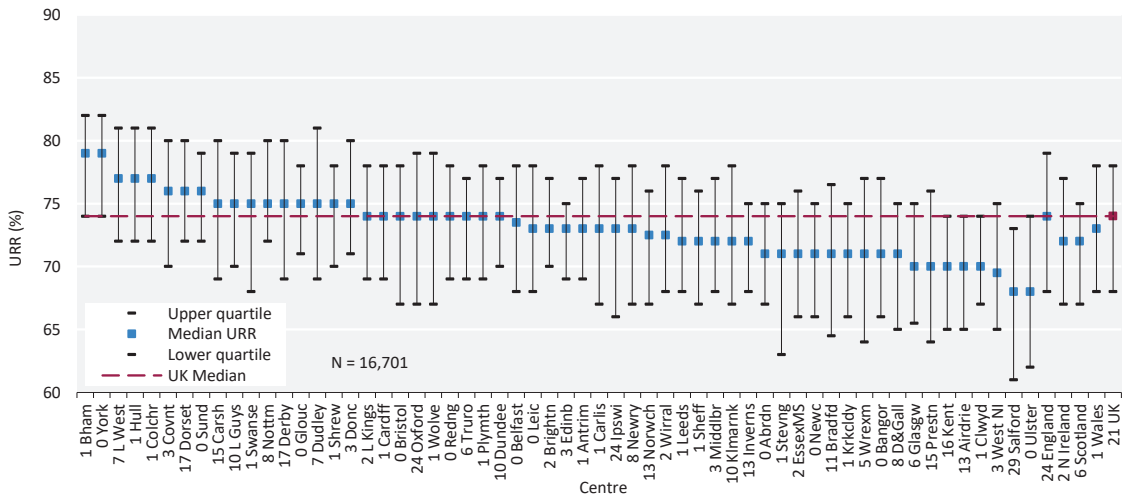
CI – confidence interval



**Figure 5.3** Median urea reduction ratio (URR) achieved in adult patients prevalent to ICHD on 31/12/2021 by centre
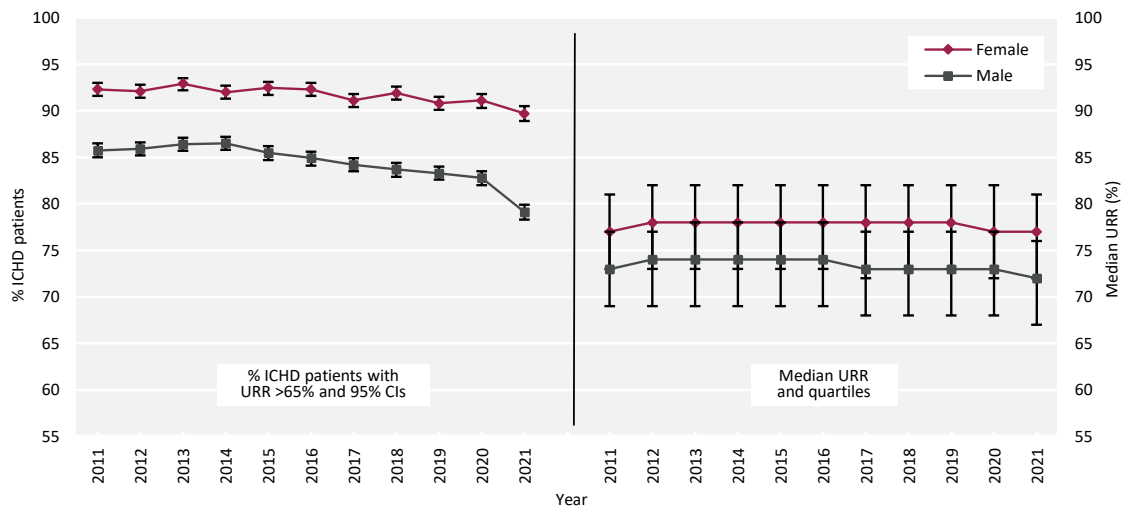
Adults on ICHD in the UK at the end of 2021

**Figure 5.4** Change in the percentage of prevalent adult ICHD patients with urea reduction ratio (URR) >65% and the median URR by sex between 2011 and 2021
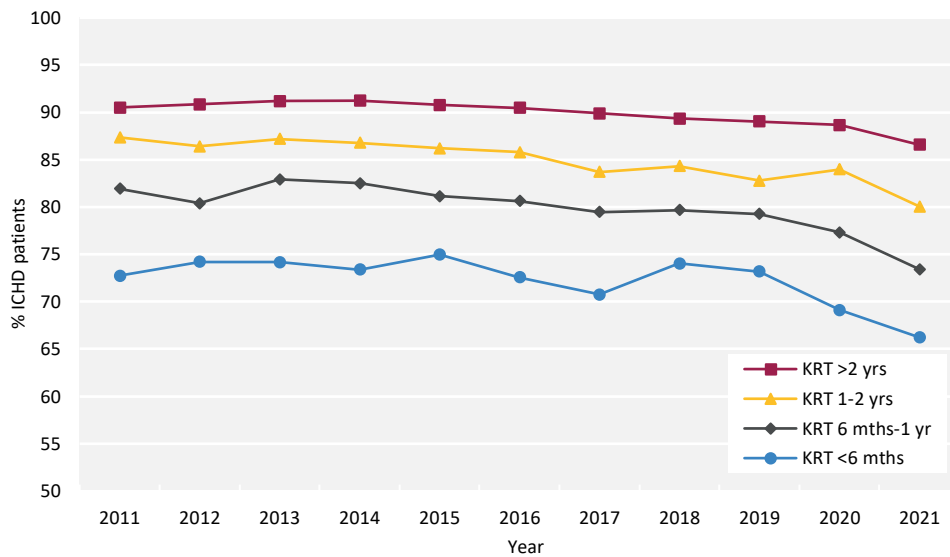
CI – confidence interval



**Figure 5.5** Percentage of prevalent adult ICHD patients achieving urea reduction ratio (URR) >65% by time on KRT between 2011 and 20201

## Biochemistry parameters in prevalent adult ICHD patients

The UK Kidney Association guideline on CKD mineral bone disease contains only one audit measure, which is the percentage of patients with adjusted calcium above the target range.

**Table 5.6** Median adjusted calcium (Ca) and percentage with adjusted Ca within and above the target range (2.2–2.5 mmol/L) in adult patients prevalent to ICHD on 31/12/2021 by centre

| Centre | Median adj Ca (mmol/L) | % adj Ca 2.2-2.5 mmol/L | % adj Ca >2.5 mmol/L | % data completeness |
|---|---|---|---|---|
| ENGLAND | | | | |
| Bham | 2.4 | 76.6 | 15.0 | 99.7 |
| Bradfd | 2.4 | 72.4 | 23.0 | 100.0 |
| Brightn | 2.3 | 77.7 | 9.9 | 100.0 |
| Bristol | 2.4 | 83.4 | 15.0 | 100.0 |
| Camb | 2.3 | 82.9 | 4.7 | 99.1 |
| Carlis | 2.3 | 79.6 | 10.2 | 100.0 |
| Carsh | 2.3 | 73.4 | 9.5 | 99.6 |
| Colchr | 2.3 | 86.4 | 6.1 | 100.0 |
| Covnt | 2.3 | 80.5 | 7.4 | 100.0 |
| Derby | 2.4 | 84.1 | 11.0 | 100.0 |
| Donc | 2.4 | 78.5 | 17.1 | 100.0 |
| Dorset | 2.4 | 80.7 | 13.6 | 99.6 |
| Dudley | 2.4 | 77.7 | 19.8 | 100.0 |
| EssexMS | 2.3 | 82.5 | 9.9 | 99.7 |
| Exeter | | | | |
| Glouc | 2.4 | 84.7 | 10.3 | 100.0 |
| Hull | 2.4 | 76.0 | 17.4 | 100.0 |
| Ipswi | 2.3 | 77.1 | 9.8 | 97.6 |
| Kent | 2.4 | 72.1 | 18.5 | 99.3 |
| L Barts | 2.3 | 77.5 | 6.4 | 98.2 |
| L Guys | 2.4 | 79.8 | 11.1 | 100.0 |
| L Kings | 2.3 | 75.4 | 7.7 | 99.8 |
| L Rfree | 2.3 | 78.0 | 6.9 | 100.0 |
| L St.G | 2.4 | 77.2 | 10.3 | 99.0 |
| L West | 2.3 | 74.0 | 8.8 | 87.0 |
| Leeds | 2.3 | 82.9 | 7.8 | 100.0 |
| Leic | 2.3 | 76.3 | 8.6 | 99.9 |
| Liv Ain | 2.5 | 69.4 | 26.1 | 97.5 |
| Liv Roy | 2.4 | 81.4 | 13.5 | 98.2 |
| M RI | 2.4 | 81.2 | 14.9 | 86.3 |
| Middlbr | 2.3 | 80.9 | 0.9 | 100.0 |
| Newc | 2.4 | 77.2 | 11.4 | 100.0 |
| Norwch | 2.3 | 83.3 | 9.4 | 89.7 |
| Nottm | 2.4 | 82.4 | 10.6 | 100.0 |
| Oxford | 2.3 | 78.5 | 9.8 | 86.5 |
| Plymth | 2.3 | 78.0 | 6.4 | 99.3 |
| Ports | 2.3 | 79.6 | 7.3 | 100.0 |
| Prestn | 2.3 | 75.7 | 5.6 | 89.1 |
| Redng | 2.3 | 83.0 | 8.2 | 100.0 |
| Salford | 2.3 | 79.8 | 9.2 | 100.0 |
| Sheff | 2.3 | 80.3 | 5.9 | 99.8 |
| Shrew | 2.4 | 79.0 | 20.5 | 99.4 |
| Stoke | 2.4 | 83.8 | 13.2 | 84.3 |
| Sund | 2.3 | 71.7 | 9.1 | 100.0 |
| Truro | 2.4 | 74.0 | 22.5 | 100.0 |
| Wirral | 2.3 | 77.7 | 8.2 | 95.5 |
| Wolve | 2.4 | 83.1 | 11.7 | 99.0 |
| York | 2.3 | 90.3 | 5.1 | 100.0 |
| N IRELAND | | | | |
| Antrim | 2.4 | 86.5 | 11.5 | 100.0 |
| Belfast | 2.4 | 83.1 | 13.6 | 100.0 |
| Newry | 2.3 | 76.0 | 3.8 | 100.0 |

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**Table 5.6** Continued

| Centre | Median adj Ca (mmol/L) | % adj Ca 2.2-2.5 mmol/L | % adj Ca >2.5 mmol/L | % data completeness |
|---|---|---|---|---|
| Ulster | 2.4 | 75.8 | 24.2 | 100.0 |
| West NI | 2.3 | 79.2 | 7.9 | 100.0 |
| WALES | | | | |
| Bangor | 2.3 | 89.0 | 6.9 | 100.0 |
| Cardff | 2.4 | 81.7 | 13.6 | 99.8 |
| Clwyd | 2.3 | 79.5 | 9.0 | 98.7 |
| Swanse | 2.3 | 87.2 | 4.6 | 100.0 |
| Wrexm | 2.3 | 87.6 | 5.2 | 98.0 |
| TOTALS | | | | |
| England | 2.3 | 78.5 | 10.5 | 97.6 |
| N Ireland | 2.4 | 80.5 | 12.4 | 100.0 |
| Wales | 2.3 | 84.4 | 9.0 | 99.6 |
| **E, W & NI** | **2.3** | **78.9** | **10.4** | **97.8** |

.Blank cells = No data returned by the centre or data completeness <70%
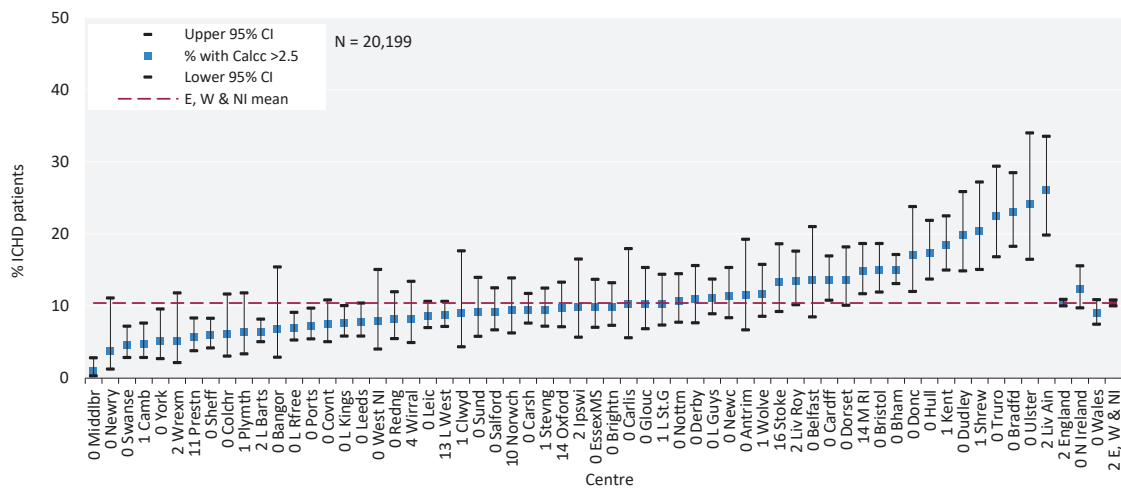


**Figure 5.6** Percentage of adult patients prevalent to ICHD on 31/12/2021 with adjusted calcium (Ca) above the target range (>2.5 mmol/L) by centre
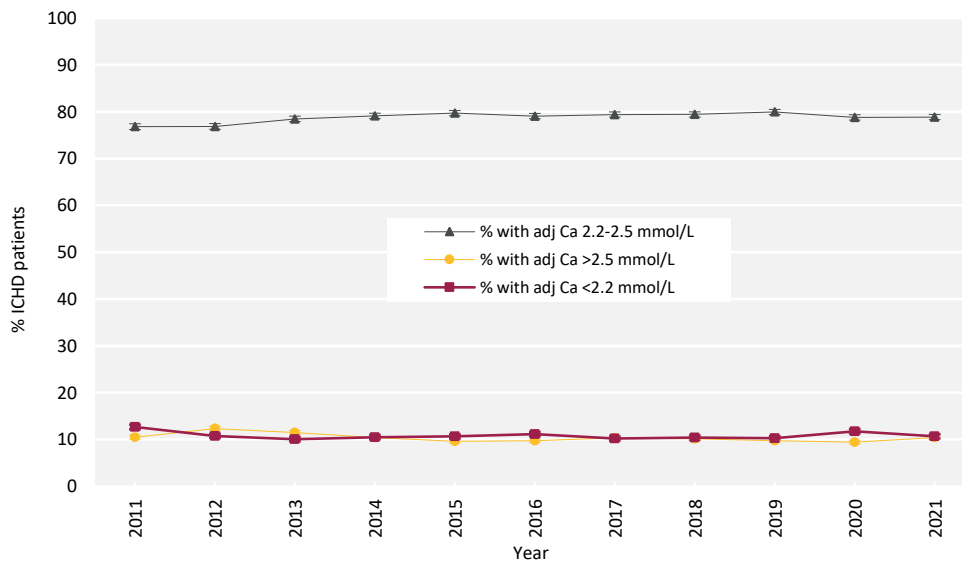CI – confidence interval

**Figure 5.7** Change in percentage of prevalent adult ICHD patients within, above and below the target range for adjusted calcium (Ca 2.2–2.5 mmol/L) between 2011 and 2021

**Table 5.7** Median pre-dialysis potassium and bicarbonate and percentage attaining target ranges in adult patients prevalent to ICHD on 31/12/2021 by centre

| Centre | Pre-dialysis potassium | | | | | Pre-dialysis bicarbonate | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Median (mmoI/L) | % <4.0 mmol/L | % 4.0–6.0 mmol/L | % >6.0 mmol/L | % complete | Median (mmoI/L) | % <18 mmol/L | % 18–26 mmol/L | % >26 mmol/L | % complete |
| ENGLAND | | | | | | | | | | |
| Bham | 4.2 | 36.8 | 60.3 | 34.2 | 99.7 | 23 | 4.1 | 88.8 | 7.1 | 99.7 |
| Bradfd | 4.8 | 11.1 | 80.5 | 7.8 | 100.0 | 24 | 1.2 | 82.7 | 16.2 | 99.6 |
| Brightn | | | | | 0.0 | 23 | 3.0 | 85.6 | 11.4 | 100.0 |
| Bristol | 4.8 | 19.4 | 77.2 | 15.9 | 100.0 | 21 | 4.4 | 94.9 | 0.7 | 100.0 |
| Camb | 4.9 | 4.7 | 90.9 | 2.9 | 98.8 | | | | | 12.4 |
| Carlis | | | | | 0.0 | 21 | 10.2 | 87.8 | 2.0 | 100.0 |
| Carsh | | | | | 0.0 | | | | | 24.4 |
| Colchr | 4.7 | 18.2 | 79.6 | 12.5 | 100.0 | 22 | 3.8 | 93.9 | 2.3 | 100.0 |
| Covnt | | | | | 0.0 | 23 | 5.0 | 89.8 | 5.3 | 100.0 |
| Derby | 4.7 | 15.1 | 81.6 | 11.1 | 100.0 | 21 | 6.1 | 93.5 | 0.4 | 100.0 |
| Donc | 4.7 | 12.0 | 82.3 | 7.8 | 100.0 | 22 | 1.3 | 96.2 | 2.5 | 100.0 |
| Dorset | 4.8 | 8.6 | 88.9 | 5.8 | 99.6 | 22 | 6.8 | 87.1 | 6.1 | 99.6 |
| Dudley | 4.8 | 13.4 | 82.7 | 9.3 | 100.0 | | | | | 62.9 |
| EssexMS | 4.8 | 7.5 | 86.8 | 4.9 | 89.2 | 24 | 1.9 | 84.6 | 13.5 | 99.1 |
| Exeter | | | | | | | | | | |
| Glouc | | | | | 0.0 | 24 | 1.5 | 91.1 | 7.4 | 100.0 |
| Hull | 4.8 | 9.0 | 85.3 | 6.4 | 100.0 | 24 | 1.2 | 82.9 | 15.9 | 100.0 |
| Ipswi | | | | | 0.0 | 24 | 0.8 | 81.2 | 18.0 | 97.6 |
| Kent | 4.5 | 28.2 | 67.5 | 24.0 | 99.3 | 20 | 11.7 | 87.6 | 0.7 | 99.3 |
| L Barts | 4.7 | 17.7 | 76.6 | 15.4 | 98.3 | 21 | 12.4 | 85.0 | 2.6 | 98.2 |
| L Guys | 4.6 | 24.4 | 71.2 | 21.3 | 100.0 | 23 | 1.2 | 89.8 | 9.0 | 100.0 |
| L Kings | 5.2 | 8.2 | 79.3 | 6.2 | 99.8 | 20 | 10.2 | 89.4 | 0.5 | 99.5 |
| L Rfree | 4.9 | 13.3 | 78.4 | 10.9 | 100.0 | 21 | 10.2 | 89.2 | 0.6 | 94.1 |
| L St.G | | | | | 0.0 | 27 | 1.1 | 47.8 | 51.1 | 93.5 |
| L West | | | | | 0.0 | | | | | 52.6 |
| Leeds | 5.0 | 3.4 | 91.3 | 2.1 | 100.0 | 23 | 2.2 | 89.0 | 8.8 | 100.0 |
| Leic | 4.9 | 9.6 | 84.7 | 7.9 | 99.9 | 24 | 2.8 | 70.9 | 26.3 | 99.9 |
| Liv Ain | | | | | 0.0 | 24 | 3.2 | 79.6 | 17.2 | 97.5 |

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**Table 5.7** Continued

| Centre | Pre-dialysis potassium | | | | | Pre-dialysis bicarbonate | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Median (mmoI/L) | % <4.0 mmol/L | % 4.0–6.0 mmol/L | % >6.0 mmol/L | % complete | Median (mmoI/L) | % <18 mmol/L | % 18–26 mmol/L | % >26 mmol/L | % complete |
| Liv Roy | | | | | 0.0 | 26 | 0.3 | 53.2 | 46.5 | 98.2 |
| M RI | | | | | 0.0 | 23 | 3.3 | 88.3 | 8.5 | 85.5 |
| Middlbr | 4.7 | 16.1 | 80.6 | 12.4 | 99.7 | 31 | 0.0 | 3.7 | 96.3 | 99.7 |
| Newc | | | | | 0.0 | 22 | 3.7 | 88.6 | 7.7 | 100.0 |
| Norwch | 5.1 | 3.9 | 86.9 | 2.1 | 99.6 | 22 | 4.1 | 89.8 | 6.1 | 94.3 |
| Nottm | 4.9 | 8.2 | 87.2 | 5.7 | 100.0 | 23 | 1.5 | 93.3 | 5.2 | 99.7 |
| Oxford | 4.9 | 8.6 | 85.2 | 6.1 | 86.7 | 22 | 7.9 | 79.3 | 12.8 | 85.3 |
| Plymth | 4.8 | 12.1 | 85.1 | 7.6 | 99.3 | 21 | 13.0 | 84.7 | 2.3 | 92.3 |
| Ports | 4.9 | 6.2 | 86.5 | 4.5 | 100.0 | 23 | 3.8 | 79.0 | 17.2 | 99.8 |
| Prestn | | | | | 0.0 | 23 | 4.8 | 88.2 | 7.0 | 100.0 |
| Redng | | | | | 0.0 | 23 | 1.4 | 93.3 | 5.3 | 100.0 |
| Salford | 4.6 | 17.6 | 78.2 | 14.1 | 100.0 | | | | | 0.0 |
| Sheff | 4.9 | 9.9 | 80.9 | 7.6 | 99.8 | 22 | 4.4 | 90.7 | 5.0 | 99.8 |
| Shrew | | | | | 0.0 | 21 | 7.0 | 90.6 | 2.3 | 99.4 |
| Sthend | | | | | | | | | | |
| Stoke | | | | | 0.0 | 26 | 1.0 | 62.6 | 36.4 | 85.1 |
| Sund | | | | | 0.0 | 21 | 9.1 | 88.9 | 2.0 | 100.0 |
| Truro | 4.9 | 7.1 | 88.8 | 4.1 | 100.0 | 26 | 0.0 | 51.5 | 48.5 | 100.0 |
| Wirral | | | | | 0.0 | 24 | 0.6 | 81.4 | 18.0 | 96.6 |
| Wolve | 4.8 | 7.5 | 86.4 | 5.0 | 99.0 | 20 | 11.4 | 88.3 | 0.3 | 99.0 |
| York | 5.2 | 3.4 | 86.3 | 1.6 | 100.0 | 22 | 2.9 | 93.7 | 3.4 | 100.0 |
| N IRELAND | | | | | | | | | | |
| Antrim | 4.9 | 12.5 | 84.6 | 7.4 | 100.0 | 26 | 0.0 | 70.2 | 29.8 | 100.0 |
| Belfast | 5.1 | 1.7 | 92.4 | 0.4 | 100.0 | 21 | 7.6 | 91.5 | 0.9 | 100.0 |
| Newry | 4.7 | 15.2 | 79.8 | 8.8 | 100.0 | 23 | 2.5 | 96.2 | 1.3 | 100.0 |
| Ulster | 4.7 | 8.8 | 87.9 | 4.5 | 100.0 | 23 | 1.1 | 98.9 | 0.0 | 100.0 |
| West NI | 5.0 | 5.0 | 89.1 | 2.1 | 100.0 | 22 | 3.0 | 96.0 | 1.0 | 100.0 |
| WALES | | | | | | | | | | |
| Bangor | | | | | 0.0 | 24 | 2.7 | 82.2 | | 100.0 |
| Cardff | | | | | 0.0 | 24 | 1.2 | 85.7 | | 99.2 |
| Clwyd | | | | | 0.0 | 24 | 1.3 | 91.0 | | 98.7 |
| Swanse | | | | | 0.0 | 23 | 3.5 | 89.0 | | 100.0 |
| Wrexm | | | | | 0.0 | 25 | 1.0 | 74.2 | | 98.0 |
| TOTALS | | | | | | | | | | |
| England | 4.8 | 5.0 | 79.6 | 14.0 | 64.0 | 23 | 5.0 | 82.7 | 12.3 | 88.3 |
| N Ireland | 4.9 | | 87.2 | 6.0 | 100.0 | 23 | 3.0 | 90.1 | 6.9 | 100.0 |
| Wales | | | | | 0.0 | 24 | 2.1 | 86.0 | 12.0 | 99.4 |
| **E, W & NI** | **4.8** | **14.4** | **79.9** | **13.8** | **61.5** | **23** | **4.8** | **83.1** | **12.2** | **89.2** |

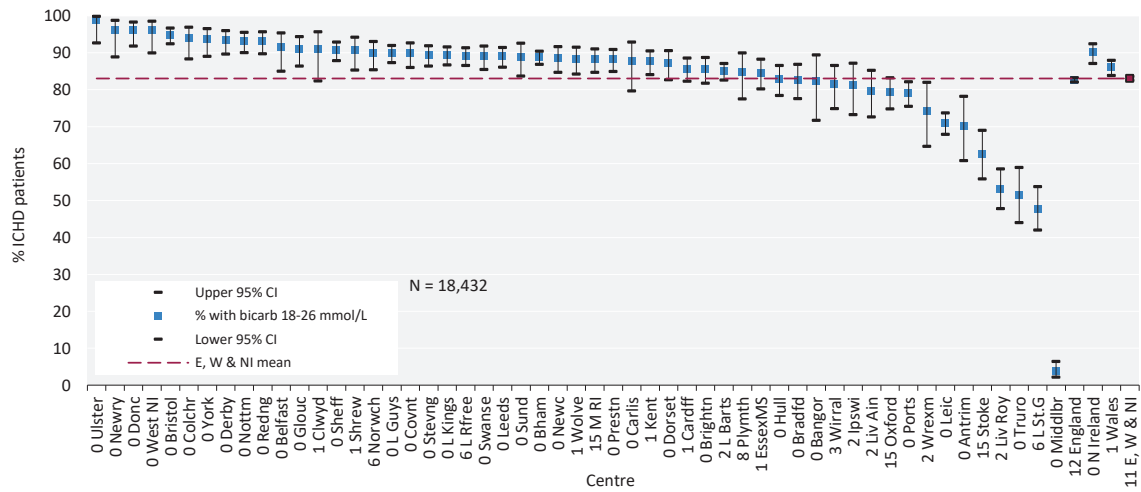Blank cells – no data returned by the centre or data completeness <70%

ICHD

**Figure 5.8** Percentage of adult patients prevalent to ICHD on 31/12/2021 with pre-dialysis bicarbonate (bicarb) within the target range (18–26 mmol/L) by centre
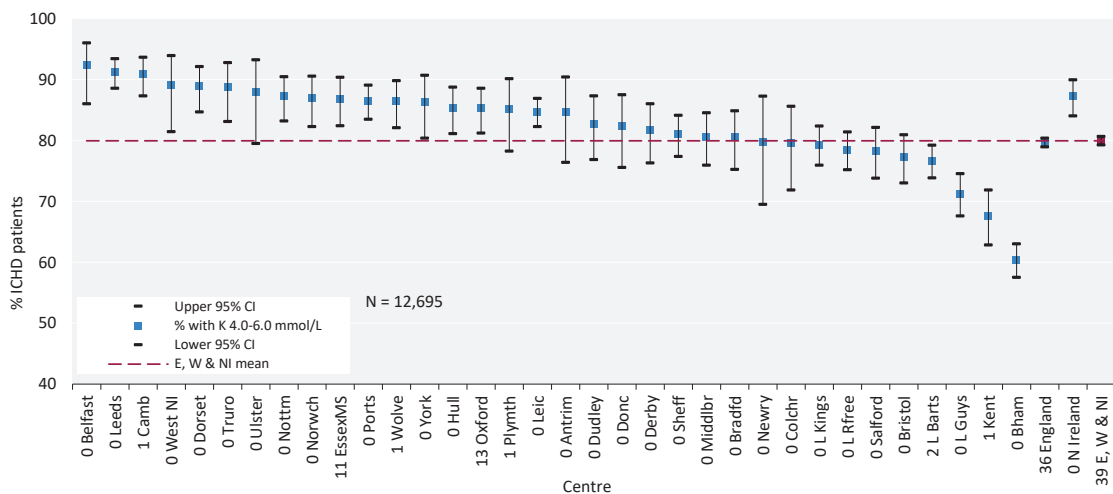CI – confidence interval
Bicarb - bicarbonate



**Figure 5.9** Percentage of adult patients prevalent to ICHD on 31/12/2021 with pre-dialysis potassium (K) within the target range (4.0–6.0 mmol/L) by centre
CI – confidence interval
K - Potassium

Pre-dialysis potassium has only been included in the UKRR report in the last few years and therefore longitudinal analyses are not shown.
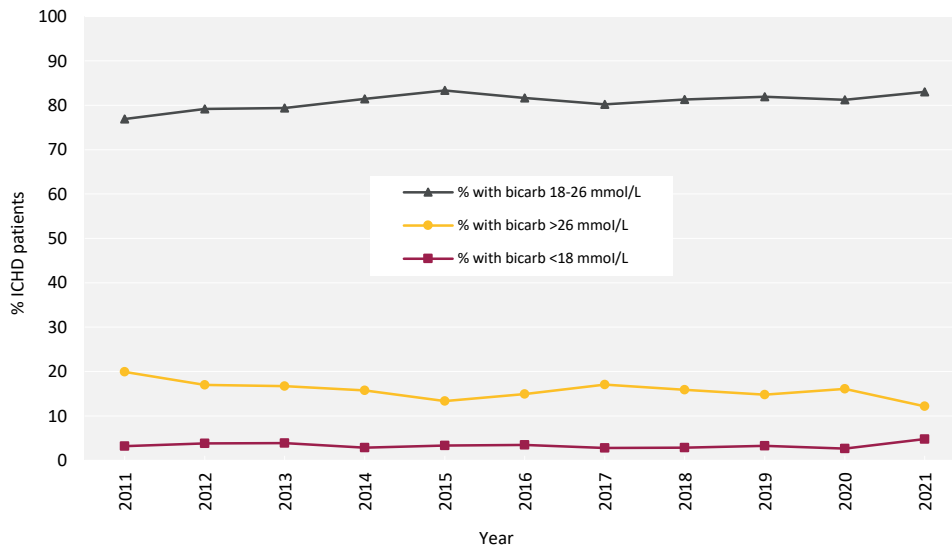
**Figure 5.10** Change in percentage of prevalent adult ICHD patients within, above and below the target range for pre-dialysis bicarbonate (bicarb 18–26 mmol/L) between 2011 and 2021

Adults on ICHD in the UK at the end of 2021

# Anaemia in prevalent adult ICHD patients

UK Kidney Association anaemia guidelines recommend a target haemoglobin of 100-120 g/L. Data regarding target and median haemoglobin and ferritin levels attained are presented in table 5.8.

**Table 5.8** Median haemoglobin and ferritin and percentage attaining target ranges in adult patients prevalent to ICHD on 31/12/2021 by centre

| | Haemoglobin | | | | Ferritin | | |
|---|---|---|---|---|---|---|---|
| Centre | Median (g/L) | % <100 g/L | % >120 g/L | % data completeness | Median (µg/L) | % <200 µg/L | % data completeness |
| ENGLAND | | | | | | | |
| Bham | 111 | 21.0 | 17.4 | 99.7 | 554 | 14.9 | 99.7 |
| Bradfd | 116 | 19.9 | 36.8 | 100.0 | 446 | 11.2 | 99.6 |
| Brightn | 110 | 22.3 | 23.0 | 100.0 | 490 | 6.4 | 99.0 |
| Bristol | 114 | 5.5 | 30.9 | 100.0 | 666 | 2.8 | 99.1 |
| Camb | 113 | 13.2 | 23.0 | 97.8 | | | 51.9 |
| Carlis | 112 | 16.3 | 19.4 | 100.0 | 618 | 12.2 | 100.0 |
| Carsh | 108 | 22.9 | 15.4 | 99.9 | 459 | 11.6 | 99.9 |
| Colchr | 111 | 18.2 | 16.7 | 100.0 | 494 | 6.1 | 100.0 |
| Covnt | 109 | 21.4 | 15.2 | 100.0 | 492 | 11.5 | 100.0 |
| Derby | 116 | 12.7 | 35.9 | 100.0 | 510 | 9.8 | 100.0 |
| Donc | 105 | 34.8 | 13.9 | 100.0 | 507 | 7.0 | 100.0 |
| Dorset | 111 | 15.5 | 17.2 | 82.9 | 735 | 3.2 | 99.6 |
| Dudley | 112 | 16.2 | 13.7 | 97.5 | | | 68.3 |
| EssexMS | 110 | 17.5 | 20.3 | 100.0 | 468 | 15.0 | 99.7 |
| Exeter | | | | | | | |
| Glouc | 110 | 20.7 | 18.2 | 100.0 | 425 | 13.3 | 96.1 |
| Hull | 111 | 21.3 | 20.7 | 100.0 | 445 | 8.8 | 99.1 |
| Ipswi | 110 | 23.0 | 13.1 | 97.6 | 434 | 25.4 | 97.6 |
| Kent | 111 | 20.9 | 22.3 | 99.3 | 555 | 12.2 | 98.6 |
| L Barts | 111 | 22.0 | 19.6 | 98.3 | 622 | 9.0 | 98.3 |
| L Guys | 110 | 19.6 | 18.5 | 100.0 | 513 | 9.6 | 99.5 |
| L Kings | 111 | 20.1 | 21.2 | 99.7 | 473 | 11.8 | 99.0 |
| L Rfree | 111 | 20.1 | 22.2 | 100.0 | 434 | 21.1 | 99.4 |
| L St.G | 108 | 30.7 | 17.9 | 99.0 | 644 | 3.4 | 99.0 |
| L West | 113 | 12.1 | 21.2 | 94.2 | 363 | 16.2 | 93.7 |
| Leeds | 110 | 20.5 | 18.2 | 100.0 | 339 | 27.4 | 100.0 |
| Leic | 112 | 17.7 | 24.5 | 99.9 | 401 | 15.2 | 99.7 |
| Liv Ain | | | | 67.7 | 574 | 11.2 | 88.8 |
| Liv Roy | 110 | 17.6 | 18.4 | 76.9 | 506 | 8.3 | 97.9 |
| M RI | 111 | 24.4 | 26.4 | 86.5 | 405 | 10.6 | 81.0 |
| Middlbr | 113 | 15.1 | 31.1 | 100.0 | 812 | 11.7 | 94.5 |
| Newc | 114 | 17.9 | 29.3 | 99.7 | 575 | 14.2 | 100.0 |
| Norwch | 111 | 25.3 | 15.4 | 92.3 | 481 | 16.7 | 94.3 |
| Nottm | 109 | 24.7 | 12.2 | 99.7 | 453 | 13.1 | 100.0 |
| Oxford | 110 | 26.9 | 24.1 | 87.2 | 556 | 4.4 | 98.8 |
| Plymth | 114 | 16.3 | 30.5 | 99.3 | 314 | 26.4 | 98.6 |
| Ports | 109 | 26.3 | 18.7 | 100.0 | 343 | 28.7 | 99.1 |
| Prestn | 110 | 22.3 | 23.4 | 100.0 | 728 | 5.2 | 96.5 |
| Redng | 110 | 23.0 | 17.4 | 100.0 | 690 | 5.7 | 100.0 |
| Salford | 108 | 26.8 | 18.6 | 100.0 | 354 | 27.1 | 99.7 |
| Sheff | 108 | 33.6 | 20.4 | 99.8 | 446 | 9.4 | 99.6 |
| Shrew | 109 | 21.6 | 17.0 | 99.4 | 493 | 5.3 | 99.4 |
| Stevng | 108 | 23.1 | 11.1 | 99.8 | 382 | 19.0 | 99.4 |
| Stoke | 114 | 9.7 | 30.4 | 85.5 | 524 | 8.0 | 82.6 |
| Sund | 111 | 16.7 | 19.2 | 100.0 | 649 | 4.0 | 100.0 |
| Truro | 109 | 19.5 | 13.6 | 100.0 | 389 | 12.0 | 98.8 |

**Table 5.8** Continued

| Centre | Haemoglobin | | | | Ferritin | | |
|---|---|---|---|---|---|---|---|
| | Median (g/L) | % <100 g/L | % >120 g/L | % data completeness | Median (µg/L) | % <200 µg/L | % data completeness |
| Wirral | 114 | 18.2 | 24.5 | 89.3 | 590 | 11.5 | 97.8 |
| Wolve | 107 | 29.9 | 18.5 | 99.0 | 673 | 10.1 | 99.0 |
| York | 110 | 21.1 | 19.4 | 100.0 | 408 | 10.3 | 100.0 |
| N IRELAND | | | | | | | |
| Antrim | 110 | 15.5 | 10.7 | 99.0 | 389 | 9.6 | 100.0 |
| Belfast | 112 | 18.6 | 23.7 | 100.0 | 501 | 5.1 | 100.0 |
| Newry | 109 | 24.4 | 11.5 | 98.7 | 510 | 8.9 | 100.0 |
| Ulster | 111 | 17.6 | 22.0 | 100.0 | 660 | 4.4 | 100.0 |
| West NI | 111 | 19.8 | 21.8 | 100.0 | 856 | 4.0 | 100.0 |
| SCOTLAND | | | | | | | |
| Abrdn | 110 | 22.6 | 18.9 | 100.0 | | | |
| Airdrie | 112 | 18.5 | 17.9 | 93.9 | | | |
| D&Gall | 111 | 15.9 | 25.0 | 91.7 | | | |
| Dundee | 115 | 15.0 | 25.6 | 93.7 | | | |
| Edinb | 114 | 17.2 | 29.7 | 97.0 | | | |
| Glasgw | 112 | 17.3 | 25.1 | 96.8 | | | |
| Inverns | 112 | 17.5 | 28.6 | 72.4 | | | |
| Klmarnk | 110 | 17.1 | 17.1 | 96.1 | | | |
| Krkcldy | 114 | 14.8 | 27.1 | 99.4 | | | |
| WALES | | | | | | | |
| Bangor | 113 | 6.8 | 16.4 | 100.0 | 582 | 11.0 | 100.0 |
| Cardff | 111 | 20.4 | 26.1 | 99.8 | 489 | 12.4 | 99.4 |
| Clwyd | 109 | 28.2 | 12.8 | 98.7 | 362 | 25.6 | 98.7 |
| Swanse | 108 | 22.5 | 16.8 | 100.0 | 434 | 24.3 | 100.0 |
| Wrexm | 112 | 17.3 | 21.4 | 99.0 | 558 | 11.3 | 98.0 |
| TOTALS | | | | | | | |
| England | 111 | 20.6 | 20.7 | 97.4 | 480 | 13.3 | 96.9 |
| N Ireland | 111 | 18.9 | 18.3 | 99.6 | 584 | 6.3 | 100.0 |
| Scotland | 113 | 16.9 | 24.8 | 95.4 | | | |
| Wales | 110 | 20.5 | 21.0 | 99.7 | 484 | 17.2 | 99.5 |
| **UK** | **111** | **20.3** | **20.9** | **97.4** | **483** | **13.3** | **97.1** |

Blank cells – no data returned by the centre or data completeness <70%
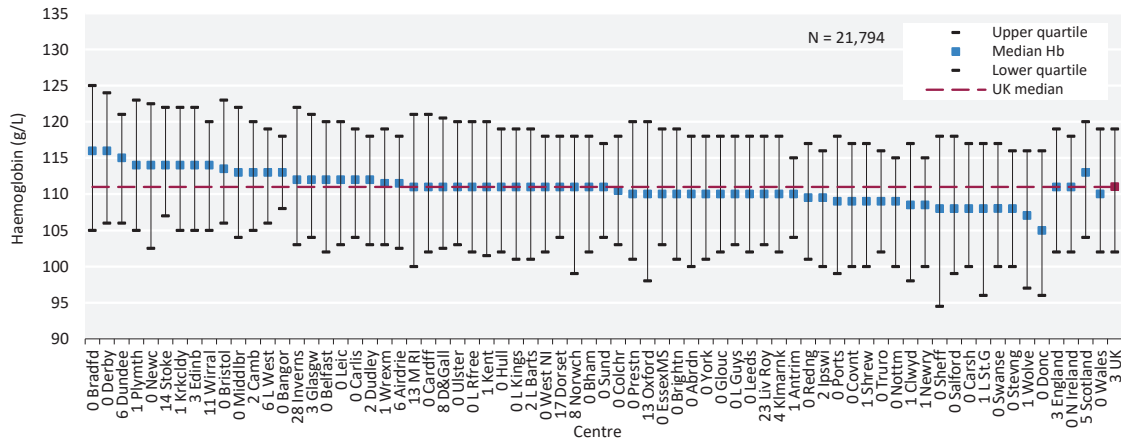UK National average for ferritin does not include Scotland

ICHD

**Figure 5.11** Median haemoglobin (Hb) in adult patients prevalent to ICHD on 31/12/2021 by centre
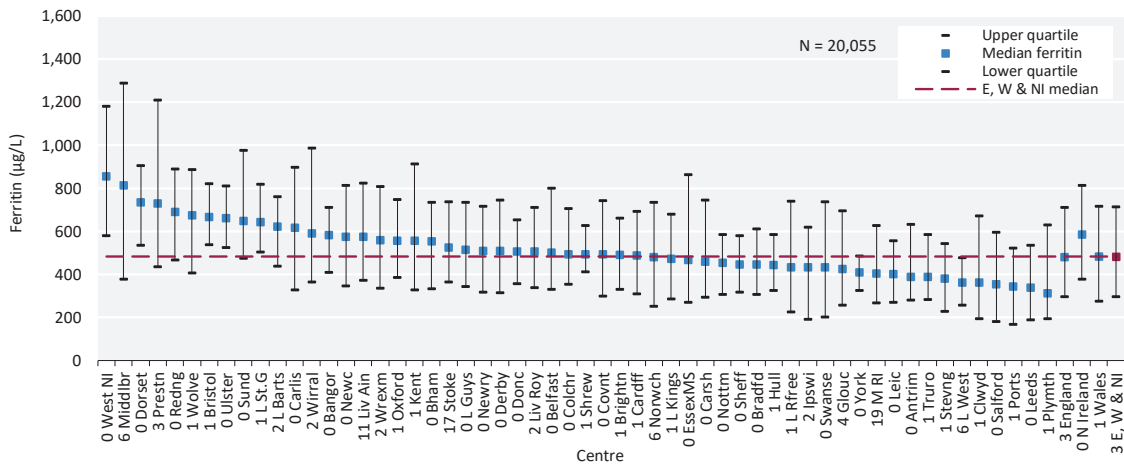


**Figure 5.12** Median ferritin in adult patients prevalent to ICHD on 31/12/2021 by centre
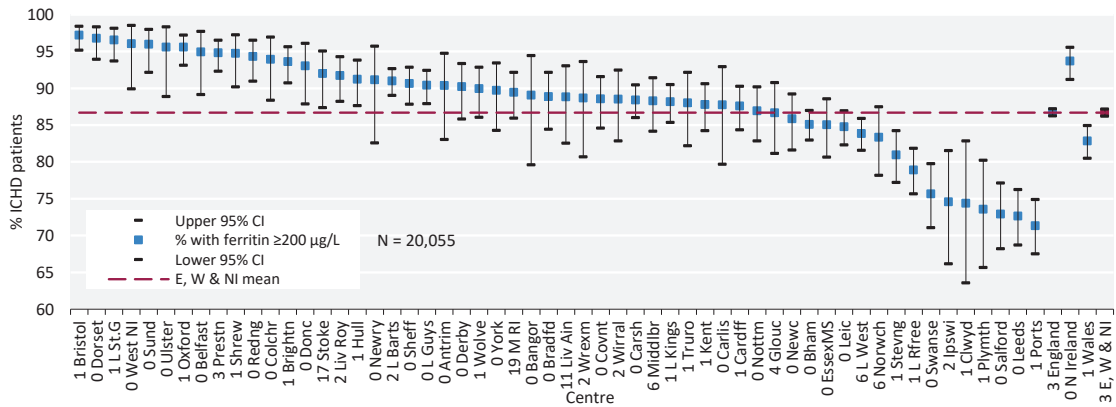


**Figure 5.13** Percentage of adult patients prevalent to ICHD on 31/12/2021 with ferritin <200 μg/L by centre
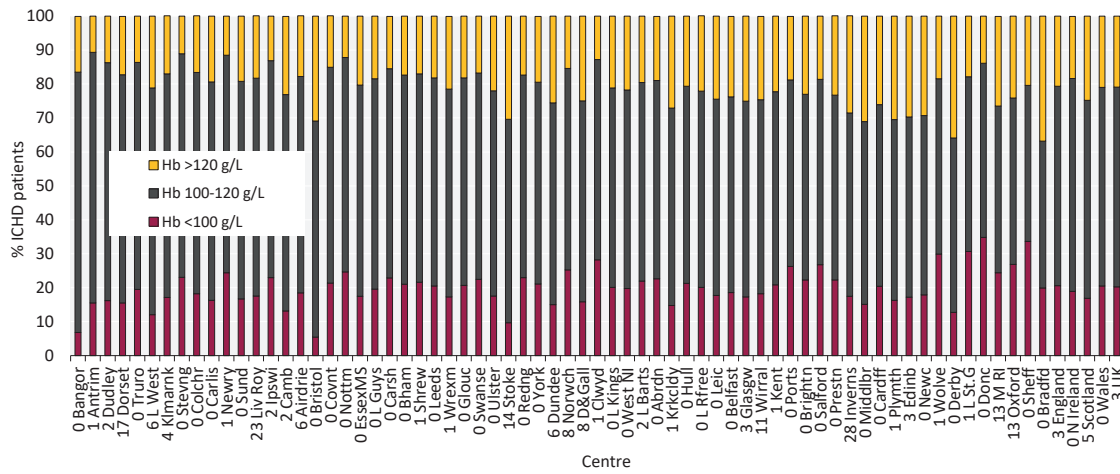
CI – confidence interval

Adults on ICHD in the UK at the end of 2021

ICHD

**Figure 5.14** Distribution of haemoglobin (Hb) in adult patients prevalent to ICHD on 31/12/2021 by centre



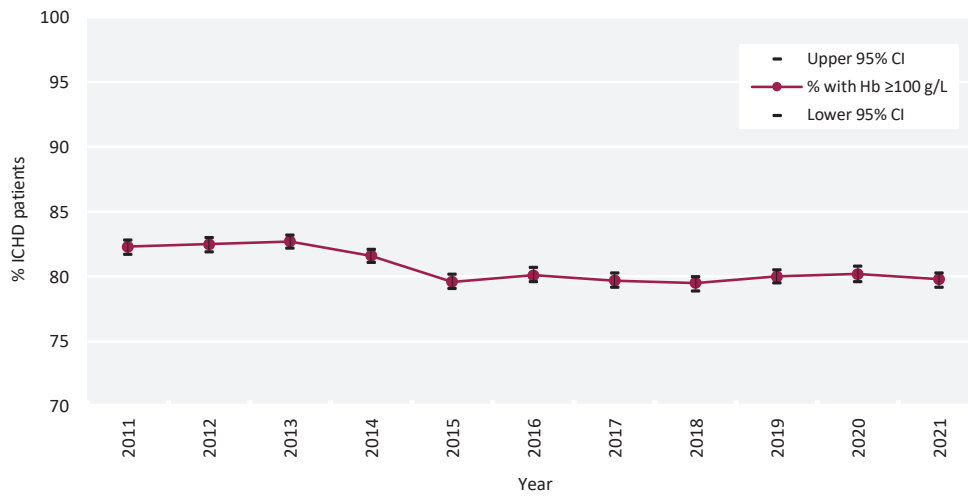**Figure 5.15** Percentage of prevalent adult ICHD patients with haemoglobin (Hb) ≥100 g/L between 2011 and 2021
CI – confidence interval

ICHD

# Dialysis access in prevalent adult dialysis patients

Scotland do not contribute dialysis session information or data via the audit, and therefore are not included in the analysis of prevalent patients. They submit access data for incident patients separately to the audit (see chapter 2). The type of prevalent dialysis access is presented in figure 5.16 for the 40 of centres in England, Northern Ireland and Wales that returned vascular access data on ≥70% of their prevalent dialysis patients. Rates of PD may impact the types of vascular access used for ICHD and this is reflected in the combined audit measures for dialysis access. .
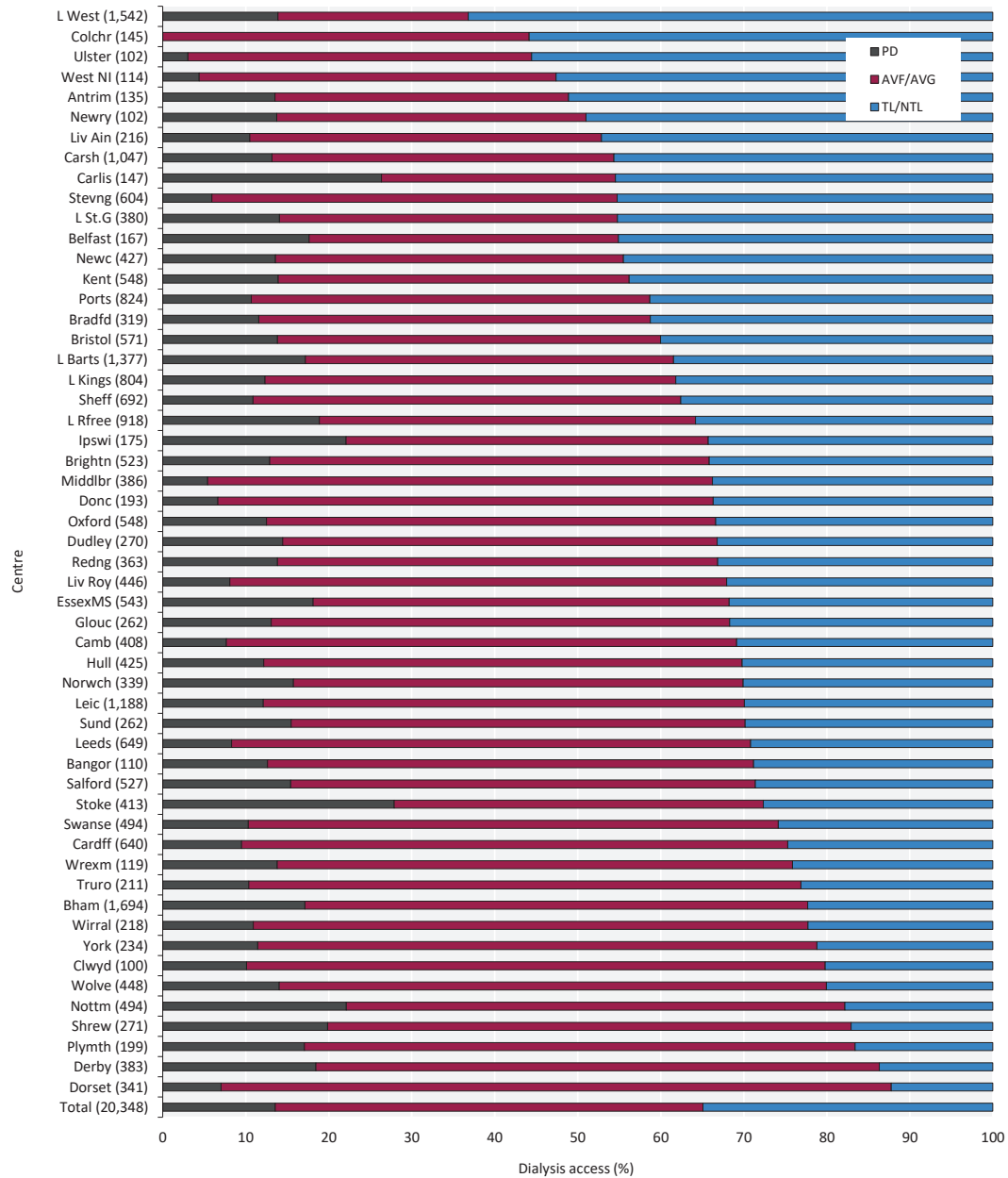


**Figure 5.16** Dialysis access in adult patients prevalent to dialysis on 31/12/2021 by centre

Number of patients on dialysis in a centre in brackets (centres with <70% access data for the prevalent dialysis population were excluded)

AVF – arteriovenous fistula; AVG – arteriovenous graft; NTL – non-tunnelled line; TL – tunnelled line

# Cause of death in adult ICHD patients

Cause of death was analysed in prevalent patients receiving ICHD on 31/12/2020 and followed-up for one year in 2021. The proportion of ICHD patients with each cause of death is shown for patients with cause of death data and these total 100% of patients with data. The proportion of patients with no cause of death data is shown on a separate line. Further detail on the survival of prevalent KRT patients is in chapter 3.

**Table 5.9** Cause of death in adult patients prevalent to ICHD on 31/12/2020 followed-up in 2021 by age group

| Cause of death | ICHD all ages | | ICHD < 65 years | | ICHD ≥ 65 years | |
| --- | --- | --- | --- | --- | --- | --- |
| | N | % | N | % | N | % |
| Cardiac disease | 523 | 20.3 | 196 | 26.1 | 327 | 17.9 |
| Cerebrovascular disease | 62 | 2.4 | 25 | 3.3 | 37 | 2.0 |
| Infection | 633 | 24.6 | 174 | 23.2 | 459 | 25.1 |
| Malignancy | 129 | 5.0 | 32 | 4.3 | 97 | 5.3 |
| Treatment withdrawal | 390 | 15.1 | 59 | 7.9 | 331 | 18.1 |
| Other | 651 | 25.3 | 199 | 26.5 | 452 | 24.8 |
| Uncertain aetiology | 189 | 7.3 | 66 | 8.8 | 123 | 6.7 |
| **Total (with data)** | **2,577** | **100.0** | **751** | **100.0** | **1,826** | **100.0** |
| | | | | | | |
| Missing | 1,509 | 36.9 | 453 | 37.6 | 1,056 | 36.6 |
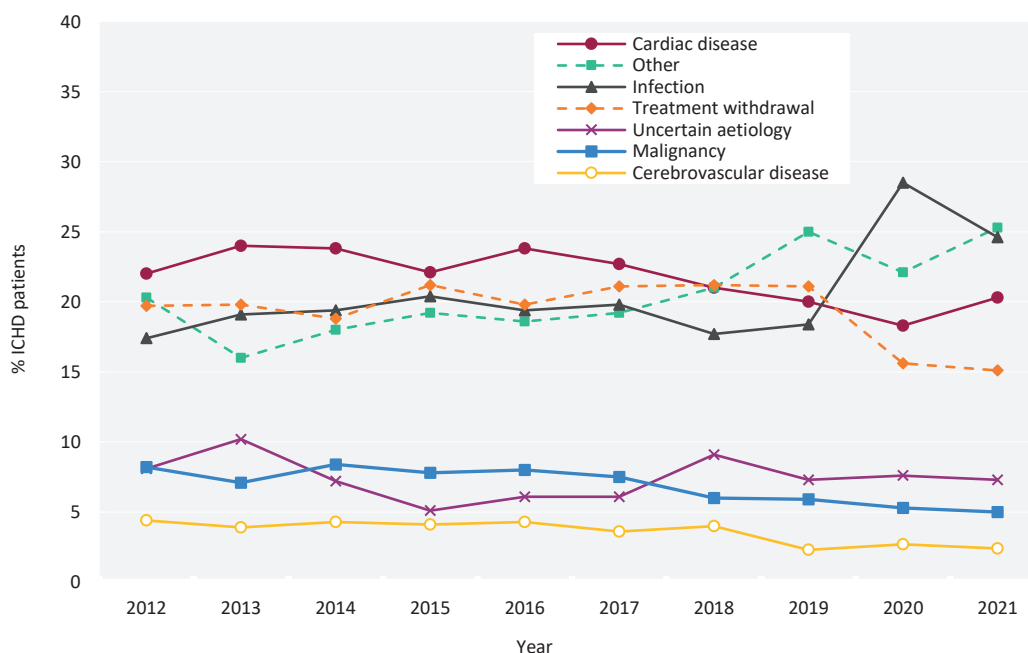


**Figure 5.21** Cause of death between 2012 and 2021 for adult patients prevalent to ICHD at the beginning of the year

*Chapter 6*

# Adults on peritoneal dialysis (PD) in the UK at the end of 2021

# Contents

# Introduction

This chapter describes the population of adult patients with end-stage kidney disease (ESKD) who were receiving regular peritoneal dialysis (PD) in the UK at the end of 2021 (figure 6.1). This population comprises patients who were on PD at the end of 2020 and remained on PD throughout 2021, as well as patients who commenced/re-commenced PD in 2021. This latter group includes both incident kidney replacement therapy (KRT) patients who ended 2021 on PD and prevalent KRT patients who switched to PD from in-centre haemodialysis (ICHD), home haemodialysis (HHD) or a transplant (Tx) in 2021. Consequently, the cohort of patients receiving PD in a centre not only reflects differences in underlying population case-mix, but also differences in the rates of acceptance onto KRT, survival on PD, transplantation and haemodialysis (ICHD and HHD), and the care of patients on those other modalities, as described in other chapters of this report.
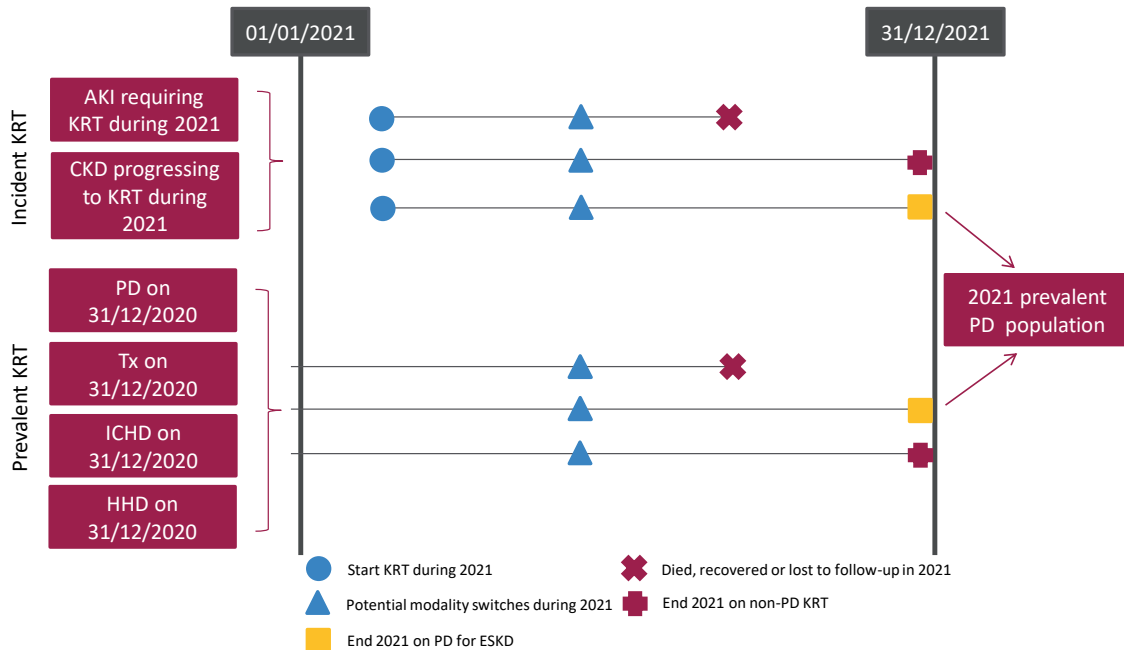


**Figure 6.1** Pathways adult patients could follow to be included in the UK 2021 prevalent PD population

Note that patients receiving dialysis for acute kidney injury (AKI) are only included in this chapter if they had a timeline or KRT modality code for chronic PD at the end of 2021 or if they had been on KRT for ≥90 days and were on PD at the end of 2021
CKD – chronic kidney disease

The cause of death analyses were undertaken on historic prevalent cohorts to allow sufficient follow-up time.

This chapter addresses the following key aspects of the care of patients on PD for which there are UK Kidney Association guidelines (table 6.1):

- **Complications associated with ESKD and PD:** these include anaemia, mineral bone disorders and metabolic acidosis.

- **Infections associated with PD:** rates of PD peritonitis are reported in this chapter. The four infections subject to mandatory reporting to the UK Health Security Agency (UKHSA) methicillin-resistant *Staphylococcus aureus* (MRSA), methicillin-sensitive *Staphylococcus aureus* (MSSA), *Escherichia coli* bacteraemia and *Clostridium difficile* - will be added to our website alongside the annual report when 2021 data are available.

# Rationale for analyses

The analyses begin with a description of the 2021 prevalent adult PD population, including the number on PD per million population (pmp).

The UK Kidney Association guidelines (ukkidney.org/health-professionals/guidelines/guidelines-commentaries) provide audit measures relevant to the care of patients on PD and, where data permit, their attainment by UK kidney centres in 2021 is reported in this chapter (table 6.1). Audit measures in guidelines that have been archived are not included.

Some audit measures – for example, the target for glycated haemoglobin (HbA1c) in those on hypoglycaemia-inducing treatment – cannot be reported because the completeness of the required data items is too low. Detail about the completeness of data returned to the UK Renal Registry (UKRR) is available through the UKRR data portal (ukkidney.org/audit-research/data-portals). Audit measures that cannot be reported because the required data items were not collected by the UKRR are omitted.

For definitions and methods relating to this chapter see appendix A. Centres were exluded from caterpillar plots and cells were blanked in tables where data completeness for a biochemical variable was <70% and/or the number of patients reported was <10. The number preceding the centre name in each caterpillar plot indicates the percentage of missing data for that centre.

As Colchester kidney centre did not have any PD patients they were excluded from some of the analyses, although their dialysis patients were included in the relevant dialysis population denominators.

Exeter was unable to submit patient level data for 2021. Aggregate numbers by modality were provided, enabling inclusion in Tables 6.2 and 6.3. Exeter is excluded from all other analyses.

PD

**Table 6.1** The UK Kidney Association audit measures relevant to PD that are reported in this chapter

| The UK Kidney Association guideline | Audit criteria | Related analysis/analyses |
|---|---|---|
| CKD mineral bone disorder (2018) | Percentage of patients with serum calcium above the normal reference range of 2.2–2.5 mmol/L | Table 6.5, figure 6.3 |
| PD (2017) | Plasma bicarbonate should be maintained in the normal reference range 22–30 mmol/L – 100% | Table 6.5, figure 6.5 |
| Anaemia (2020) | Proportion of patients with serum ferritin <100 µg/L at start of treatment with erythropoiesis stimulating agent (ESA) | Table 6.6, figure 6.9 (the UKRR does not hold treatment with ESA start dates) |
| Planning, initiating and withdrawing KRT (2014) | Number of patients withdrawing from PD as a proportion of all deaths on PD | Table 6.8, figure 6.13 |

ESA – erythropoiesis stimulating agent

PD

# Key findings

- 3,903 adult patients were receiving PD for ESKD in the UK on 31/12/2021, compared to 3822 in 2020, which represented 5.6% of the KRT population.

- The median age of PD patients was 63.3 years and 60.3% were male.

- The median adjusted calcium for PD patients was 2.4 mmol/L and 14.3% were above the target range of 2.2–2.5 mmol/L.

- The median bicarbonate for PD patients was 24 mmol/L and 74.1% were within the target range of 22–30 mmol/L.

- The median haemoglobin for PD patients was 111 g/L and 8.8% had a ferritin <100 µg/L.

- The PD peritonitis rate in 2021 (England only) was 0.42/1 PD patient-year.

- There was no cause of death data available for 37.0% of deaths. For those with data, the leading cause of death was infection in both younger patients and those ≥65 years at 40.0% and 26.2% respectively with a likely contribution from COVID related deaths. Treatment withdrawal accounted for 11.0% of deaths in those ≥65 years.

PD

# Analyses

## Changes to the prevalent adult PD population

For the 68 adult kidney centres, the number of prevalent patients on PD was calculated as both a proportion of the prevalent patients on KRT and as a proportion of the estimated centre catchment population (calculated as detailed in appendix A).

**Table 6.2** Number of prevalent adult PD patients and proportion of adult KRT patients on PD by year and by centre; number of PD patients as a proportion of the catchment population

| Centre | N on PD | | | | | % on PD | | | | | Estimated catchment population (millions) | 2021 crude rate (pmp) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2017 | 2018 | 2019 | 2020 | 2021 | 2017 | 2018 | 2019 | 2020 | 2021 | | |
| ENGLAND | | | | | | | | | | | | |
| Bham | 249 | 257 | 257 | 268 | 277 | 7.8 | 7.9 | 7.8 | 8.2 | 8.4 | 2.05 | 135 |
| Bradfd | 20 | 26 | 34 | 26 | 37 | 3.0 | 3.8 | 4.6 | 3.6 | 5.0 | 0.49 | 75 |
| Brightn | 59 | 60 | 55 | 65 | 69 | 5.8 | 5.7 | 5.2 | 6.0 | 6.3 | 1.08 | 64 |
| Bristol | 58 | 56 | 63 | 68 | 77 | 3.9 | 3.8 | 4.2 | 4.6 | 5.1 | 1.22 | 63 |
| Camb | 26 | 32 | 28 | 26 | 29 | 1.9 | 2.3 | 1.9 | 1.7 | 1.8 | 0.94 | 31 |
| Carlis | 27 | 30 | 35 | 32 | 30 | 9.6 | 10.2 | 11.6 | 10.8 | 9.8 | 0.26 | 117 |
| Carsh | 96 | 99 | 72 | 121 | 134 | 5.7 | 5.7 | 4.0 | 6.5 | 7.0 | 1.63 | 82 |
| Colchr | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.29 | 0 |
| Covnt | 52 | 52 | 81 | 84 | 81 | 5.4 | 5.4 | 7.5 | 7.6 | 7.2 | 0.80 | 102 |
| Derby | 78 | 78 | 62 | 69 | 66 | 14.1 | 13.3 | 9.5 | 10.2 | 9.6 | 0.56 | 118 |
| Donc | 29 | 23 | 25 | 19 | 13 | 8.7 | 7.0 | 7.3 | 5.6 | 3.8 | 0.38 | 35 |
| Dorset | 35 | 38 | 33 | 34 | 23 | 4.8 | 5.0 | 4.3 | 4.3 | 2.9 | 0.73 | 32 |
| Dudley | 57 | 38 | 36 | 32 | 40 | 15.6 | 10.6 | 9.8 | 8.6 | 10.1 | 0.34 | 116 |
| EssexMS | 93 | 87 | 85 | 83 | 93 | 11.2 | 10.3 | 10.0 | 9.4 | 10.4 | 0.99 | 94 |
| Exeter | 75 | 77 | 84 | 84 | 73 | 7.1 | 7.1 | 7.7 | 7.7 | 6.8 | 0.95 | 77 |
| Glouc | 45 | 37 | 31 | 30 | 36 | 8.8 | 7.1 | 5.8 | 5.7 | 6.6 | 0.51 | 71 |
| Hull | 56 | 45 | 49 | 57 | 52 | 6.4 | 5.1 | 5.4 | 6.2 | 5.7 | 0.80 | 65 |
| Ipswi | 45 | 40 | 42 | 33 | 33 | 10.3 | 9.3 | 9.8 | 7.7 | 7.8 | 0.31 | 106 |
| Kent | 51 | 43 | 50 | 62 | 72 | 4.7 | 3.9 | 4.4 | 5.4 | 6.0 | 1.07 | 67 |
| L Barts | 236 | 237 | 228 | 266 | 258 | 9.4 | 9.1 | 8.6 | 9.9 | 9.4 | 1.59 | 162 |
| L Guys | 39 | 43 | 53 | 64 | 70 | 1.8 | 1.9 | 2.3 | 2.8 | 3.0 | 1.01 | 70 |
| L Kings | 97 | 89 | 95 | 101 | 98 | 8.4 | 7.5 | 7.6 | 8.1 | 7.3 | 0.93 | 105 |
| L Rfree | 143 | 163 | 165 | 179 | 173 | 6.5 | 7.3 | 7.0 | 7.7 | 7.3 | 1.33 | 130 |
| L St.G | 37 | 40 | 43 | 48 | 53 | 4.4 | 4.8 | 5.0 | 5.6 | 6.1 | 0.67 | 80 |
| L West | 120 | 135 | 155 | 200 | 214 | 3.5 | 3.8 | 4.3 | 5.7 | 6.0 | 1.96 | 109 |
| Leeds | 59 | 64 | 67 | 64 | 53 | 3.6 | 3.8 | 3.9 | 3.7 | 3.0 | 1.37 | 39 |
| Leic | 96 | 108 | 126 | 120 | 138 | 4.1 | 4.4 | 4.9 | 4.6 | 5.2 | 2.09 | 66 |
| Liv Ain | 21 | 25 | 22 | 25 | 22 | 10.0 | 11.5 | 9.7 | 10.3 | 8.3 | 0.43 | 51 |
| Liv Roy | 70 | 57 | 35 | 32 | 32 | 5.6 | 4.5 | 2.8 | 2.6 | 2.7 | 0.81 | 39 |
| M RI | 71 | 69 | 76 | 84 | 97 | 3.5 | 3.3 | 3.7 | 4.2 | 4.7 | 1.33 | 73 |
| Middlbr | 23 | 29 | 32 | 28 | 20 | 2.5 | 3.1 | 3.4 | 3.0 | 2.1 | 0.81 | 25 |
| Newc | 58 | 60 | 59 | 46 | 58 | 5.2 | 5.2 | 5.0 | 3.8 | 4.7 | 0.95 | 61 |
| Norwch | 43 | 36 | 46 | 45 | 45 | 5.5 | 4.6 | 5.7 | 5.6 | 5.7 | 0.69 | 65 |
| Nottm | 69 | 70 | 76 | 95 | 103 | 5.8 | 5.8 | 6.2 | 7.9 | 8.4 | 0.93 | 111 |
| Oxford | 67 | 70 | 58 | 68 | 66 | 3.6 | 3.6 | 2.9 | 3.4 | 3.3 | 1.45 | 46 |
| Plymth | 49 | 40 | 42 | 33 | 34 | 9.1 | 7.4 | 7.9 | 6.1 | 6.2 | 0.40 | 85 |
| Ports | 84 | 94 | 87 | 101 | 90 | 4.8 | 5.3 | 4.6 | 5.3 | 4.6 | 1.75 | 51 |
| Prestn | 35 | 39 | 43 | 50 | 55 | 2.8 | 3.0 | 3.2 | 3.7 | 4.0 | 1.23 | 45 |
| Redng | 39 | 40 | 56 | 61 | 50 | 4.9 | 4.9 | 6.5 | 7.0 | 5.7 | 0.70 | 72 |
| Salford | 117 | 115 | 120 | 106 | 84 | 10.5 | 9.8 | 9.7 | 8.4 | 6.9 | 1.15 | 73 |

Adults on PD in the UK at the end of 2021

**Table 6.2** Continued

| Centre | N on PD | | | | | % on PD | | | | | Estimated catchment population (millions) | 2021 crude rate (pmp) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2017 | 2018 | 2019 | 2020 | 2021 | 2017 | 2018 | 2019 | 2020 | 2021 | | |
| Sheff | 55 | 61 | 60 | 77 | 82 | 3.8 | 4.1 | 4.0 | 5.2 | 5.5 | 1.13 | 72 |
| Shrew | 42 | 58 | 55 | 51 | 51 | 10.9 | 13.5 | 12.6 | 11.9 | 11.5 | 0.41 | 124 |
| Stevng | 23 | 28 | 37 | 25 | 36 | 2.6 | 3.0 | 3.9 | 2.6 | 3.6 | 1.11 | 32 |
| Stoke | 72 | 81 | 71 | 94 | 107 | 8.9 | 10.0 | 8.8 | 11.6 | 12.7 | 0.73 | 146 |
| Sund | 16 | 17 | 26 | 32 | 37 | 2.9 | 3.0 | 4.6 | 5.8 | 6.8 | 0.55 | 68 |
| Truro | 15 | 17 | 21 | 23 | 22 | 3.5 | 3.9 | 4.7 | 5.2 | 4.8 | 0.36 | 61 |
| Wirral | 20 | 20 | 18 | 18 | 20 | 5.1 | 5.0 | 4.3 | 4.3 | 4.9 | 0.47 | 43 |
| Wolve | 54 | 54 | 49 | 59 | 64 | 9.3 | 8.9 | 8.0 | 9.0 | 9.3 | 0.55 | 117 |
| York | 35 | 29 | 33 | 24 | 27 | 6.3 | 5.1 | 5.7 | 4.2 | 4.6 | 0.49 | 56 |
| N IRELAND | | | | | | | | | | | | |
| Antrim | 14 | 20 | 19 | 12 | 18 | 5.5 | 7.3 | 6.7 | 4.2 | 6.1 | 0.25 | 73 |
| Belfast | 16 | 22 | 18 | 15 | 27 | 1.9 | 2.5 | 2.0 | 1.7 | 3.0 | 0.53 | 51 |
| Newry | 23 | 16 | 11 | 9 | 13 | 9.5 | 6.3 | 4.3 | 3.4 | 4.6 | 0.24 | 55 |
| Ulster | 6 | 10 | 8 | 3 | 3 | 3.3 | 5.2 | 4.3 | 1.5 | 1.5 | 0.20 | 15 |
| West NI | 9 | 9 | 14 | 7 | 6 | 2.9 | 2.8 | 4.3 | 2.0 | 1.8 | 0.25 | 24 |
| SCOTLAND | | | | | | | | | | | | |
| Abrdn | 22 | 26 | 22 | 22 | 20 | 3.9 | 4.5 | 3.9 | 3.9 | 3.5 | 0.50 | 40 |
| Airdrie | 16 | 22 | 21 | 29 | 29 | 3.4 | 4.5 | 4.0 | 5.6 | 5.8 | 0.46 | 63 |
| D&Gall | 6 | 6 | 8 | 10 | 8 | 4.4 | 4.1 | 5.4 | 6.4 | 5.2 | 0.12 | 65 |
| Dundee | 18 | 22 | 21 | 13 | 16 | 4.1 | 4.9 | 4.7 | 3.0 | 3.9 | 0.37 | 43 |
| Edinb | 33 | 36 | 41 | 33 | 33 | 4.0 | 4.2 | 4.6 | 3.7 | 3.6 | 0.84 | 39 |
| Glasgw | 48 | 52 | 45 | 46 | 38 | 2.7 | 2.9 | 2.4 | 2.5 | 2.0 | 1.37 | 28 |
| Inverns | 10 | 13 | 12 | 9 | 11 | 3.8 | 4.7 | 4.3 | 3.3 | 4.0 | 0.22 | 49 |
| Klmarnk | 24 | 19 | 24 | 27 | 33 | 7.1 | 5.6 | 6.7 | 7.3 | 9.0 | 0.29 | 113 |
| Krkcldy | 11 | 10 | 12 | 6 | 7 | 3.6 | 3.4 | 4.1 | 2.1 | 2.4 | 0.27 | 26 |
| WALES | | | | | | | | | | | | |
| Bangor | 17 | 20 | 14 | 18 | 13 | 8.7 | 9.9 | 7.0 | 8.3 | 6.0 | 0.16 | 79 |
| Cardff | 71 | 59 | 63 | 67 | 58 | 4.2 | 3.4 | 3.6 | 4.0 | 3.4 | 1.16 | 50 |
| Clwyd | 12 | 15 | 13 | 13 | 11 | 6.7 | 7.9 | 6.3 | 6.4 | 5.4 | 0.18 | 61 |
| Swanse | 74 | 70 | 77 | 59 | 49 | 9.4 | 8.5 | 8.9 | 6.9 | 5.7 | 0.76 | 65 |
| Wrexm | 27 | 24 | 23 | 25 | 16 | 8.4 | 7.6 | 7.4 | 7.7 | 5.3 | 0.21 | 77 |
| TOTALS | | | | | | | | | | | | |
| England | 3,056 | 3,106 | 3,176 | 3,412 | 3,494 | 5.6 | 5.5 | 5.5 | 5.9 | 5.9 | 44.77 | 78 |
| N Ireland | 68 | 77 | 70 | 46 | 67 | 3.7 | 4.0 | 3.6 | 2.3 | 3.3 | 1.47 | 46 |
| Scotland | 188 | 206 | 206 | 195 | 195 | 3.7 | 3.9 | 3.8 | 3.7 | 3.6 | 4.45 | 44 |
| Wales | 201 | 188 | 190 | 182 | 147 | 6.3 | 5.8 | 5.7 | 5.6 | 4.5 | 2.49 | 59 |
| **UK** | **3,513** | **3,577** | **3,642** | **3,835** | **3,903** | **5.4** | **5.4** | **5.3** | **5.6** | **5.6** | **53.19** | **73** |

Country PD populations were calculated by summing the PD patients from centres in each country. Estimated country populations were derived from Office for National Statistics figures (see appendix A for details on estimated catchment population by kidney centre)

Exeter was unable to submit 2021 patient level data, but provided aggregate numbers of patients on KRT at the end of 2021, by treatment modality
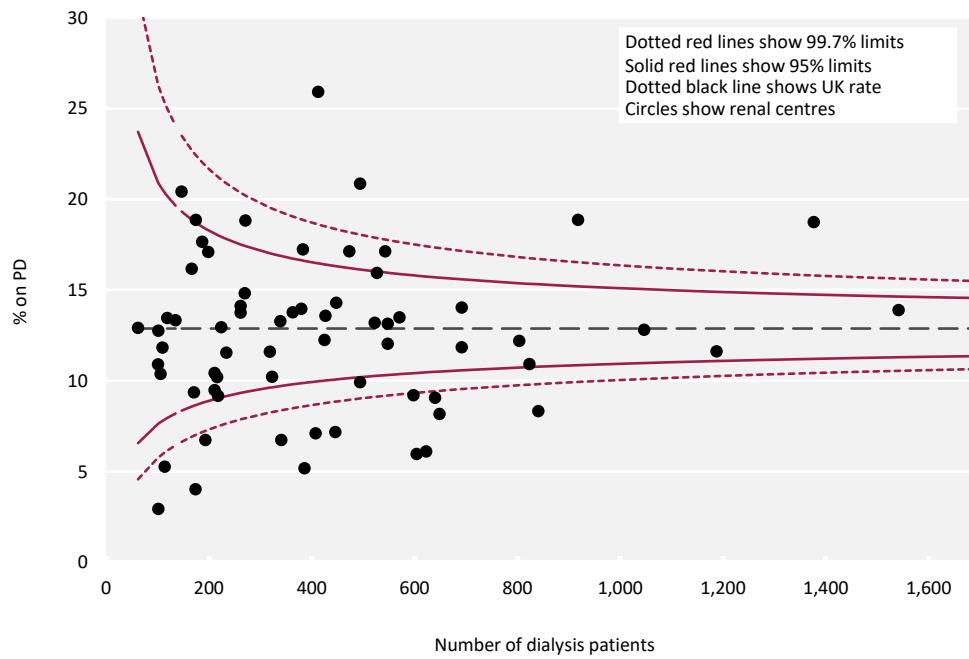
pmp – per million population

PD

**Figure 6.2** Percentage of adult patients prevalent to dialysis on 31/12/2021 who were on PD by centre

PD

# Demographics of prevalent adult PD patients

The proportion of PD patients from each ethnic group is shown for patients with ethnicity data – the proportion of patients in each centre with no ethnicity data is shown separately.

**Table 6.3** Demographics of adult patients prevalent to PD on 31/12/2021 by centre

| Centre | N on KRT | N on PD | % on PD | Median age (yrs) | % male | Ethnicity | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | % White | % Asian | % Black | % Other | % missing |
| ENGLAND | | | | | | | | | | |
| Bham | 3,309 | 277 | 8.4 | 62.1 | 61.4 | 57.8 | 29.3 | 11.5 | 1.5 | 2.5 |
| Bradfd | 735 | 37 | 5.0 | 62.1 | 64.9 | 64.9 | 29.7 | 0.0 | 5.4 | 0.0 |
| Brightn | 1,092 | 69 | 6.3 | 68.5 | 66.7 | 90.5 | 6.3 | 1.6 | 1.6 | 8.7 |
| Bristol | 1,497 | 77 | 5.1 | 59.9 | 66.2 | 94.5 | 1.4 | 1.4 | 2.7 | 5.2 |
| Camb | 1,629 | 29 | 1.8 | 62.2 | 72.4 | 96.3 | 3.7 | 0.0 | 0.0 | 6.9 |
| Carlis | 305 | 30 | 9.8 | 69.6 | 60.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Carsh | 1,907 | 134 | 7.0 | 63.8 | 61.2 | 66.1 | 16.1 | 8.1 | 9.7 | 7.5 |
| Colchr | 145 | 0 | 0.0 | | | | | | | |
| Covnt | 1,119 | 81 | 7.2 | 71.5 | 70.4 | 88.9 | 4.9 | 6.2 | 0.0 | 0.0 |
| Derby | 689 | 66 | 9.6 | 69.0 | 59.1 | 90.8 | 7.7 | 1.5 | 0.0 | 1.5 |
| Donc | 339 | 13 | 3.8 | 61.1 | 38.5 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Dorset | 786 | 23 | 2.9 | 69.5 | 69.6 | 95.7 | 0.0 | 0.0 | 4.3 | 0.0 |
| Dudley | 398 | 40 | 10.1 | 65.9 | 60.0 | 80.0 | 15.0 | 5.0 | 0.0 | 0.0 |
| EssexMS | 895 | 93 | 10.4 | 70.2 | 67.7 | 89.7 | 5.7 | 2.3 | 2.3 | 6.5 |
| Exeter | 1,077 | 73 | 6.8 | | | | | | | |
| Glouc | 546 | 36 | 6.6 | 57.3 | 58.3 | 82.4 | 5.9 | 2.9 | 8.8 | 5.6 |
| Hull | 919 | 52 | 5.7 | 66.8 | 57.7 | 94.2 | 3.8 | 1.9 | 0.0 | 0.0 |
| Ipswi | 421 | 33 | 7.8 | 75.3 | 66.7 | 83.3 | 0.0 | 4.2 | 12.5 | 27.3 |
| Kent | 1,192 | 72 | 6.0 | 62.4 | 56.9 | 87.9 | 1.5 | 6.1 | 4.5 | 8.3 |
| L Barts | 2,750 | 258 | 9.4 | 61.5 | 58.5 | 26.3 | 42.2 | 25.5 | 6.0 | 2.7 |
| L Guys | 2,322 | 70 | 3.0 | 56.3 | 45.7 | 49.2 | 14.3 | 31.7 | 4.8 | 10.0 |
| L Kings | 1,334 | 98 | 7.3 | 57.0 | 63.3 | 47.4 | 12.4 | 34.0 | 6.2 | 1.0 |
| L Rfree | 2,380 | 173 | 7.3 | 63.6 | 60.7 | 33.5 | 29.0 | 23.2 | 14.2 | 10.4 |
| L St.G | 866 | 53 | 6.1 | 57.5 | 58.5 | 38.6 | 22.7 | 15.9 | 22.7 | 17.0 |
| L West | 3,556 | 214 | 6.0 | 67.0 | 54.2 | 38.0 | 44.1 | 16.0 | 1.9 | 0.5 |
| Leeds | 1,784 | 53 | 3.0 | 58.9 | 47.2 | 69.8 | 17.0 | 11.3 | 1.9 | 0.0 |
| Leic | 2,640 | 138 | 5.2 | 64.8 | 55.8 | 80.6 | 14.0 | 3.9 | 1.6 | 6.5 |
| Liv Ain | 264 | 22 | 8.3 | 69.6 | 63.6 | 90.5 | 0.0 | 9.5 | 0.0 | 4.5 |
| Liv Roy | 1,207 | 32 | 2.7 | 54.3 | 43.8 | 86.7 | 3.3 | 3.3 | 6.7 | 6.3 |
| M RI | 2,077 | 97 | 4.7 | 59.9 | 60.8 | 67.5 | 15.7 | 13.3 | 3.6 | 14.4 |
| Middlbr | 955 | 20 | 2.1 | 64.0 | 65.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Newc | 1,226 | 58 | 4.7 | 57.2 | 65.5 | 87.7 | 5.3 | 3.5 | 3.5 | 1.7 |
| Norwch | 784 | 45 | 5.7 | 72.6 | 71.1 | 97.7 | 2.3 | 0.0 | 0.0 | 2.2 |
| Nottm | 1,220 | 103 | 8.4 | 57.5 | 69.9 | 77.5 | 14.7 | 6.9 | 1.0 | 1.0 |
| Oxford | 2,003 | 66 | 3.3 | 65.6 | 51.5 | | | | | 34.8 |
| Plymth | 548 | 34 | 6.2 | 64.5 | 67.6 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Ports | 1,941 | 90 | 4.6 | 66.8 | 62.2 | 92.8 | 5.8 | 0.0 | 1.4 | 23.3 |
| Prestn | 1,379 | 55 | 4.0 | 65.1 | 56.4 | 78.2 | 21.8 | 0.0 | 0.0 | 0.0 |
| Redng | 877 | 50 | 5.7 | 59.4 | 62.0 | 75.6 | 13.3 | 4.4 | 6.7 | 10.0 |
| Salford | 1,215 | 84 | 6.9 | 61.8 | 58.3 | 82.1 | 14.3 | 1.2 | 2.4 | 0.0 |
| Sheff | 1,496 | 82 | 5.5 | 63.0 | 63.4 | 97.5 | 2.5 | 0.0 | 0.0 | 2.4 |
| Shrew | 442 | 51 | 11.5 | 68.5 | 56.9 | 91.3 | 6.5 | 0.0 | 2.2 | 9.8 |
| Stevng | 1,014 | 36 | 3.6 | 60.8 | 52.8 | 68.8 | 15.6 | 9.4 | 6.3 | 11.1 |
| Stoke | 845 | 107 | 12.7 | 64.3 | 56.1 | 87.4 | 6.3 | 4.2 | 2.1 | 11.2 |
| Sund | 547 | 37 | 6.8 | 57.8 | 51.4 | 94.6 | 5.4 | 0.0 | 0.0 | 0.0 |
| Truro | 461 | 22 | 4.8 | 57.1 | 59.1 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Wirral | 412 | 20 | 4.9 | 61.5 | 50.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |

**Table 6.3** Continued

| Centre | N on KRT | N on PD | % on PD | Median age (yrs) | % male | Ethnicity | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | % White | % Asian | % Black | % Other | % missing |
| Wolve | 691 | 64 | 9.3 | 58.1 | 50.0 | 67.2 | 12.5 | 15.6 | 4.7 | 0.0 |
| York | 581 | 27 | 4.6 | 62.7 | 63.0 | 96.3 | 3.7 | 0.0 | 0.0 | 0.0 |
| N IRELAND | | | | | | | | | | |
| Antrim | 296 | 18 | 6.1 | 75.7 | 72.2 | | | | | 38.9 |
| Belfast | 911 | 27 | 3.0 | 71.4 | 70.4 | | | | | 40.7 |
| Newry | 281 | 13 | 4.6 | 78.1 | 76.9 | 100.0 | 0.0 | 0.0 | 0.0 | 7.7 |
| Ulster | 203 | 3 | 1.5 | 76.8 | 66.7 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| West NI | 339 | 6 | 1.8 | 74.4 | 66.7 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| SCOTLAND | | | | | | | | | | |
| Abrdn | 578 | 20 | 3.5 | 63.2 | 75.0 | | | | | 100.0 |
| Airdrie | 504 | 29 | 5.8 | 65.7 | 55.2 | | | | | 62.1 |
| D&Gall | 154 | 8 | 5.2 | 58.3 | 50.0 | | | | | 75.0 |
| Dundee | 411 | 16 | 3.9 | 66.6 | 81.3 | | | | | 100.0 |
| Edinb | 926 | 33 | 3.6 | 60.4 | 66.7 | | | | | 97.0 |
| Glasgw | 1,865 | 38 | 2.0 | 57.3 | 63.2 | | | | | 84.2 |
| Inverns | 278 | 11 | 4.0 | 65.5 | 54.5 | | | | | 90.9 |
| Klmarnk | 365 | 33 | 9.0 | 67.2 | 39.4 | | | | | 84.8 |
| Krkcldy | 295 | 7 | 2.4 | 50.2 | 85.7 | | | | | 100.0 |
| WALES | | | | | | | | | | |
| Bangor | 217 | 13 | 6.0 | 70.0 | 84.6 | | | | | 30.8 |
| Cardff | 1,700 | 58 | 3.4 | 62.7 | 51.7 | 94.5 | 3.6 | 1.8 | 0.0 | 5.2 |
| Clwyd | 204 | 11 | 5.4 | 66.2 | 81.8 | 100.0 | 0.0 | 0.0 | 0.0 | 18.2 |
| Swanse | 853 | 49 | 5.7 | 67.4 | 69.4 | 95.9 | 4.1 | 0.0 | 0.0 | 0.0 |
| Wrexm | 300 | 16 | 5.3 | 63.9 | 68.8 | 93.3 | 0.0 | 6.7 | 0.0 | 6.3 |
| TOTALS | | | | | | | | | | |
| England | 58,817 | 3,494 | 5.9 | 63.1 | 59.8 | 69.8 | 16.8 | 9.7 | 3.7 | 5.8 |
| N Ireland | 2,030 | 67 | 3.3 | 75.0 | 71.6 | 100.0 | 0.0 | 0.0 | 0.0 | 28.4 |
| Scotland | 5,376 | 195 | 3.6 | 62.4 | 61.0 | | | | | 86.7 |
| Wales | 3,274 | 147 | 4.5 | 65.7 | 64.6 | 95.6 | 2.9 | 1.5 | 0.0 | 6.8 |
| **UK** | **69,497** | **3,903** | **5.6** | **63.3** | **60.3** | **71.4** | **15.9** | **9.2** | **3.5** | **10.3** |

Blank cells – no data returned by the centre or data completeness <70%
Breakdown by ethnicity is not shown for centres with <70% data completeness, but these centres were included in national averages
Exeter was unable to submit 2021 patient level data, but provided aggregate numbers of patients on KRT at the end of 2021, by treatment modality

Primary renal diseases (PRDs) were grouped into categories as shown in table 6.4, with the mapping of disease codes into groups explained in more detail in appendix A. The proportion of PD patients with each PRD is shown for patients with PRD data and these total 100% of patients with data. The proportion of patients with no PRD data is shown on a separate line.

PD

**Table 6.4** Primary renal diseases (PRDs) of adult patients prevalent to PD on 31/12/2021

| PRD | N on PD | % PD population | Age <65 yrs | | Age ≥65 yrs | | M/F ratio |
|---|---|---|---|---|---|---|---|
| | | | N | % | N | % | |
| Diabetes | 867 | 24.6 | 458 | 24.0 | 409 | 25.3 | 1.8 |
| Glomerulonephritis | 580 | 16.5 | 388 | 20.3 | 192 | 11.9 | 1.6 |
| Hypertension | 262 | 7.4 | 134 | 7.0 | 128 | 7.9 | 2.0 |
| Polycystic kidney disease | 297 | 8.4 | 198 | 10.4 | 99 | 6.1 | 1.0 |
| Pyelonephritis | 215 | 6.1 | 103 | 5.4 | 112 | 6.9 | 1.9 |
| Renal vascular disease | 148 | 4.2 | 28 | 1.5 | 120 | 7.4 | 2.7 |
| Other | 546 | 15.5 | 325 | 17.0 | 221 | 13.7 | 1.0 |
| Uncertain aetiology | 609 | 17.3 | 274 | 14.4 | 335 | 20.7 | 1.4 |
| **Total (with data)** | **3,524** | **100.0** | **1,908** | **100.0** | **1,616** | **100.0** | |
| Missing | 306 | 8.0 | 151 | 7.3 | 155 | 8.8 | 1.7 |

# Biochemistry parameters in prevalent adult PD patients

The UK Kidney Association guideline on CKD mineral bone disease contains only one audit measure, which is the percentage of patients with adjusted calcium above the target range. The UK Kidney Association guideline on PD contains one biochemical audit measure, which is the proportion of patients with bicarbonate in the target range.

**Table 6.5** Median adjusted calcium (Ca) and percentage with adjusted Ca within and above the target range (2.2–2.5 mmol/L); and median bicarbonate and percentage with bicarbonate below, within and above the target range (22–30 mmol/L) in adult patients prevalent to PD on 31/12/2021 by centre

| | Adjusted calcium | | | | Bicarbonate | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Median | % 2.2-2.5 | % >2.5 | % data | Median | % <22 | % 22-30 | % >30 | % data |
| Centre | (mmol/L) | mmol/L | mmol/L | completeness | (mmol/L) | mmol/L | mmol/L | mmol/L | completeness |
| ENGLAND | | | | | | | | | |
| Bham | 2.4 | 78.3 | 18.9 | 99.2 | | | | | 58.6 |
| Bradfd | 2.5 | 74.1 | 25.9 | 100.0 | 27 | 7.4 | 81.5 | 11.1 | 100.0 |
| Brightn | 2.4 | 81.0 | 12.7 | 100.0 | 24 | 20.6 | 77.8 | 1.6 | 100.0 |
| Bristol | 2.4 | 76.7 | 21.7 | 100.0 | 23 | 28.3 | 70.0 | 1.7 | 100.0 |
| Camb | 2.4 | 80.0 | 16.0 | 100.0 | 26 | 12.0 | 88.0 | 0.0 | 100.0 |
| Carlis | 2.3 | 81.5 | 3.7 | 100.0 | 22 | 48.2 | 51.9 | 0.0 | 100.0 |
| Carsh | | | | | | | | | |
| Colchr | 2.3 | 78.5 | 4.7 | 95.5 | | | | | 0.0 |
| Covnt | 2.3 | 88.2 | 10.3 | 98.6 | 25 | 22.1 | 76.5 | 1.5 | 98.6 |
| Derby | 2.4 | 81.3 | 17.2 | 100.0 | 23 | 26.6 | 73.4 | 0.0 | 100.0 |
| Donc | 2.4 | 90.9 | 9.1 | 100.0 | 24 | 27.3 | 72.7 | 0.0 | 100.0 |
| Dorset | 2.3 | 72.2 | 16.7 | 90.0 | 22 | 50.0 | 45.0 | 5.0 | 100.0 |
| Dudley | 2.5 | 69.4 | 30.6 | 100.0 | 23 | 25.0 | 75.0 | 0.0 | 100.0 |
| EssexMS | 2.4 | 84.0 | 6.7 | 93.8 | 27 | 5.3 | 82.7 | 12.0 | 93.8 |
| Exeter | | | | | | | | | |
| Glouc | 2.3 | 81.8 | 6.1 | 100.0 | 22 | 42.4 | 57.6 | 0.0 | 100.0 |
| Hull | 2.4 | 78.3 | 13.0 | 100.0 | 27 | 4.4 | 89.1 | 6.5 | 100.0 |
| Ipswi | 2.3 | 80.0 | 13.3 | 96.8 | 25 | 14.3 | 85.7 | 0.0 | 90.3 |
| Kent | 2.5 | 67.3 | 25.5 | 94.8 | 23 | 23.2 | 73.2 | 3.6 | 96.6 |
| L Barts | 2.3 | 81.0 | 4.6 | 87.1 | 23 | 29.4 | 70.1 | 0.5 | 86.6 |
| L Guys | 2.4 | 75.8 | 19.4 | 100.0 | 24 | 14.5 | 83.9 | 1.6 | 100.0 |
| L Kings | 2.3 | 78.4 | 11.4 | 98.9 | 23 | 34.1 | 62.5 | 3.4 | 98.9 |
| L Rfree | 2.4 | 81.8 | 13.6 | 98.1 | 24 | 22.0 | 76.7 | 1.3 | 95.5 |
| L St.G | 2.5 | 70.7 | 29.3 | 89.1 | 25 | 25.7 | 74.3 | 0.0 | 76.1 |

**Table 6.5** Continued

| | Adjusted calcium | | | | Bicarbonate | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Median | % 2.2-2.5 | % >2.5 | % data | Median | % <22 | % 22-30 | % >30 | % data |
| Centre | (mmoI/L) | mmoI/L | mmoI/L | completeness | (mmoI/L) | mmoI/L | mmoI/L | mmoI/L | completeness |
| L West | | | | 33.5 | | | | | 29.9 |
| Leeds | 2.4 | 91.8 | 4.1 | 100.0 | 28 | 4.1 | 77.6 | 18.4 | 100.0 |
| Leic | 2.4 | 82.9 | 13.5 | 97.4 | 24 | 13.5 | 86.5 | 0.0 | 97.4 |
| Liv Ain | 2.5 | 68.4 | 26.3 | 100.0 | 26 | 10.5 | 84.2 | 5.3 | 100.0 |
| Liv Roy | 2.5 | 88.5 | 11.5 | 96.3 | 25 | 15.4 | 80.8 | 3.9 | 96.3 |
| M RI | 2.4 | 72.8 | 24.7 | 100.0 | 24 | 22.2 | 77.8 | 0.0 | 100.0 |
| Middlbr | 2.4 | 68.8 | 12.5 | 94.1 | 27 | 6.3 | 75.0 | 18.8 | 94.1 |
| Newc | 2.4 | 79.6 | 18.2 | 93.6 | 24 | 25.0 | 70.5 | 4.6 | 93.6 |
| Norwch | 2.4 | 82.5 | 15.0 | 97.6 | 23 | 36.6 | 63.4 | 0.0 | 100.0 |
| Nottm | 2.3 | 79.5 | 5.1 | 100.0 | | | | | 29.5 |
| Oxford | 2.4 | 72.9 | 12.5 | 81.4 | | | | | 61.0 |
| Plymth | 2.4 | 77.4 | 19.4 | 100.0 | 23 | 14.3 | 85.7 | 0.0 | 90.3 |
| Ports | 2.4 | 74.0 | 19.5 | 100.0 | 25 | 15.8 | 79.0 | 5.3 | 98.7 |
| Prestn | 2.3 | 76.6 | 4.3 | 100.0 | 25 | 18.2 | 77.3 | 4.6 | 93.6 |
| Redng | 2.4 | 75.6 | 19.5 | 100.0 | 24 | 14.6 | 82.9 | 2.4 | 100.0 |
| Salford | 2.4 | 78.2 | 15.4 | 100.0 | | | | | 0.0 |
| Sheff | 2.3 | 84.9 | 4.6 | 97.1 | 22 | 49.2 | 50.8 | 0.0 | 95.6 |
| Shrew | 2.4 | 86.4 | 9.1 | 100.0 | 21 | 54.6 | 45.5 | 0.0 | 100.0 |
| Stoke | 2.4 | 77.9 | 18.6 | 96.6 | 26 | 6.7 | 88.8 | 4.5 | 100.0 |
| Sund | 2.4 | 85.3 | 14.7 | 97.1 | | | | | 0.0 |
| Truro | 2.4 | 75.0 | 15.0 | 100.0 | 25 | 10.0 | 90.0 | 0.0 | 100.0 |
| Wirral | 2.4 | 85.7 | 0.0 | 100.0 | 22 | 28.6 | 64.3 | 7.1 | 100.0 |
| Wolve | 2.5 | 72.0 | 24.0 | 94.3 | 22 | 46.9 | 53.1 | 0.0 | 92.5 |
| York | 2.5 | 72.7 | 22.7 | 100.0 | 26 | 4.6 | 95.5 | 0.0 | 100.0 |
| N IRELAND | | | | | | | | | |
| Antrim | 2.4 | 62.5 | 25.0 | 100.0 | 26 | 6.3 | 93.8 | 0.0 | 100.0 |
| Belfast | 2.3 | 85.0 | 5.0 | 100.0 | 25 | 10.0 | 90.0 | 0.0 | 100.0 |
| Newry | 2.4 | 91.7 | 0.0 | 100.0 | 24 | 8.3 | 91.7 | 0.0 | 100.0 |
| Ulster | | | | 100.0 | | | | | 100.0 |
| West NI | | | | 100.0 | | | | | 100.0 |
| WALES | | | | | | | | | |
| Bangor | | | | 100.0 | | | | | 100.0 |
| Cardff | 2.4 | 80.8 | 17.3 | 100.0 | 25 | 21.2 | 76.9 | 1.9 | 100.0 |
| Clwyd | | | | 100.0 | | | | | 88.9 |
| Swanse | 2.4 | 88.9 | 8.9 | 100.0 | 25 | 22.2 | 71.1 | 6.7 | 100.0 |
| Wrexm | 2.4 | 93.3 | 6.7 | 100.0 | 28 | 6.7 | 80.0 | 13.3 | 100.0 |
| TOTALS | | | | | | | | | |
| England | 2.4 | 78.7 | 14.5 | 92.7 | 24 | 24.0 | 73.5 | 2.6 | 78.9 |
| N Ireland | 2.3 | 78.9 | 11.5 | 100.0 | 25 | 7.7 | 92.3 | 0.0 | 100.0 |
| Wales | 2.4 | 86.1 | 11.6 | 100.0 | 25 | 17.2 | 77.3 | 5.5 | 99.2 |
| **E, W & NI** | **2.4** | **79.0** | **14.3** | **93.1** | **24** | **23.3** | **74.1** | **2.7** | **80.1** |

Blank cells – no data returned by the centre or <10 patients in the centre or data completeness <70%
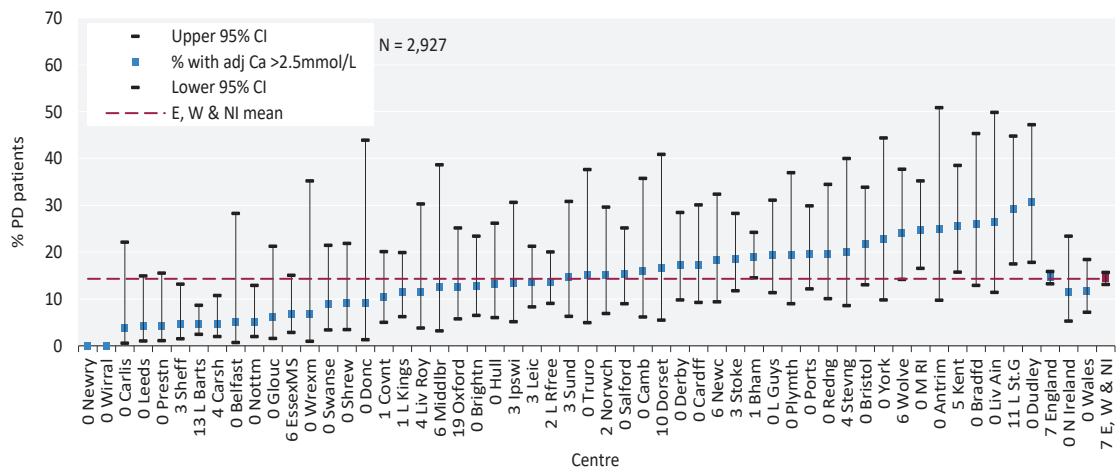
Adults on PD in the UK at the end of 2021

**Figure 6.3** Percentage of adult patients prevalent to PD on 31/12/2021 with adjusted calcium (Ca) above the target range (>2.5 mmol/L) by centre
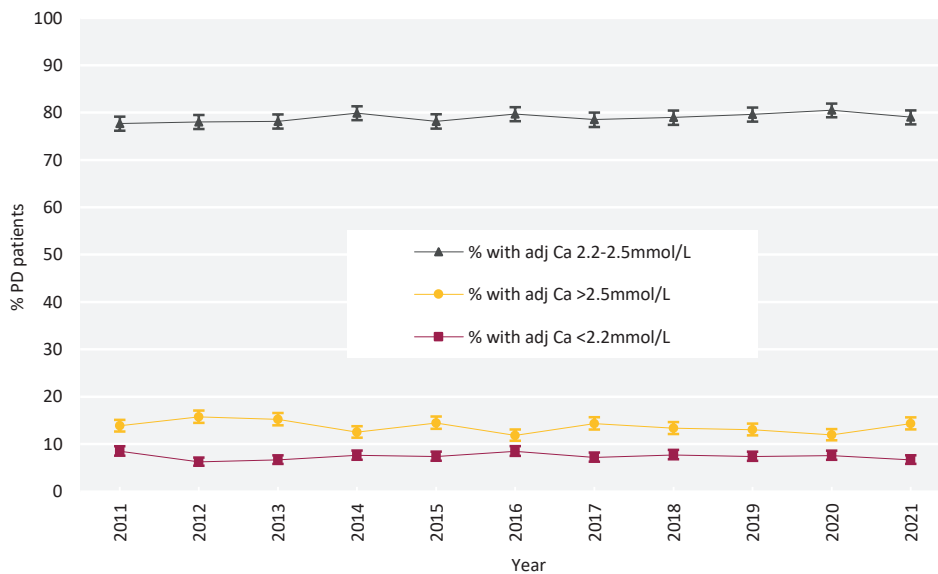CI – confidence interval



**Figure 6.4** Change in percentage of prevalent adult PD patients within, above and below the target range for adjusted calcium (Ca 2.2–2.5 mmol/L) between 2011 and 2021
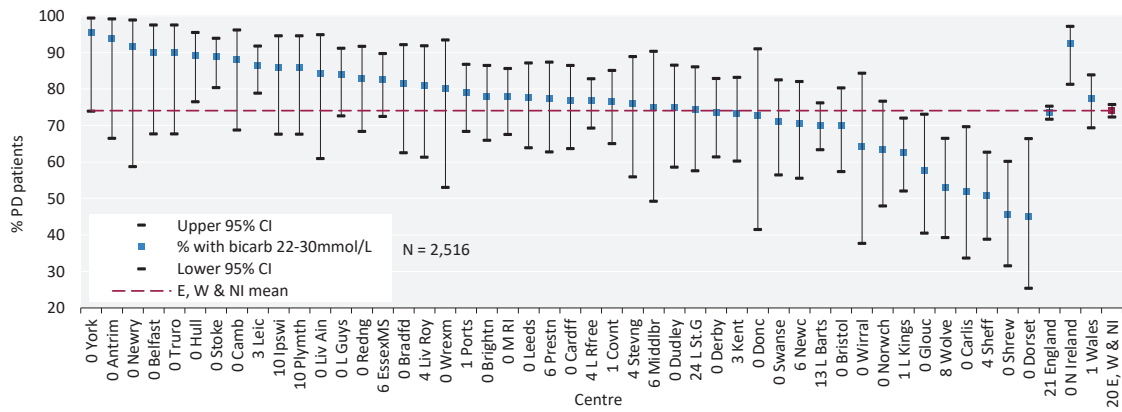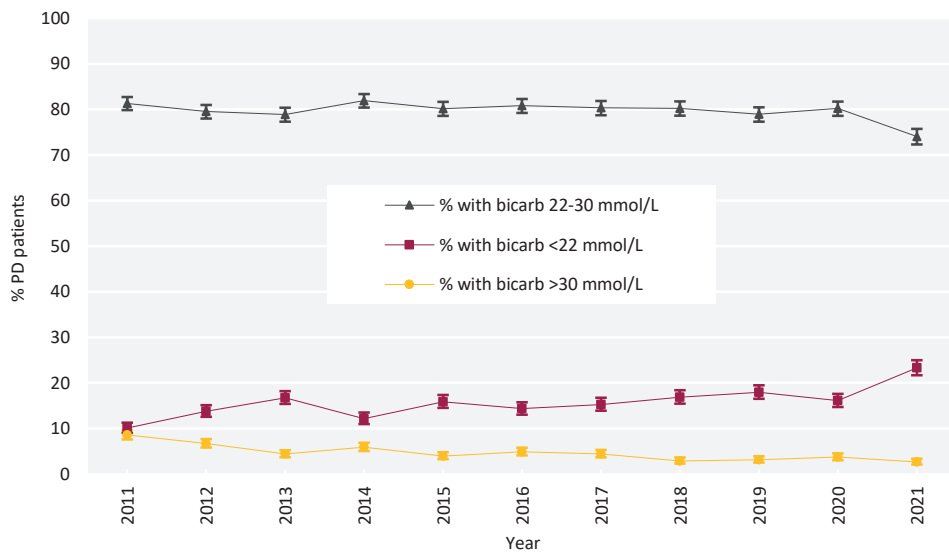
PD

**Figure 6.5** Percentage of adult patients prevalent to PD on 31/12/2021 with bicarbonate (bicarb) within the target range (22–30 mmol/L) by centre

CI – confidence interval



**Figure 6.6** Percentage of prevalent adult PD patients within, above and below the target range for bicarbonate (bicarb) 22–30 mmol/L) between 2011 and 2021

## Anaemia in prevalent adult PD patients

UK Kidney Association anaemia guidelines recommend a target haemoglobin of 100-120 g/L. Data regarding target and median haemoglobin and ferritin levels attained are presented in table 6.6.

**Table 6.6** Median haemoglobin and ferritin and percentage attaining target ranges in adult patients prevalent to PD on 31/12/2021 by centre

| Centre | Haemoglobin | | | | Ferritin | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| | Median (g/L) | % <100 g/L | % >120 g/L | % data completeness | Median (µg/L) | % <100 µg/L | % data completeness |
| ENGLAND | | | | | | | |
| Bham | 108 | 28.6 | 17.3 | 98.8 | 365 | 5.6 | 98.8 |
| Bradfd | 122 | 7.4 | 55.6 | 100.0 | 424 | 3.7 | 100.0 |
| Brightn | 116 | 6.3 | 31.7 | 100.0 | 372 | 1.6 | 100.0 |
| Bristol | 113 | 13.3 | 21.7 | 100.0 | 357 | 6.7 | 100.0 |
| Camb | 120 | 8.0 | 40.0 | 100.0 | 359 | 4.3 | 92.0 |
| Carlis | 110 | 18.5 | 14.8 | 100.0 | 266 | 16.7 | 88.9 |
| Carsh | 110 | 24.8 | 18.3 | 97.3 | 273 | 6.4 | 97.3 |
| Colchr | | | | | | | |
| Covnt | 113 | 20.3 | 29.0 | 100.0 | 284 | 11.9 | 97.1 |
| Derby | 115 | 21.9 | 34.4 | 100.0 | 472 | 1.6 | 100.0 |
| Donc | 117 | 9.1 | 36.4 | 100.0 | 394 | 10.0 | 90.9 |
| Dorset | 108 | 25.0 | 10.0 | 100.0 | 281 | 5.0 | 100.0 |
| Dudley | 115 | 11.8 | 29.4 | 94.4 | | | 8.3 |
| EssexMS | 113 | 12.8 | 23.1 | 97.5 | 315 | 13.5 | 92.5 |
| Exeter | | | | | | | |
| Glouc | 109 | 36.4 | 18.2 | 100.0 | 205 | 7.4 | 81.8 |
| Hull | 115 | 6.5 | 32.6 | 100.0 | 444 | 8.9 | 97.8 |
| Ipswi | 109 | 16.7 | 26.7 | 96.8 | 288 | 17.2 | 93.6 |
| Kent | 115 | 21.8 | 29.1 | 94.8 | 351 | 5.6 | 93.1 |
| L Barts | 110 | 24.5 | 25.0 | 85.7 | 282 | 13.5 | 79.5 |
| L Guys | 104 | 37.1 | 9.7 | 100.0 | 281 | 8.3 | 96.8 |
| L Kings | 113 | 21.8 | 29.9 | 97.8 | 255 | 14.1 | 95.5 |
| L Rfree | 110 | 27.1 | 22.6 | 98.7 | 582 | 7.7 | 98.7 |
| L St.G | 105 | 39.0 | 14.6 | 89.1 | 359 | 9.8 | 89.1 |
| L West | | | | 35.1 | | | 28.4 |
| Leeds | 109 | 24.5 | 16.3 | 100.0 | 389 | 8.2 | 100.0 |
| Leic | 114 | 13.4 | 30.4 | 98.3 | 272 | 10.8 | 97.4 |
| Liv Ain | | | | 36.8 | 536 | 5.6 | 94.7 |
| Liv Roy | 112 | 10.5 | 10.5 | 70.4 | 379 | 11.5 | 96.3 |
| M RI | 111 | 29.6 | 23.5 | 100.0 | 325 | 6.2 | 100.0 |
| Middlbr | 119 | 12.5 | 50.0 | 94.1 | 224 | 0.0 | 88.2 |
| Newc | 111 | 31.1 | 17.8 | 95.7 | 432 | 13.3 | 95.7 |
| Norwch | 114 | 26.8 | 29.3 | 100.0 | 287 | 7.3 | 100.0 |
| Nottm | 110 | 23.1 | 19.2 | 100.0 | 403 | 5.1 | 100.0 |
| Oxford | 110 | 21.6 | 23.5 | 86.4 | 378 | 3.5 | 96.6 |
| Plymth | 115 | 12.9 | 35.5 | 100.0 | 339 | 9.7 | 100.0 |
| Ports | 116 | 13.0 | 26.0 | 100.0 | 377 | 6.5 | 100.0 |
| Prestn | 112 | 29.8 | 19.1 | 100.0 | 619 | 4.3 | 97.9 |
| Redng | 110 | 12.2 | 36.6 | 100.0 | 378 | 9.8 | 100.0 |
| Salford | 111 | 19.2 | 19.2 | 100.0 | 497 | 6.4 | 100.0 |
| Sheff | 110 | 24.2 | 24.2 | 97.1 | 548 | 3.1 | 94.1 |
| Shrew | 112 | 27.3 | 25.0 | 100.0 | 272 | 7.0 | 97.7 |
| Stevng | 107 | 40.0 | 8.0 | 96.2 | 202 | 16.7 | 92.3 |
| Stoke | 111 | 15.7 | 23.6 | 100.0 | 346 | 8.0 | 97.8 |
| Sund | 113 | 17.6 | 38.2 | 97.1 | 314 | 12.5 | 91.4 |
| Truro | 112 | 25.0 | 25.0 | 100.0 | 184 | 17.6 | 85.0 |
| Wirral | 107 | 40.0 | 20.0 | 71.4 | 361 | 0.0 | 100.0 |
| Wolve | 106 | 28.0 | 18.0 | 94.3 | 160 | 27.1 | 90.6 |
| York | 110 | 13.6 | 27.3 | 100.0 | 233 | 9.1 | 100.0 |
| N IRELAND | | | | | | | |
| Antrim | 113 | 12.5 | 31.3 | 100.0 | 592 | 0.0 | 100.0 |
| Belfast | 119 | 5.0 | 35.0 | 100.0 | 480 | 10.0 | 100.0 |

PD

**Table 6.6** Continued

| Centre | Haemoglobin | | | | Ferritin | | |
|---|---|---|---|---|---|---|---|
| | Median (g/L) | % <100 g/L | % >120 g/L | % data completeness | Median (µg/L) | % <100 µg/L | % data completeness |
| Newry | 109 | 25.0 | 25.0 | 100.0 | 409 | 16.7 | 100.0 |
| Ulster | | | | 100.0 | | | 100.0 |
| West NI | | | | 100.0 | | | 100.0 |
| WALES | | | | | | | |
| Bangor | | | | 100.0 | | | 100.0 |
| Cardff | 113 | 23.1 | 30.8 | 100.0 | 180 | 21.6 | 98.1 |
| Clwyd | | | | 100.0 | | | 100.0 |
| Swanse | 107 | 17.8 | 35.6 | 100.0 | 261 | 15.6 | 100.0 |
| Wrexm | 116 | 0.0 | 26.7 | 100.0 | 373 | 6.7 | 100.0 |
| TOTALS | | | | | | | |
| England | 111 | 22.5 | 23.7 | 92.4 | 350 | 8.4 | 90.0 |
| N Ireland | 115 | 11.5 | 30.8 | 100.0 | 432 | 7.7 | 100.0 |
| Wales | 113 | 18.6 | 31.8 | 100.0 | 244 | 18.0 | 99.2 |
| **UK** | **111** | **22.1** | **24.2** | **92.8** | **346** | **8.8** | **90.6** |

Blank cells – no data returned by the centre or <10 patients in the centre or data completeness <70%
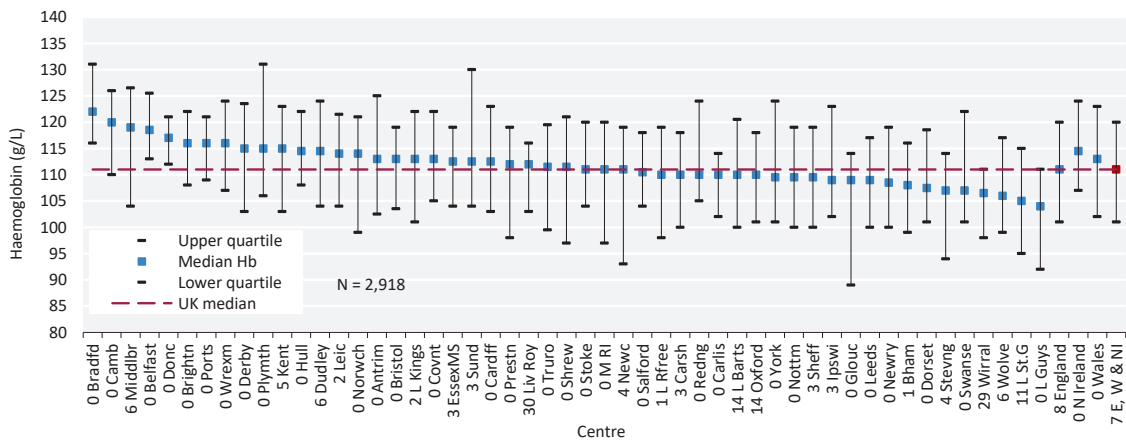


**Figure 6.7** Median haemoglobin (Hb) in adult patients prevalent to PD on 31/12/2021 by centre
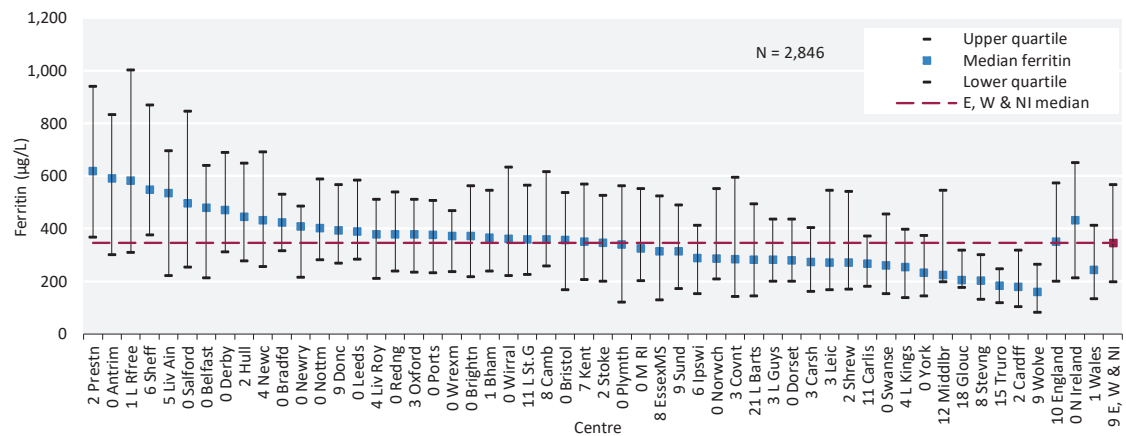


**Figure 6.8** Median ferritin in adult patients prevalent to PD on 31/12/2021 by centre
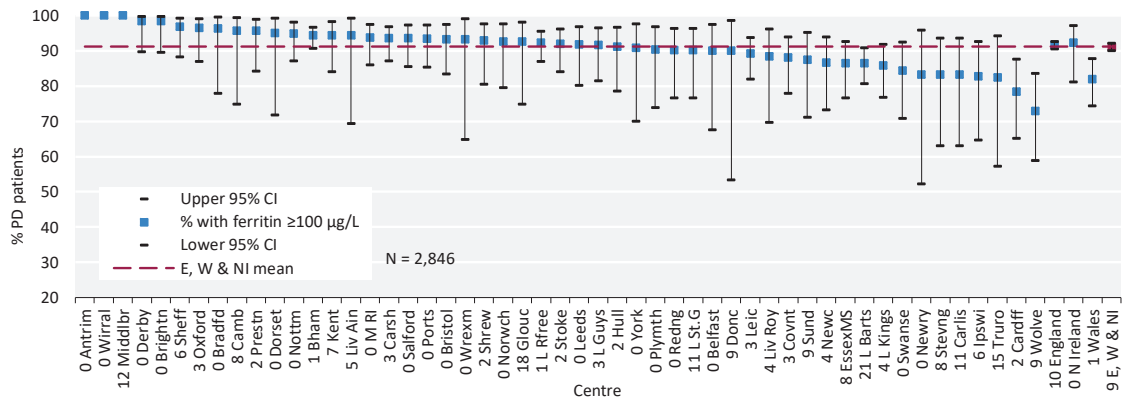
**Figure 6.9** Percentage of adult patients prevalent to PD on 31/12/2021 with ferritin ≥100 µg/L by centre

CI – confidence interval
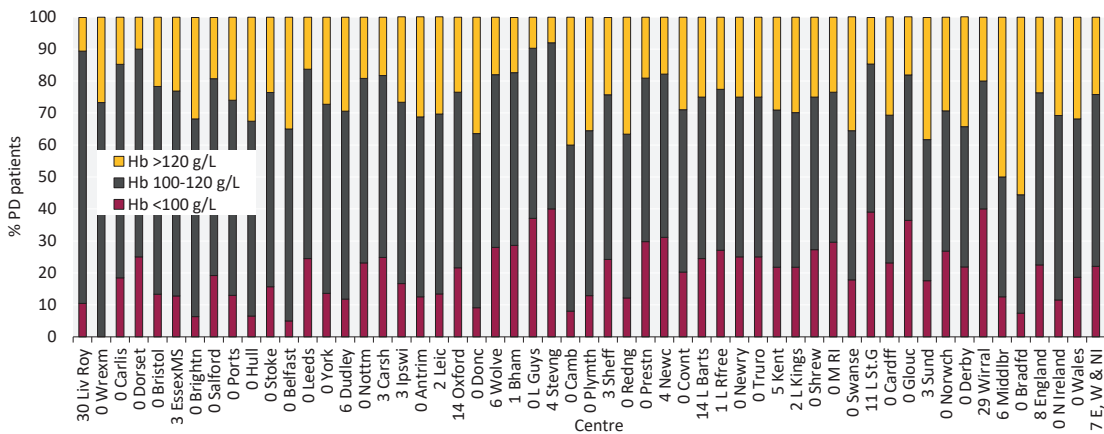


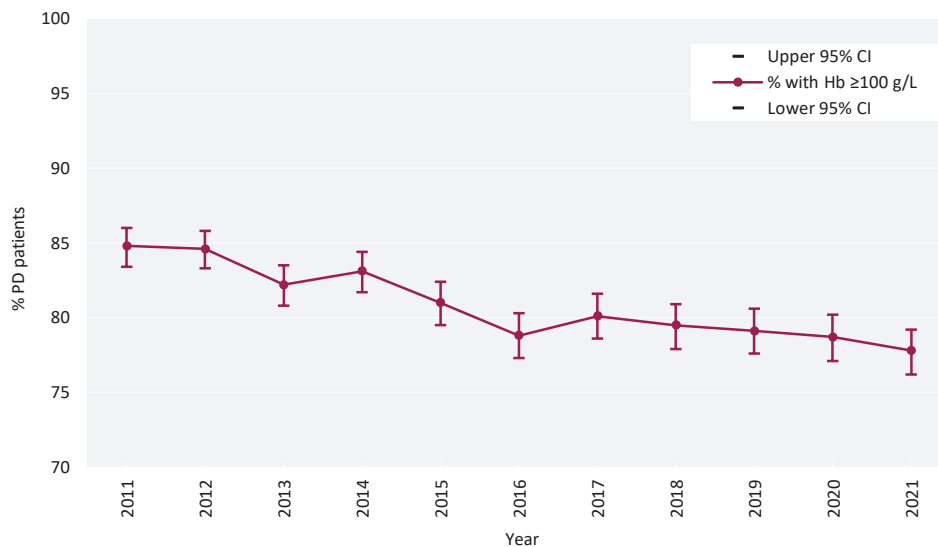**Figure 6.10** Distribution of haemoglobin (Hb) in adult patients prevalent to PD on 31/12/2021 by centre



**Figure 6.11** Percentage of prevalent adult PD patients with haemoglobin (Hb) ≥100 g/L between 2011 and 2021
CI – confidence interval

Adults on PD in the UK at the end of 2021

PD peritonitis infection rates are collected for English kidney centres by the UKRR in collaboration with NHS England for the Renal Dialysis Quality Dashboard (ukkidney.org/audit-research/data-permissions/data/ukrr-nhs-england-quality-dashboard-dataset) and are listed in the table below. The funnel plot (figure 6.12) shows each centre's 2021 peritonitis rate per one PD patient-year against the number of patient-years at risk to take into account the greater variation expected as centre size decreases.

**Table 6.7** Number of patient-years and peritonitis rate in adult patients receiving PD in 2021 by centre in England

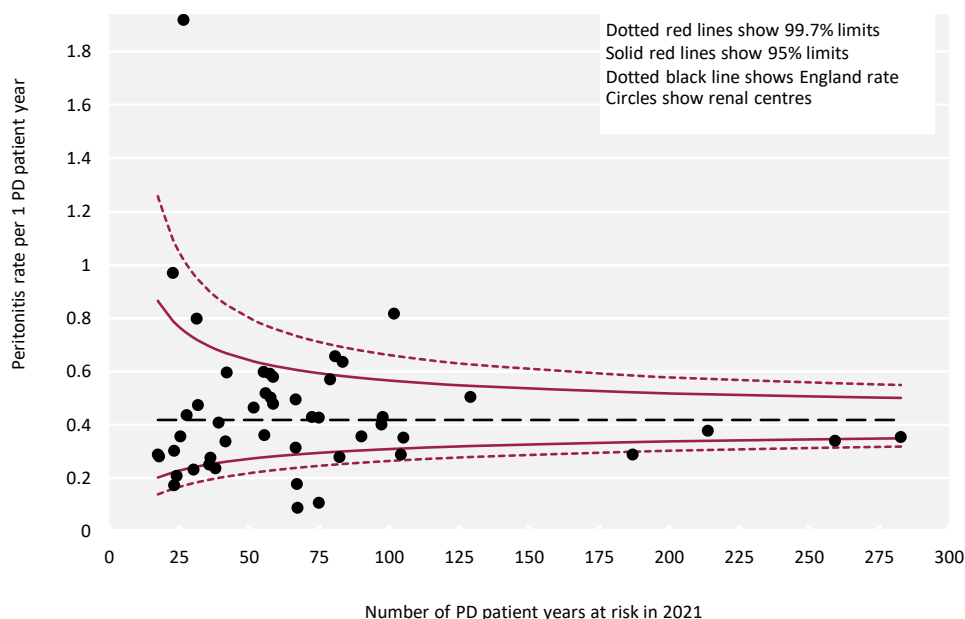| Centre | PD patient years | Peritonitis rate per 1 PD patient year |
|---|---|---|
| Bham | 283 | 0.35 |
| Bradfd | 32 | 0.48 |
| Brightn | 67 | 0.18 |
| Bristol | 81 | 0.66 |
| Camb | 28 | 0.44 |
| Carlis | 23 | 0.17 |
| Carsh | 129 | 0.50 |
| Covnt | 83 | 0.64 |
| Derby | 67 | 0.32 |
| Donc | 17 | 0.29 |
| Dorset | 27 | 1.92 |
| Dudley | 36 | 0.25 |
| EssexMS | 82 | 0.28 |
| Exeter | 75 | 0.43 |
| Glouc | 38 | 0.24 |
| Hull | 55 | 0.36 |
| Ipswi | 36 | 0.28 |
| Kent | 67 | 0.09 |
| L Barts | 259 | 0.34 |
| L Guys | 66 | 0.50 |
| L Kings | 105 | 0.35 |
| L Rfree | 187 | 0.29 |
| L St.G | 58 | 0.50 |
| L West | 214 | 0.38 |
| Leeds | 58 | 0.48 |
| Leic | 104 | 0.29 |
| Liv Ain | 24 | 0.21 |
| Liv Roy | 31 | 0.80 |
| M RI | 90 | 0.36 |
| Middlbr | 23 | 0.97 |
| Newc | 52 | 0.47 |
| Norwch | 56 | 0.52 |
| Nottm | 102 | 0.82 |
| Oxford | 72 | 0.43 |
| Plymth | 30 | 0.23 |
| Ports | 97 | 0.40 |
| Prestn | 42 | 0.60 |
| Redng | 55 | 0.60 |
| Salford | 98 | 0.43 |
| Sheff | 75 | 0.11 |
| Shrew | 59 | 0.58 |
| Stevng | 39 | 0.41 |
| Stoke | 79 | 0.57 |
| Sund | 41 | 0.34 |
| Truro | 23 | 0.30 |
| Wirral | 18 | 0.28 |
| Wolve | 57 | 0.59 |
| York | 25 | 0.36 |
| TOTAL | | |
| **England** | **3,465** | **0.42** |

**Figure 6.12** PD peritonitis rates in adult patients receiving PD in 2021 per 1 PD patient-year by centre in England
Please visit the UKRR data portal (ukkidney.org/audit-research/data-portals) to identify individual kidney centres

## Cause of death in adult PD patients

Cause of death was analysed in prevalent patients receiving PD on 31/12/2020 and followed-up for one year in 2021. The proportion of PD patients with each cause of death is shown for patients with cause of death data and these total 100% of patients with data. The proportion of patients with no cause of death data is shown on a separate line. Further detail on the survival of prevalent KRT patients is in chapter 3.

**Table 6.8** Cause of death in adult patients prevalent to PD on 31/12/2020 followed-up in 2021 by age group

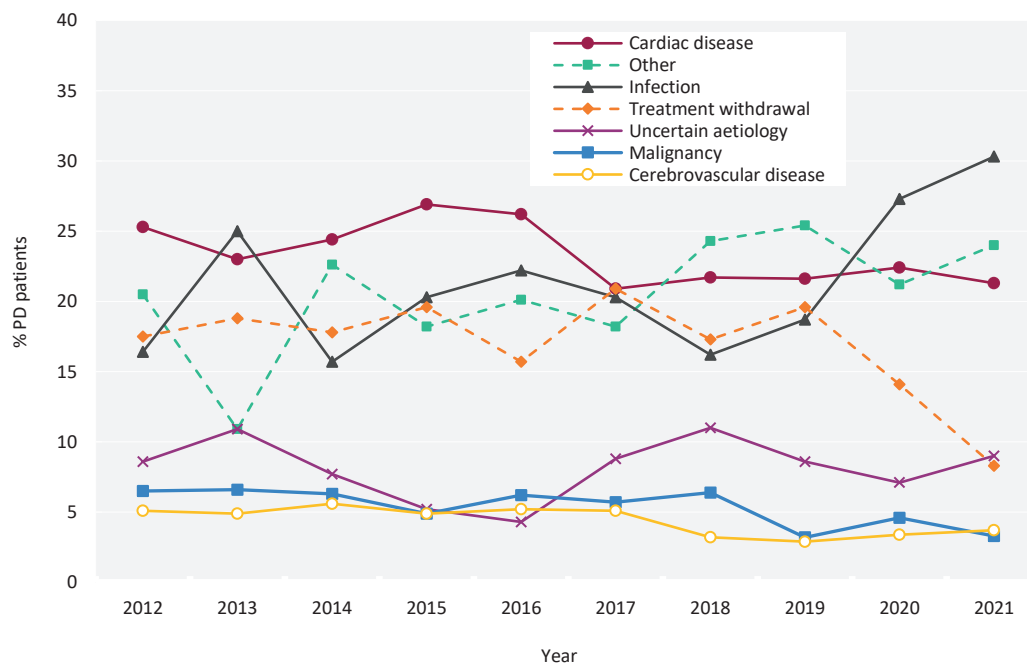| | PD all ages | | PD < 65 years | | PD ≥ 65 years | |
|---|---|---|---|---|---|---|
| Cause of death | N | % | N | % | N | % |
| Cardiac disease | 64 | 21.3 | 21 | 23.3 | 43 | 20.5 |
| Cerebrovascular disease | 11 | 3.7 | 2 | 2.2 | 9 | 4.3 |
| Infection | 91 | 30.3 | 36 | 40.0 | 55 | 26.2 |
| Malignancy | 10 | 3.3 | 1 | 1.1 | 9 | 4.3 |
| Treatment withdrawal | 25 | 8.3 | 2 | 2.2 | 23 | 11.0 |
| Other | 72 | 24.0 | 19 | 21.1 | 53 | 25.2 |
| Uncertain aetiology | 27 | 9.0 | 9 | 10.0 | 18 | 8.6 |
| **Total (with data)** | **300** | **100.0** | **90** | **100.0** | **210** | **100.0** |
| **Missing** | **176** | **37.0** | **44** | **32.8** | **132** | **38.6** |

**Figure 6.13** Cause of death between 2012 and 2021 for adult patients prevalent to PD at the beginning of the year

# *Chapter 7*

# Adults on home haemodialysis (HHD) in the UK at the end of 2021

# Contents

# Introduction

This chapter describes the population of adult patients with end-stage kidney disease (ESKD) who were receiving regular home haemodialysis (HHD) in the UK at the end of 2021 (figure 7.1). This population comprises patients who were on HHD at the end of 2020 and remained on HHD throughout 2021, as well as patients who commenced/re-commenced HHD in 2021. This latter group includes both incident kidney replacement therapy (KRT) patients who ended 2021 on HHD and prevalent KRT patients who switched to HHD from in-centre haemodialysis (ICHD), peritoneal dialysis (PD), or a transplant (Tx) in 2021. Consequently, the cohort of patients receiving HHD in a centre not only reflects differences in underlying population case-mix, but also differences in the rates of acceptance onto KRT, survival on HHD, transplantation and other dialysis therapies (ICHD and PD), and the care of patients on those other modalities, as described in other chapters of this report.
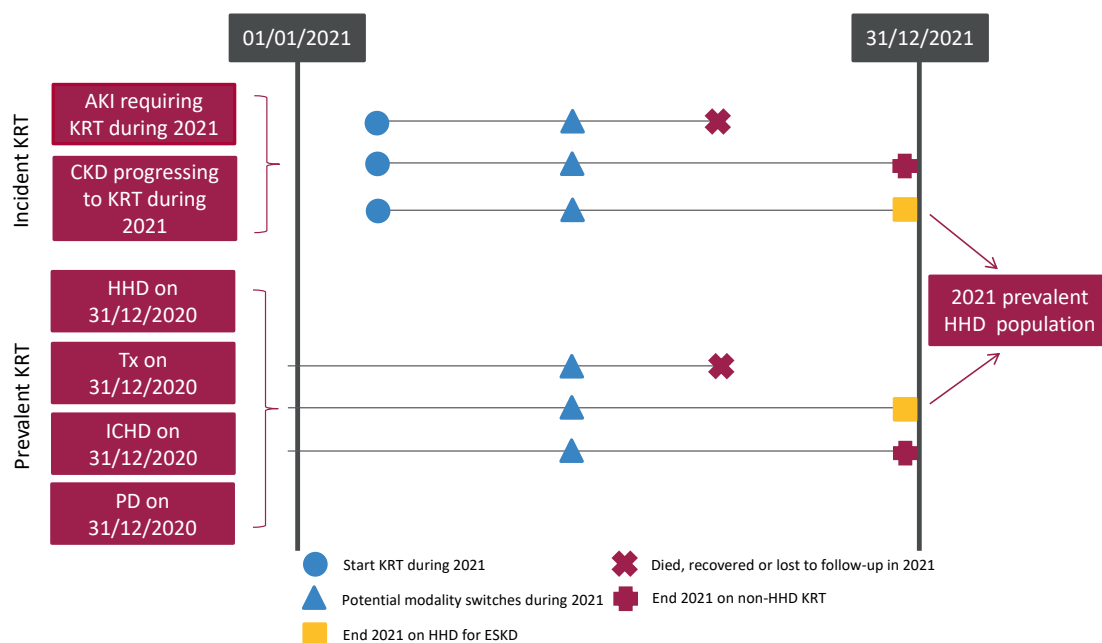


**Figure 7.1** Pathways adult patients could follow to be included in the UK 2021 prevalent HHD population

Note that patients receiving dialysis for acute kidney injury (AKI) are only included in this chapter if they had a timeline or KRT modality code for chronic HHD at the end of 2021 or if they had been on KRT for ≥90 days and were on HHD at the end of 2021

CKD – chronic kidney disease

Where possible, the chapter addresses key aspects of the care of patients on HHD for which there are UK Kidney Association guidelines (table 7.1). This includes complications associated with ESKD and HHD, for example anaemia and mineral bone disorders.

Data on infections associated with haemodialysis (HD) are available through the UKRR data portal (ukkidney. org/audit-research/data-portals).

# Rationale for analyses

The analyses begin with a description of the 2021 prevalent adult HHD population, including the number on HHD per million population (pmp).

The UK Kidney Association guidelines (ukkidney.org/health-professionals/guidelines/guidelines-commentaries) provide audit measures relevant to the care of patients on HHD and, where data permit, their attainment by UK kidney centres in 2021 is reported in this chapter (table 7.1). Audit measures in guidelines that have been archived are not included. Some audit measures – for example, the target for glycated haemoglobin (HbA1c) in those on hypoglycaemia-inducing treatment – cannot be reported because the completeness of the required data items is too low. Further detail about the completeness of data returned to the UKRR is available through the UKRR data portal (ukkidney.org/audit-research/data-portals). Audit measures that cannot be reported because the required data items were not collected by the UKRR are omitted.

**Table 7.1** The UK KidneyAssociation audit measures relevant to HHD that are reported in this chapter

| The UK Kidney Association guideline | Audit criteria | Related analysis/analyses |
| --- | --- | --- |
| CKD mineral bone disorder (2018) | Percentage of patients with serum calcium above the normal reference range of 2.2–2.5 mmol/L | Table 7.5, figure 7.3 |
| HD (2019) | Proportion of patients with pre-dialysis bicarbonate 18–26 mmol/L | Table 7.6, figure 7.4 |
|  | Proportion of patients with pre-dialysis potassium 4.0–6.0 mmol/L | Table 7.6, figure 7.5 |
| Anaemia (2020) | Proportion of patients who are not iron replete with a serum ferritin <200 µg/L | Table 7.7 |
|  | Proportion of patients with haemoglobin 100–120 g/L | |
| Planning, initiating and withdrawing KRT (2014) | Number of patients withdrawing from HHD as a proportion of all deaths on HHD | Table 7.9, figure 7.10 |

ESA – erythropoiesis stimulating agent

For definitions and methods relating to this chapter see appendix A. Centres were excluded from caterpillar plots and cells were blanked in tables where data completeness for a biochemical variable was <70% and/or the number of patients reported was <10. The number preceding the centre name in each caterpillar plot indicates the percentage of missing data for that centre.

Exeter was unable to submit patient level data for 2021.  Aggregate numbers by modality were provided, enabling inclusion in Tables 7.2 and 7.3.  Exeter is excluded from all other analyses.

# Key findings

- 1,396 adult patients were receiving HHD for ESKD in the UK on 31/12/2021, which represented 2.0% of the KRT population.

- The median age of HHD patients was 56.0 years and 62.8% were male.

- The median adjusted calcium for HHD patients was 2.4 mmol/L and 14.6% were above the target range 2.2–2.5 mmol/L.

- The  median pre-dialysis bicarbonate for HHD patients was 23 mmol/L and 77.3% were within the target range 18–26 mmol/L.

- The median pre-dialysis potassium for HHD patients was 4.9 mmol/L and 78.6% were within the target range 4.0–6.0 mmol/L.

- The median ferritin for HHD patients was 344 µg/L and 28.8% had a ferritin <200 µg/L.

- The median haemoglobin for HHD patients was 109 g/L and 24.6% had a haemoglobin<100 g/L.

- There was no cause of death data available for 38.3% of deaths. For those with data, the leading cause of death in patients less than 65 years and those older than 65 years was cardiac disease at 35.6% and 29.4% respectively.

# Analyses

## Changes to the prevalent adult HHD population

For the 68 adult kidney centres, the number of prevalent patients on HHD was calculated as both a proportion of the prevalent patients on KRT and as a proportion of the estimated centre catchment population (calculated as detailed in appendix A).

**Table 7.2** Number of prevalent adult HHD patients and proportion of adult KRT patients on HHD by year and by centre; number of HHD patients as a proportion of the catchment population

| Centre | N on HHD | | | | | % on HHD | | | | | Estimated catchment population (millions) | 2021 crude rate (pmp) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2017 | 2018 | 2019 | 2020 | 2021 | 2017 | 2018 | 2019 | 2020 | 2021 | | |
| ENGLAND | | | | | | | | | | | | |
| Bham | 75 | 68 | 76 | 76 | 69 | 2.4 | 2.1 | 2.3 | 2.3 | 2.1 | 2.05 | 34 |
| Bradfd | 9 | 9 | 6 | 6 | 7 | 1.3 | 1.3 | 0.8 | 0.8 | 1.0 | 0.49 | 14 |
| Brightn | 41 | 39 | 32 | 31 | 30 | 4.1 | 3.7 | 3.0 | 2.9 | 2.7 | 1.08 | 28 |
| Bristol | 17 | 15 | 16 | 17 | 18 | 1.2 | 1.0 | 1.1 | 1.2 | 1.2 | 1.22 | 15 |
| Camb | 26 | 32 | 32 | 26 | 24 | 1.9 | 2.3 | 2.2 | 1.7 | 1.5 | 0.94 | 26 |
| Carlis | 0 | 0 | 0 | 2 | 3 | 0.0 | 0.0 | 0.0 | 0.7 | 1.0 | 0.26 | 12 |
| Carsh | 27 | 29 | 35 | 28 | 28 | 1.6 | 1.7 | 2.0 | 1.5 | 1.5 | 1.63 | 17 |
| Colchr | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.29 | 0 |
| Covnt | 14 | 22 | 20 | 20 | 22 | 1.4 | 2.3 | 1.9 | 1.8 | 2.0 | 0.80 | 28 |
| Derby | 52 | 53 | 58 | 63 | 55 | 9.4 | 9.0 | 8.9 | 9.3 | 8.0 | 0.56 | 98 |
| Donc | 9 | 9 | 5 | 5 | 5 | 2.7 | 2.7 | 1.5 | 1.5 | 1.5 | 0.38 | 13 |
| Dorset | 10 | 13 | 15 | 16 | 14 | 1.4 | 1.7 | 1.9 | 2.0 | 1.8 | 0.73 | 19 |
| Dudley | 13 | 12 | 12 | 9 | 10 | 3.6 | 3.3 | 3.3 | 2.4 | 2.5 | 0.34 | 29 |
| EssexMS | 15 | 17 | 24 | 29 | 21 | 1.8 | 2.0 | 2.8 | 3.3 | 2.3 | 0.99 | 21 |
| Exeter | 13 | 19 | 21 | 19 | 16 | 1.2 | 1.8 | 1.9 | 1.7 | 1.5 | 0.95 | 17 |
| Glouc | 5 | 0 | 0 | 0 | 0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.51 | 0 |
| Hull | 6 | 5 | 7 | 7 | 12 | 0.7 | 0.6 | 0.8 | 0.8 | 1.3 | 0.80 | 15 |
| Ipswi | 8 | 5 | 4 | 3 | 2 | 1.8 | 1.2 | 0.9 | 0.7 | 0.5 | 0.31 | 6 |
| Kent | 21 | 18 | 20 | 18 | 18 | 1.9 | 1.6 | 1.8 | 1.6 | 1.5 | 1.07 | 17 |
| L Barts | 31 | 36 | 20 | 25 | 25 | 1.2 | 1.4 | 0.8 | 0.9 | 0.9 | 1.59 | 16 |
| L Guys | 42 | 38 | 45 | 48 | 41 | 1.9 | 1.7 | 1.9 | 2.1 | 1.8 | 1.01 | 41 |
| L Kings | 20 | 17 | 17 | 22 | 34 | 1.7 | 1.4 | 1.4 | 1.8 | 2.5 | 0.93 | 36 |
| L Rfree | 17 | 12 | 11 | 10 | 10 | 0.8 | 0.5 | 0.5 | 0.4 | 0.4 | 1.33 | 8 |
| L St.G | 5 | 6 | 6 | 6 | 5 | 0.6 | 0.7 | 0.7 | 0.7 | 0.6 | 0.67 | 8 |
| L West | 12 | 20 | 29 | 35 | 36 | 0.3 | 0.6 | 0.8 | 1.0 | 1.0 | 1.96 | 18 |
| Leeds | 23 | 23 | 26 | 22 | 16 | 1.4 | 1.4 | 1.5 | 1.3 | 0.9 | 1.37 | 12 |
| Leic | 72 | 64 | 54 | 50 | 48 | 3.1 | 2.6 | 2.1 | 1.9 | 1.8 | 2.09 | 23 |
| Liv Ain | 14 | 18 | 15 | 13 | 13 | 6.7 | 8.3 | 6.6 | 5.4 | 4.9 | 0.43 | 30 |
| Liv Roy | 39 | 39 | 39 | 47 | 44 | 3.1 | 3.1 | 3.1 | 3.9 | 3.6 | 0.81 | 54 |
| M RI | 77 | 74 | 75 | 71 | 84 | 3.8 | 3.6 | 3.7 | 3.6 | 4.0 | 1.33 | 63 |
| Middlbr | 12 | 13 | 19 | 18 | 17 | 1.3 | 1.4 | 2.0 | 1.9 | 1.8 | 0.81 | 21 |
| Newc | 21 | 22 | 19 | 15 | 18 | 1.9 | 1.9 | 1.6 | 1.3 | 1.5 | 0.95 | 19 |
| Norwch | 14 | 13 | 14 | 13 | 10 | 1.8 | 1.6 | 1.7 | 1.6 | 1.3 | 0.69 | 14 |
| Nottm | 34 | 34 | 31 | 32 | 28 | 2.9 | 2.8 | 2.5 | 2.6 | 2.3 | 0.93 | 30 |
| Oxford | 16 | 21 | 25 | 17 | 19 | 0.9 | 1.1 | 1.3 | 0.8 | 0.9 | 1.45 | 13 |
| Plymth | 10 | 10 | 7 | 0 | 0 | 1.8 | 1.9 | 1.3 | 0.0 | 0.0 | 0.40 | 0 |
| Ports | 65 | 70 | 70 | 83 | 85 | 3.7 | 4.0 | 3.7 | 4.4 | 4.4 | 1.75 | 49 |
| Prestn | 49 | 43 | 49 | 47 | 42 | 3.9 | 3.3 | 3.7 | 3.4 | 3.0 | 1.23 | 34 |
| Redng | 6 | 9 | 8 | 8 | 9 | 0.8 | 1.1 | 0.9 | 0.9 | 1.0 | 0.70 | 13 |
| Salford | 41 | 35 | 41 | 40 | 31 | 3.7 | 3.0 | 3.3 | 3.2 | 2.6 | 1.15 | 27 |
| Sheff | 50 | 49 | 55 | 61 | 56 | 3.5 | 3.3 | 3.7 | 4.1 | 3.7 | 1.13 | 49 |

HHD

**Table 7.2** Continued

| Centre | N on HHD | | | | | % on HHD | | | | | Estimated catchment population (millions) | 2021 crude rate (pmp) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2017 | 2018 | 2019 | 2020 | 2021 | 2017 | 2018 | 2019 | 2020 | 2021 | | |
| Shrew | 22 | 20 | 27 | 36 | 37 | 5.7 | 4.7 | 6.2 | 8.4 | 8.4 | 0.41 | 90 |
| Stevng | 30 | 43 | 36 | 31 | 39 | 3.4 | 4.6 | 3.7 | 3.2 | 3.8 | 1.11 | 35 |
| Stoke | 29 | 25 | 31 | 39 | 41 | 3.6 | 3.1 | 3.8 | 4.8 | 4.9 | 0.73 | 56 |
| Sund | 21 | 22 | 12 | 9 | 10 | 3.9 | 3.9 | 2.1 | 1.6 | 1.8 | 0.55 | 18 |
| Truro | 9 | 3 | 4 | 4 | 5 | 2.1 | 0.7 | 0.9 | 0.9 | 1.1 | 0.36 | 14 |
| Wirral | 9 | 8 | 8 | 7 | 6 | 2.3 | 2.0 | 1.9 | 1.7 | 1.5 | 0.47 | 13 |
| Wolve | 33 | 34 | 33 | 31 | 38 | 5.7 | 5.6 | 5.4 | 4.7 | 5.5 | 0.55 | 69 |
| York | 13 | 17 | 16 | 18 | 17 | 2.3 | 3.0 | 2.7 | 3.1 | 2.9 | 0.49 | 35 |
| N IRELAND | | | | | | | | | | | | |
| Antrim | 4 | 4 | 4 | 4 | 2 | 1.6 | 1.5 | 1.4 | 1.4 | 0.7 | 0.25 | 8 |
| Belfast | 8 | 10 | 13 | 10 | 8 | 0.9 | 1.1 | 1.5 | 1.1 | 0.9 | 0.53 | 15 |
| Newry | 3 | 2 | 2 | 4 | 3 | 1.2 | 0.8 | 0.8 | 1.5 | 1.1 | 0.24 | 13 |
| Ulster | 1 | 0 | 0 | 0 | 0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.20 | 0 |
| West NI | 3 | 2 | 1 | 3 | 3 | 1.0 | 0.6 | 0.3 | 0.9 | 0.9 | 0.25 | 12 |
| SCOTLAND | | | | | | | | | | | | |
| Abrdn | 4 | 4 | 3 | 2 | 2 | 0.7 | 0.7 | 0.5 | 0.4 | 0.3 | 0.50 | 4 |
| Airdrie | 2 | 0 | 0 | 0 | 0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.46 | 0 |
| D&Gall | 2 | 1 | 2 | 1 | 1 | 1.5 | 0.7 | 1.3 | 0.6 | 0.6 | 0.12 | 8 |
| Dundee | 2 | 8 | 7 | 6 | 6 | 0.5 | 1.8 | 1.6 | 1.4 | 1.5 | 0.37 | 16 |
| Edinb | 4 | 3 | 2 | 3 | 7 | 0.5 | 0.3 | 0.2 | 0.3 | 0.8 | 0.84 | 8 |
| Glasgw | 15 | 18 | 18 | 11 | 10 | 0.8 | 1.0 | 1.0 | 0.6 | 0.5 | 1.37 | 7 |
| Inverns | 5 | 7 | 7 | 3 | 2 | 1.9 | 2.5 | 2.5 | 1.1 | 0.7 | 0.22 | 9 |
| Klmarnk | 10 | 13 | 14 | 14 | 16 | 3.0 | 3.8 | 3.9 | 3.8 | 4.4 | 0.29 | 55 |
| Krkcldy | 0 | 0 | 2 | 3 | 3 | 0.0 | 0.0 | 0.7 | 1.0 | 1.0 | 0.27 | 11 |
| WALES | | | | | | | | | | | | |
| Bangor | 11 | 13 | 15 | 13 | 21 | 5.6 | 6.4 | 7.5 | 6.0 | 9.7 | 0.16 | 128 |
| Cardff | 38 | 34 | 33 | 34 | 51 | 2.3 | 2.0 | 1.9 | 2.0 | 3.0 | 1.16 | 44 |
| Clwyd | 2 | 2 | 2 | 0 | 0 | 1.1 | 1.1 | 1.0 | 0.0 | 0.0 | 0.18 | 0 |
| Swanse | 34 | 36 | 45 | 44 | 40 | 4.3 | 4.4 | 5.2 | 5.2 | 4.7 | 0.76 | 53 |
| Wrexm | 5 | 6 | 7 | 7 | 3 | 1.5 | 1.9 | 2.3 | 2.2 | 1.0 | 0.21 | 14 |
| TOTALS | | | | | | | | | | | | |
| England | 1,197 | 1,203 | 1,225 | 1,233 | 1,218 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 44.77 | 27 |
| N Ireland | 19 | 18 | 20 | 21 | 16 | 1.0 | 0.9 | 1.0 | 1.1 | 0.8 | 1.47 | 11 |
| Scotland | 44 | 54 | 55 | 43 | 47 | 0.9 | 1.0 | 1.0 | 0.8 | 0.9 | 4.45 | 11 |
| Wales | 90 | 91 | 102 | 98 | 115 | 2.8 | 2.8 | 3.1 | 3.0 | 3.5 | 2.49 | 46 |
| **UK** | **1,350** | **1,366** | **1,402** | **1,395** | **1,396** | **2.1** | **2.1** | **2.1** | **2.0** | **2.0** | **53.19** | **26** |

Country HHD populations were calculated by summing the HHD patients from centres in each country. Estimated country populations were derived from Office for National Statistics figures (see appendix A for details on estimated catchment population by kidney centre)
Exeter was unable to submit patient level data but provided aggregate numbers of patients on KRT at the end of 2021 by treatment modality
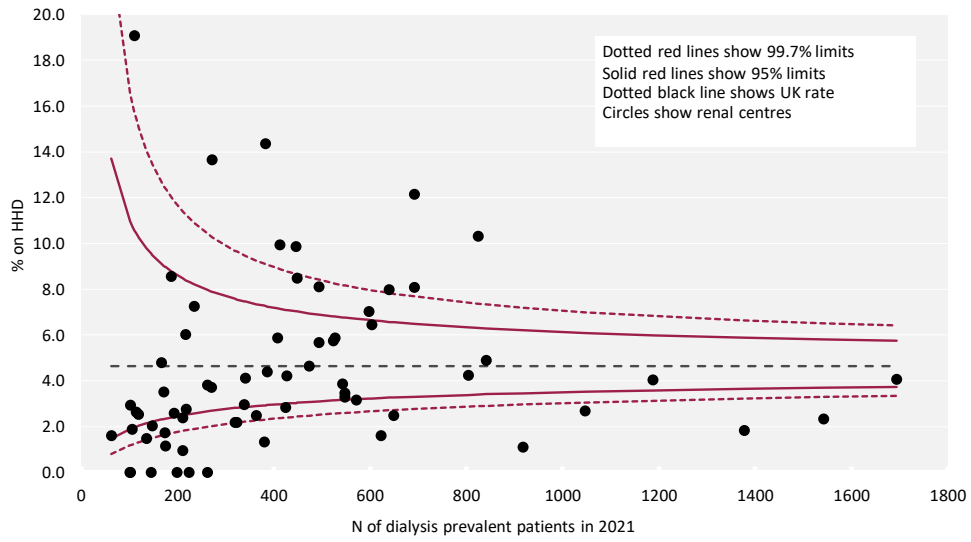pmp – per million population

HHD

**Figure 7.2** Percentage of adult patients prevalent to dialysis on 31/12/2021 who were on HHD by centre

Adults on HHD in the UK at the end of 2021

# Demographics of prevalent adult HHD patients

The proportion of HHD patients from each ethnic group is shown for patients with ethnicity data – the proportion of patients in each centre with no ethnicity data is shown separately.

**Table 7.3** Demographics of adult patients prevalent to HHD on 31/12/2021 by centre

| Centre | N on KRT | N on HHD | % on HHD | Median age (yrs) | % male | Ethnicity | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | % White | % Asian | % Black | % Other | % missing |
| ENGLAND | | | | | | | | | | |
| Bham | 3,309 | 69 | 2.1 | 55.0 | 73.9 | 64.7 | 19.1 | 10.3 | 5.9 | 1.4 |
| Bradfd | 735 | 7 | 1.0 | 57.1 | 57.1 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Brightn | 1,092 | 30 | 2.7 | 58.6 | 66.7 | 96.6 | 3.4 | 0.0 | 0.0 | 3.3 |
| Bristol | 1,497 | 18 | 1.2 | 59.8 | 38.9 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Camb | 1,629 | 24 | 1.5 | 56.8 | 79.2 | 91.7 | 0.0 | 8.3 | 0.0 | 0.0 |
| Carlis | 305 | 3 | 1.0 | 52.2 | 66.7 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Carsh | 1,907 | 28 | 1.5 | 59.1 | 67.9 | 82.1 | 7.1 | 10.7 | 0.0 | 0.0 |
| Colchr | 145 | 0 | 0.0 | | | | | | | |
| Covnt | 1,119 | 22 | 2.0 | 54.3 | 72.7 | 81.8 | 13.6 | 4.5 | 0.0 | 0.0 |
| Derby | 689 | 55 | 8.0 | 63.1 | 70.9 | 83.6 | 14.5 | 1.8 | 0.0 | 0.0 |
| Donc | 339 | 5 | 1.5 | 54.3 | 60.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Dorset | 786 | 14 | 1.8 | 65.2 | 78.6 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Dudley | 398 | 10 | 2.5 | 55.2 | 70.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| EssexMS | 895 | 21 | 2.3 | 58.4 | 47.6 | 89.5 | 10.5 | 0.0 | 0.0 | 9.5 |
| Exeter | 1,077 | 16 | 1.5 | | | | | | | |
| Glouc | 546 | 0 | 0.0 | | | | | | | |
| Hull | 919 | 12 | 1.3 | 45.0 | 66.7 | 91.7 | 0.0 | 0.0 | 8.3 | 0.0 |
| Ipswi | 421 | 2 | 0.5 | 56.5 | 0.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Kent | 1,192 | 18 | 1.5 | 55.9 | 55.6 | 94.4 | 0.0 | 0.0 | 5.6 | 0.0 |
| L Barts | 2,750 | 25 | 0.9 | 56.2 | 48.0 | 48.0 | 12.0 | 36.0 | 4.0 | 0.0 |
| L Guys | 2,322 | 41 | 1.8 | 49.5 | 53.7 | 53.7 | 9.8 | 36.6 | 0.0 | 0.0 |
| L Kings | 1,334 | 34 | 2.5 | 54.9 | 67.6 | 50.0 | 2.9 | 44.1 | 2.9 | 0.0 |
| L Rfree | 2,380 | 10 | 0.4 | 52.2 | 80.0 | 50.0 | 10.0 | 40.0 | 0.0 | 0.0 |
| L St.G | 866 | 5 | 0.6 | 47.4 | 60.0 | 80.0 | 0.0 | 20.0 | 0.0 | 0.0 |
| L West | 3,556 | 36 | 1.0 | 55.3 | 50.0 | 38.9 | 16.7 | 38.9 | 5.6 | 0.0 |
| Leeds | 1,784 | 16 | 0.9 | 49.2 | 68.8 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Leic | 2,640 | 48 | 1.8 | 57.4 | 72.9 | 84.4 | 11.1 | 4.4 | 0.0 | 6.3 |
| Liv Ain | 264 | 13 | 4.9 | 56.7 | 69.2 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Liv Roy | 1,207 | 44 | 3.6 | 51.2 | 47.7 | 90.7 | 0.0 | 2.3 | 7.0 | 2.3 |
| M RI | 2,077 | 84 | 4.0 | 52.5 | 65.5 | 62.8 | 7.7 | 26.9 | 2.6 | 7.1 |
| Middlbr | 955 | 17 | 1.8 | 53.7 | 47.1 | 88.2 | 0.0 | 0.0 | 11.8 | 0.0 |
| Newc | 1,226 | 18 | 1.5 | 61.2 | 66.7 | 94.4 | 5.6 | 0.0 | 0.0 | 0.0 |
| Norwch | 784 | 10 | 1.3 | 62.5 | 50.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Nottm | 1,220 | 28 | 2.3 | 55.7 | 32.1 | 82.1 | 3.6 | 10.7 | 3.6 | 0.0 |
| Oxford | 2,003 | 19 | 0.9 | 62.5 | 47.4 | 88.9 | 0.0 | 11.1 | 0.0 | 5.3 |
| Plymth | 548 | 0 | 0.0 | | | | | | | |
| Ports | 1,941 | 85 | 4.4 | 58.9 | 65.9 | 93.5 | 3.9 | 1.3 | 1.3 | 9.4 |
| Prestn | 1,379 | 42 | 3.0 | 55.3 | 54.8 | 90.5 | 7.1 | 2.4 | 0.0 | 0.0 |
| Redng | 877 | 9 | 1.0 | 54.7 | 55.6 | 50.0 | 0.0 | 37.5 | 12.5 | 11.1 |
| Salford | 1,215 | 31 | 2.6 | 53.7 | 64.5 | 90.3 | 0.0 | 9.7 | 0.0 | 0.0 |
| Sheff | 1,496 | 56 | 3.7 | 56.0 | 51.8 | 87.5 | 5.4 | 3.6 | 3.6 | 0.0 |
| Shrew | 442 | 37 | 8.4 | 62.1 | 70.3 | 94.6 | 0.0 | 2.7 | 2.7 | 0.0 |
| Stevng | 1,014 | 39 | 3.8 | 57.5 | 64.1 | 79.5 | 7.7 | 10.3 | 2.6 | 0.0 |
| Stoke | 845 | 41 | 4.9 | 55.7 | 70.7 | 92.5 | 0.0 | 5.0 | 2.5 | 2.4 |
| Sund | 547 | 10 | 1.8 | 59.1 | 70.0 | 100.0 | 0.0 | 0.0 | 0.0 | 10.0 |
| Truro | 461 | 5 | 1.1 | 56.3 | 40.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Wirral | 412 | 6 | 1.5 | 52.7 | 100.0 | 83.3 | 16.7 | 0.0 | 0.0 | 0.0 |
| Wolve | 691 | 38 | 5.5 | 52.4 | 78.9 | 86.8 | 10.5 | 2.6 | 0.0 | 0.0 |

Adults on HHD in the UK at the end of 2021

HHD

**Table 7.3** Continued

| Centre | N on KRT | N on HHD | % on HHD | Median age (yrs) | % male | Ethnicity % White | % Asian | % Black | % Other | % missing |
|---|---|---|---|---|---|---|---|---|---|---|
| York | 581 | 17 | 2.9 | 55.2 | 82.4 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| N IRELAND | | | | | | | | | | |
| Antrim | 296 | 2 | 0.7 | 65.3 | 100.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Belfast | 911 | 8 | 0.9 | 55.2 | 75.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Newry | 281 | 3 | 1.1 | 67.8 | 100.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Ulster | 203 | 0 | 0.0 | | | | | | | |
| West NI | 339 | 3 | 0.9 | 53.5 | 33.3 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| SCOTLAND | | | | | | | | | | |
| Abrdn | 578 | 2 | 0.3 | 44.3 | 0.0 | | | | | 50.0 |
| Airdrie | 504 | 0 | 0.0 | | | | | | | |
| D&Gall | 154 | 1 | 0.6 | 56.3 | 0.0 | | | | | 100.0 |
| Dundee | 411 | 6 | 1.5 | 66.3 | 66.7 | | | | | 66.7 |
| Edinb | 926 | 7 | 0.8 | 36.6 | 57.1 | | | | | 57.1 |
| Glasgw | 1,865 | 10 | 0.5 | 54.2 | 80.0 | | | | | 60.0 |
| Inverns | 278 | 2 | 0.7 | 54.8 | 50.0 | | | | | 50.0 |
| Klmarnk | 365 | 16 | 4.4 | 63.0 | 56.3 | | | | | 81.3 |
| Krkcldy | 295 | 3 | 1.0 | 78.5 | 66.7 | | | | | 100.0 |
| WALES | | | | | | | | | | |
| Bangor | 217 | 21 | 9.7 | 49.0 | 76.2 | 100.0 | 0.0 | 0.0 | 0.0 | 9.5 |
| Cardff | 1,700 | 51 | 3.0 | 60.8 | 54.9 | 94.0 | 2.0 | 4.0 | 0.0 | 2.0 |
| Clwyd | 204 | 0 | 0.0 | | | | | | | |
| Swanse | 853 | 40 | 4.7 | 56.9 | 60.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Wrexm | 300 | 3 | 1.0 | 63.8 | 33.3 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| TOTALS | | | | | | | | | | |
| England | 58,817 | 1,218 | 2.1 | 55.6 | 63.1 | 81.5 | 6.3 | 10.1 | 2.1 | 2.2 |
| N Ireland | 2,030 | 16 | 0.8 | 58.6 | 75.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Scotland | 5,376 | 47 | 0.9 | 60.0 | 59.6 | | | | | 70.2 |
| Wales | 3,274 | 115 | 3.5 | 57.6 | 60.0 | 97.3 | 0.9 | 1.8 | 0.0 | 2.6 |
| **UK** | **69,497** | **1,396** | **2.0** | **56.0** | **62.8** | **83.2** | **5.8** | **9.2** | **1.9** | **4.5** |

Blank cells – no data returned by the centre or data completeness <70%
Breakdown by ethnicity is not shown for centres with <70% data completeness, but these centres were included in national averages
Exeter was unable to submit patient level data but provided aggregate numbers of patients on KRT at the end of 2021 by treatment modality

Primary renal diseases (PRDs) were grouped into categories as shown in table 7.4, with the mapping of disease codes into groups explained in more detail in appendix A. The proportion of HHD patients with each PRD is shown for patients with PRD data and these total 100% of patients with data. The proportion of patients with no PRD data is shown on a separate line.

HHD

**Table 7.4** Primary renal diseases (PRDs) of adult patients prevalent to HHD on 31/12/2021

| PRD | N on HHD | % HHD population | Age <65 yrs | | Age ≥65 yrs | | M/F ratio |
|---|---|---|---|---|---|---|---|
| | | | N | % | N | % | |
| Diabetes | 186 | 14.1 | 124 | 12.4 | 62 | 19.0 | 1.6 |
| Glomerulonephritis | 344 | 26.0 | 293 | 29.4 | 51 | 15.6 | 2.1 |
| Hypertension | 73 | 5.5 | 52 | 5.2 | 21 | 6.4 | 3.1 |
| Polycystic kidney disease | 149 | 11.3 | 110 | 11.0 | 39 | 12.0 | 1.6 |
| Pyelonephritis | 135 | 10.2 | 101 | 10.1 | 34 | 10.4 | 1.3 |
| Renal vascular disease | 22 | 1.7 | 8 | 0.8 | 14 | 4.3 | 2.1 |
| Other | 266 | 20.1 | 207 | 20.8 | 59 | 18.1 | 1.4 |
| Uncertain aetiology | 148 | 11.2 | 102 | 10.2 | 46 | 14.1 | 1.6 |
| **Total (with data)** | **1,323** | **100.0** | **997** | **100.0** | **326** | **100.0** | |
| Missing | 57 | 4.1 | 41 | 3.9 | 16 | 4.7 | 1.6 |

## Biochemistry parameters in prevalent adult HHD patients

The UK Kidney Association guideline on CKD mineral bone disease contains only one audit measure, which is the percentage of patients with adjusted calcium above the target range.

**Table 7.5** Median adjusted calcium (Ca) and percentage with adjusted Ca within and above the target range (2.2–2.5 mmol/L) in adult patients prevalent to HHD on 31/12/2021 by centre

| Centre | Median adj Ca (mmoI/L) | % adj Ca 2.2-2.5 mmoI/L | % adj Ca >2.5 mmoI/L | % data completeness |
|---|---|---|---|---|
| ENGLAND | | | | |
| Bham | 2.4 | 72.3 | 20.0 | 100.0 |
| Bradfd | | | | 100.0 |
| Brightn | 2.4 | 73.3 | 20.0 | 100.0 |
| Bristol | 2.4 | 88.9 | 11.1 | 100.0 |
| Camb | 2.3 | 79.2 | 8.3 | 100.0 |
| Carlis | | | | 100.0 |
| Carsh | 2.3 | 85.7 | 3.6 | 100.0 |
| Colchr | | | | |
| Covnt | 2.3 | 59.1 | 13.6 | 100.0 |
| Derby | 2.4 | 67.3 | 27.3 | 100.0 |
| Donc | | | | 100.0 |
| Dorset | 2.4 | 76.9 | 23.1 | 100.0 |
| Dudley | 2.5 | 80.0 | 10.0 | 100.0 |
| EssexMS | 2.4 | 58.8 | 35.3 | 85.0 |
| Exeter | | | | |
| Glouc | | | | |
| Hull | 2.4 | 83.3 | 8.3 | 100.0 |
| Ipswi | | | | 100.0 |
| Kent | 2.3 | 61.1 | 5.6 | 100.0 |
| L Barts | 2.3 | 84.0 | 4.0 | 100.0 |
| L Guys | 2.3 | 78.1 | 2.4 | 100.0 |
| L Kings | 2.3 | 86.2 | 6.9 | 90.6 |
| L Rfree | 2.4 | 60.0 | 20.0 | 100.0 |
| L St.G | | | | 100.0 |
| L West | | | | 66.7 |
| Leeds | 2.3 | 87.5 | 12.5 | 100.0 |
| Leic | 2.4 | 77.1 | 6.3 | 100.0 |
| Liv Ain | 2.5 | 75.0 | 25.0 | 92.3 |
| Liv Roy | 2.5 | 65.1 | 27.9 | 100.0 |

Adults on HHD in the UK at the end of 2021

HHD

**Table 7.5** Continued

| Centre | Median adj Ca (mmoI/L) | % adj Ca 2.2-2.5 mmoI/L | % adj Ca >2.5 mmoI/L | % data completeness |
|---|---|---|---|---|
| M RI | 2.5 | 65.0 | 31.3 | 100.0 |
| Middlbr | 2.3 | 94.1 | 0.0 | 100.0 |
| Newc | 2.4 | 88.9 | 5.6 | 100.0 |
| Norwch | 2.3 | 90.0 | 0.0 | 100.0 |
| Nottm | 2.4 | 85.7 | 14.3 | 100.0 |
| Oxford | | | | 68.4 |
| Plymth | | | | |
| Ports | 2.4 | 84.2 | 7.3 | 98.8 |
| Prestn | 2.3 | 90.2 | 7.3 | 100.0 |
| Redng | | | | 100.0 |
| Salford | 2.4 | 64.5 | 25.8 | 100.0 |
| Sheff | 2.3 | 76.4 | 9.1 | 100.0 |
| Shrew | 2.4 | 75.9 | 10.3 | 96.7 |
| Stoke | 2.4 | 92.5 | 5.0 | 100.0 |
| Sund | 2.3 | 60.0 | 20.0 | 100.0 |
| Truro | | | | 100.0 |
| Wirral | | | | 100.0 |
| Wolve | 2.4 | 68.6 | 25.7 | 94.6 |
| York | 2.3 | 94.1 | 0.0 | 100.0 |
| N IRELAND | | | | |
| Antrim | | | | 100.0 |
| Belfast | | | | 100.0 |
| Newry | | | | 100.0 |
| Ulster | | | | |
| West NI | | | | 100.0 |
| WALES | | | | |
| Bangor | 2.4 | 76.2 | 14.3 | 100.0 |
| Cardff | 2.4 | 76.0 | 16.0 | 100.0 |
| Clwyd | | | | |
| Swanse | 2.4 | 82.5 | 12.5 | 100.0 |
| Wrexm | | | | 100.0 |
| TOTALS | | | | |
| England | 2.4 | 76.0 | 14.7 | 97.4 |
| N Ireland | 2.4 | 87.5 | 6.3 | 100.0 |
| Wales | 2.4 | 79.0 | 14.0 | 100.0 |
| **E, W & NI** | **2.4** | **76.4** | **14.6** | **97.6** |

Blank cells – no data returned by the centre or <10 patients in the centre or data completeness <70%

HHD
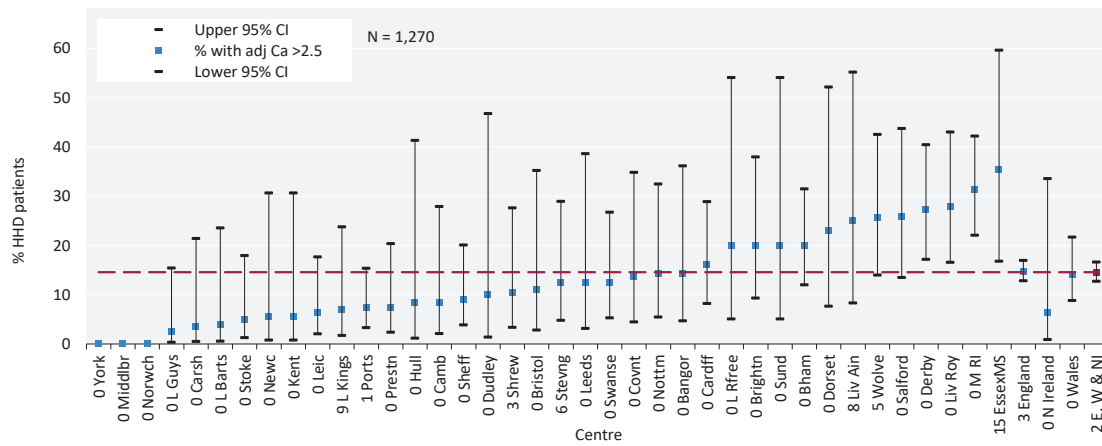
**Figure 7.3** Percentage of adult patients prevalent to HHD on 31/12/2021 with adjusted calcium (Ca) above the target range (>2.5 mmol/L) by centre

CI – confidence interval

**Table 7.6** Median pre-dialysis potassium and bicarbonate and percentage attaining target ranges in adult patients prevalent to HHD on 31/12/2021 by centre

| Centre | Pre-dialysis potassium | | | | | Pre-dialysis bicarbonate | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Median (mmoI/L) | % <4.0 mmol/L | % 4.0–6.0 mmol/L | % >6.0 mmol/L | % data complete | Median (mmoI/L) | % <18 mmol/L | % 18–26 mmol/L | % >26 mmol/L | % data complete |
| ENGLAND | | | | | | | | | | |
| Bham | 4.6 | 20.0 | 76.9 | 3.1 | 100.0 | | | | | 69.2 |
| Bradfd | | | | | 100.0 | | | | | 100.0 |
| Brightn | | | | | 0.0 | 27 | 0.0 | 39.3 | 60.7 | 93.3 |
| Bristol | 4.7 | 11.1 | 88.9 | 0.0 | 100.0 | 21 | 5.6 | 83.3 | 11.1 | 100.0 |
| Camb | 5.0 | 4.2 | 83.3 | 12.5 | 100.0 | 27 | 0.0 | 50.0 | 50.0 | 100.0 |
| Carlis | | | | | 0.0 | | | | | 100.0 |
| Carsh | | | | | 0.0 | | | | | 0.0 |
| Colchr | | | | | | | | | | |
| Covnt | | | | | 0.0 | 24 | 9.1 | 81.8 | 9.1 | 100.0 |
| Derby | 4.5 | 16.4 | 83.6 | 0.0 | 100.0 | 23 | 7.3 | 87.3 | 5.5 | 100.0 |
| Donc | | | | | 100.0 | | | | | 100.0 |
| Dorset | 5.1 | 0.0 | 92.3 | 7.7 | 100.0 | 22 | 0.0 | 100.0 | 0.0 | 100.0 |
| Dudley | 5.0 | 0.0 | 100.0 | 0.0 | 100.0 | 23 | 0.0 | 100.0 | 0.0 | 100.0 |
| EssexMS | 4.0 | 45.0 | 55.0 | 0.0 | 100.0 | 27 | 0.0 | 35.3 | 64.7 | 85.0 |
| Exeter | | | | | | | | | | |
| Glouc | | | | | | | | | | |
| Hull | 5.2 | 8.3 | 91.7 | 0.0 | 100.0 | 24 | 0.0 | 91.7 | 8.3 | 100.0 |
| Ipswi | | | | | 0.0 | | | | | 100.0 |
| Kent | 3.8 | 61.1 | 38.9 | 0.0 | 100.0 | 20 | 5.6 | 94.4 | 0.0 | 100.0 |
| L Barts | 5.4 | 12.0 | 76.0 | 12.0 | 100.0 | 20 | 8.0 | 92.0 | 0.0 | 100.0 |
| L Guys | 4.4 | 22.0 | 73.2 | 4.9 | 100.0 | 24 | 2.6 | 82.1 | 15.4 | 95.1 |
| L Kings | 5.1 | 3.6 | 67.9 | 28.6 | 87.5 | 21 | 12.5 | 83.3 | 4.2 | 75.0 |
| L Rfree | 5.6 | 20.0 | 40.0 | 40.0 | 100.0 | | | | | 80.0 |
| L St.G | | | | | 0.0 | | | | | 60.0 |
| L West | | | | | 0.0 | | | | | 30.6 |
| Leeds | 5.0 | 0.0 | 81.3 | 18.8 | 100.0 | 23 | 0.0 | 87.5 | 12.5 | 100.0 |
| Leic | 5.2 | 14.6 | 77.1 | 8.3 | 100.0 | 24 | 0.0 | 79.6 | 20.5 | 91.7 |
| Liv Ain | | | | | 0.0 | 23 | 0.0 | 100.0 | 0.0 | 92.3 |
| Liv Roy | | | | | 0.0 | 24 | 2.3 | 72.1 | 25.6 | 100.0 |
| M RI | | | | | 0.0 | 24 | 1.3 | 78.8 | 20.0 | 100.0 |
| Middlbr | 5.2 | 11.8 | 82.4 | 5.9 | 100.0 | 34 | 0.0 | 0.0 | 100.0 | 100.0 |
| Newc | | | | | 0.0 | 24 | 0.0 | 83.3 | 16.7 | 100.0 |

HHD

**Table 7.6** Continued

| Centre | Pre-dialysis potassium | | | | | Pre-dialysis bicarbonate | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Median (mmoI/L) | % <4.0 mmol/L | % 4.0–6.0 mmol/L | % >6.0 mmol/L | % data complete | Median (mmoI/L) | % <18 mmol/L | % 18–26 mmol/L | % >26 mmol/L | % data complete |
| Norwch | 5.4 | 0.0 | 80.0 | 20.0 | 100.0 | 23 | 0.0 | 100.0 | 0.0 | 100.0 |
| Nottm | 5.1 | 3.6 | 89.3 | 7.1 | 100.0 | | | | | 32.1 |
| Oxford | | | | | 68.4 | | | | | 68.4 |
| Plymth | | | | | | | | | | |
| Ports | 4.6 | 17.1 | 80.5 | 2.4 | 98.8 | 24 | 1.2 | 80.5 | 18.3 | 98.8 |
| Prestn | | | | | 0.0 | 23 | 10.5 | 68.4 | 21.1 | 92.7 |
| Redng | | | | | 0.0 | | | | | 100.0 |
| Salford | 4.6 | 16.1 | 80.7 | 3.2 | 100.0 | | | | | 0.0 |
| Sheff | 5.2 | 3.6 | 89.1 | 7.3 | 100.0 | 22 | 7.3 | 83.6 | 9.1 | 100.0 |
| Shrew | | | | | 0.0 | 21 | 3.5 | 96.6 | 0.0 | 96.7 |
| Sthend | | | | | | | | | | |
| Stoke | | | | | 0.0 | 27 | 0.0 | 47.5 | 52.5 | 100.0 |
| Sund | | | | | 0.0 | 22 | 10.0 | 70.0 | 20.0 | 100.0 |
| Truro | | | | | 100.0 | | | | | 100.0 |
| Wirral | | | | | 0.0 | | | | | 100.0 |
| Wolve | 4.9 | 11.4 | 82.9 | 5.7 | 94.6 | 19 | 17.1 | 77.1 | 5.7 | 94.6 |
| York | 5.5 | 0.0 | 76.5 | 23.5 | 100.0 | 23 | 0.0 | 88.2 | 11.8 | 100.0 |
| N IRELAND | | | | | | | | | | |
| Antrim | | | | | 100.0 | | | | | 100.0 |
| Belfast | | | | | 100.0 | | | | | 100.0 |
| Newry | | | | | 100.0 | | | | | 100.0 |
| Ulster | | | | | | | | | | |
| West NI | | | | | 100.0 | | | | | 100.0 |
| WALES | | | | | | | | | | |
| Bangor | | | | | 0.0 | 24 | 0.0 | 71.4 | 28.6 | 100.0 |
| Cardff | | | | | 0.0 | 23 | 0.0 | 85.7 | 14.3 | 98.0 |
| Clwyd | | | | | | | | | | |
| Swanse | | | | | 0.0 | 23 | 5.0 | 87.5 | 7.5 | 100.0 |
| Wrexm | | | | | 0.0 | | | | | 100.0 |
| TOTALS | | | | | | | | | | |
| England | 4.9 | 14.0 | 78.7 | 7.3 | 60.5 | 23 | 3.8 | 76.5 | 19.7 | 86.2 |
| N Ireland | 5.2 | 12.5 | 75.0 | 12.5 | 100.0 | 23 | 0.0 | 87.5 | 12.5 | 100.0 |
| Wales | | | | | 0.0 | 23 | 1.8 | 83.2 | 15.0 | 99.1 |
| **E, W & NI** | **4.9** | **14.0** | **78.6** | **7.5** | **55.7** | **23** | **3.5** | **77.3** | **19.2** | **87.5** |

Blank cells – no data returned by the centre or <10 patients in the centre or data completeness <70%

HHD
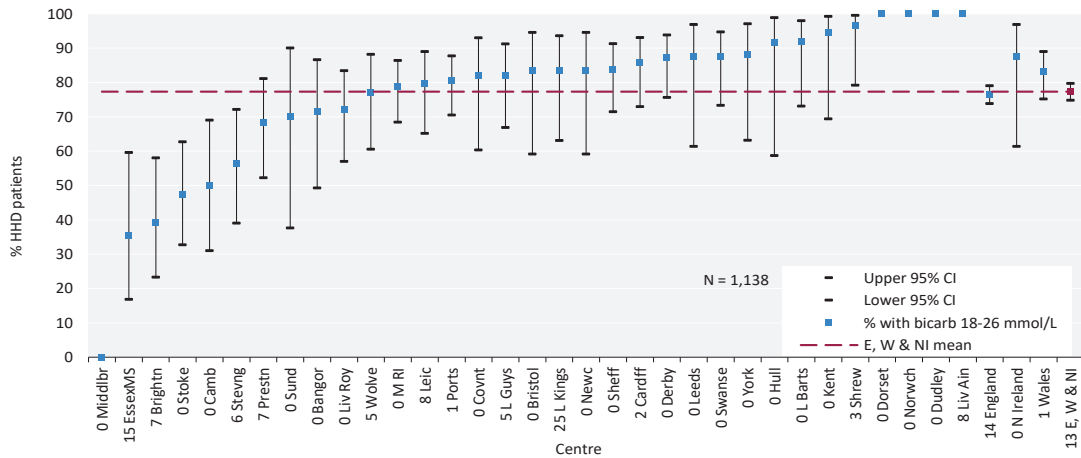
**Figure 7.4** Percentage of adult patients prevalent to HHD on 31/12/2021 with pre-dialysis bicarbonate (bicarb) within the target range (18–26 mmol/L) by centre

CI – confidence interval
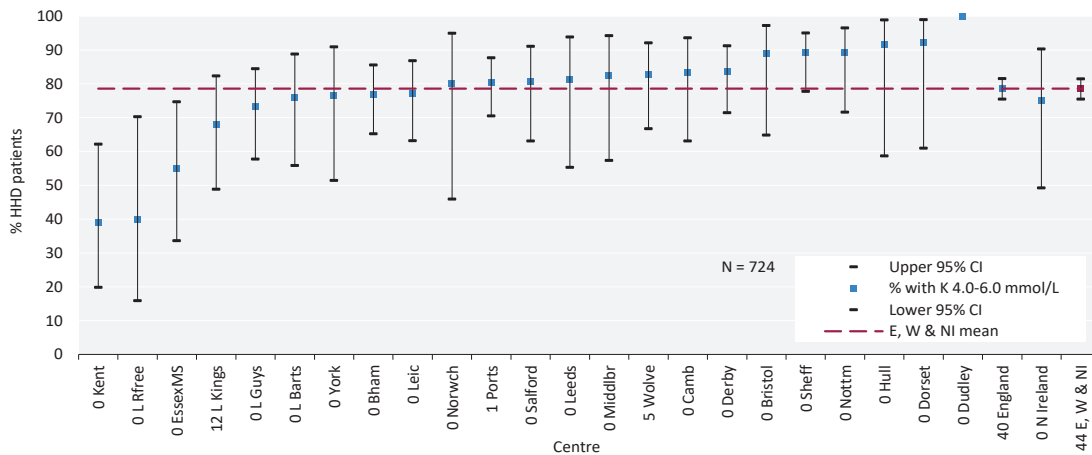


**Figure 7.5** Percentage of adult patients prevalent to HHD on 31/12/2021 with pre-dialysis potassium (K) within the target range (4.0–6.0 mmol/L) by centre

CI – confidence interval

# Anaemia in prevalent adult HHD patients

UK Kidney Association anaemia guidelines recommend a target haemoglobin of 100-120 g/L. Data are presented in table 7.7 regarding target and median haemoglobin and ferritin levels attained.

**Table 7.7** Median haemoglobin and ferritin and percentage attaining target ranges in adult patients prevalent to HHD on 31/12/2021 by centre

| Centre | Haemoglobin | | | | Ferritin | | |
| | Median (g/L) | % <100 g/L | % >120 g/L | % data completeness | Median (μg/L) | % <200 μg/L | % data completeness |
|---|---|---|---|---|---|---|---|
| | | | ENGLAND | | | | |
| Bham | 112 | 16.9 | 23.1 | 100.0 | 526 | 21.5 | 100.0 |
| Bradfd | | | | 100.0 | | | 100.0 |
| Brightn | 103 | 36.7 | 20.0 | 100.0 | 417 | 13.3 | 100.0 |
| Bristol | 111 | 5.6 | 16.7 | 100.0 | 454 | 16.7 | 100.0 |
| Camb | | | | 8.3 | | | 4.2 |
| Carlis | | | | 100.0 | | | 100.0 |
| Carsh | 108 | 14.3 | 25.0 | 100.0 | 359 | 17.9 | 100.0 |
| Colchr | | | | | | | |
| Covnt | 105 | 27.3 | 27.3 | 100.0 | 340 | 22.7 | 100.0 |
| Derby | 113 | 9.1 | 29.1 | 100.0 | 556 | 7.3 | 100.0 |
| Donc | | | | 100.0 | | | 100.0 |
| Dorset | 113 | 15.4 | 15.4 | 100.0 | 340 | 23.1 | 100.0 |
| Dudley | 114 | 20.0 | 10.0 | 100.0 | | | 0.0 |
| EssexMS | 109 | 30.0 | 30.0 | 100.0 | 208 | 47.4 | 95.0 |
| Exeter | | | | | | | |
| Glouc | | | | | | | |
| Hull | 118 | 8.3 | 33.3 | 100.0 | 370 | 25.0 | 100.0 |
| Ipswi | | | | 100.0 | | | 100.0 |
| Kent | 108 | 27.8 | 16.7 | 100.0 | 161 | 61.1 | 100.0 |
| L Barts | 107 | 24.0 | 12.0 | 100.0 | 718 | 4.0 | 100.0 |
| L Guys | 107 | 29.3 | 19.5 | 100.0 | 430 | 22.5 | 97.6 |
| L Kings | 103 | 34.5 | 17.2 | 90.6 | 487 | 13.8 | 90.6 |
| L Rfree | 111 | 10.0 | 30.0 | 100.0 | 450 | 20.0 | 100.0 |
| L St.G | | | | 100.0 | | | 100.0 |
| L West | 105 | 30.8 | 15.4 | 72.2 | 220 | 40.7 | 75.0 |
| Leeds | 101 | 50.0 | 6.3 | 100.0 | 260 | 43.8 | 100.0 |
| Leic | 111 | 16.7 | 18.8 | 100.0 | 245 | 31.3 | 100.0 |
| Liv Ain | | | | 69.2 | 180 | 61.5 | 100.0 |
| Liv Roy | | | | 67.4 | 287 | 34.9 | 100.0 |
| M RI | 110 | 28.8 | 27.5 | 100.0 | 239 | 37.5 | 100.0 |
| Middlbr | 107 | 23.5 | 11.8 | 100.0 | 669 | 17.6 | 100.0 |
| Newc | 113 | 22.2 | 22.2 | 100.0 | 607 | 5.6 | 100.0 |
| Norwch | 112 | 10.0 | 30.0 | 100.0 | 235 | 50.0 | 100.0 |
| Nottm | 106 | 28.6 | 7.1 | 100.0 | 349 | 32.1 | 100.0 |
| Oxford | 114 | 28.6 | 14.3 | 73.7 | 555 | 10.5 | 100.0 |
| Plymth | | | | | | | |
| Ports | 112 | 26.8 | 25.6 | 98.8 | 328 | 33.7 | 100.0 |
| Prestn | 112 | 14.6 | 12.2 | 100.0 | 487 | 9.8 | 100.0 |
| Redng | | | | 100.0 | | | 100.0 |
| Salford | 109 | 16.1 | 12.9 | 100.0 | 176 | 56.7 | 96.8 |
| Sheff | 106 | 36.4 | 10.9 | 100.0 | 479 | 23.6 | 100.0 |
| Shrew | 111 | 20.7 | 24.1 | 96.7 | 317 | 31.0 | 96.7 |
| Stevng | 116 | 33.3 | 36.4 | 97.1 | 402 | 11.8 | 100.0 |
| Stoke | 112 | 17.5 | 25.0 | 100.0 | 347 | 22.5 | 100.0 |
| Sund | 114 | 20.0 | 0.0 | 100.0 | 453 | 20.0 | 100.0 |
| Truro | | | | 100.0 | | | 100.0 |

Adults on HHD in the UK at the end of 2021

HHD

**Table 7.7** Continued

| Centre | Haemoglobin | | | | Ferritin | | |
|---|---|---|---|---|---|---|---|
| | Median (g/L) | % <100 g/L | % >120 g/L | % data completeness | Median (µg/L) | % <200 µg/L | % data completeness |
| Wirral | | | | 83.3 | | | 100.0 |
| Wolve | 112 | 28.6 | 17.1 | 94.6 | 240 | 42.9 | 94.6 |
| York | 106 | 35.3 | 11.8 | 100.0 | 351 | 23.5 | 100.0 |
| N IRELAND | | | | | | | |
| Antrim | | | | 100.0 | | | 100.0 |
| Belfast | | | | 100.0 | | | 100.0 |
| Newry | | | | 100.0 | | | 100.0 |
| Ulster | | | | | | | |
| West NI | | | | 66.7 | | | 100.0 |
| SCOTLAND | | | | | | | |
| Abrdn | | | | 100.0 | | | |
| Airdrie | | | | | | | |
| D&Gall | | | | 100.0 | | | |
| Dundee | | | | 100.0 | | | |
| Edinb | | | | 85.7 | | | |
| Glasgw | | | | 90.0 | | | |
| Inverns | | | | 100.0 | | | |
| Klmarnk | 104 | 37.5 | 0.0 | 100.0 | | | |
| Krkcldy | | | | 100.0 | | | |
| WALES | | | | | | | |
| Bangor | 111 | 19.0 | 33.3 | 100.0 | 164 | 57.1 | 100.0 |
| Cardff | 109 | 24.0 | 24.0 | 100.0 | 224 | 44.9 | 98.0 |
| Clwyd | | | | | | | |
| Swanse | 112 | 25.0 | 27.5 | 100.0 | 314 | 40.0 | 100.0 |
| Wrexm | | | | 100.0 | | | 100.0 |
| TOTALS | | | | | | | |
| England | 109 | 25.1 | 20.0 | 94.5 | 357 | 27.1 | 95.6 |
| N Ireland | 111 | 13.3 | 26.7 | 93.8 | 321 | 31.3 | 100.0 |
| Scotland | 110 | 21.1 | 21.1 | 95.7 | | | 0.0 |
| Wales | 111 | 22.8 | 27.2 | 100.0 | 225 | 45.1 | 99.1 |
| **UK** | **109** | **24.6** | **20.7** | **95.0** | **344** | **28.8** | **96.0** |

Blank cells – no data returned by the centre or <10 patients in the centre or data completeness <70%

UK National average for ferritin does not include Scotland

HHD
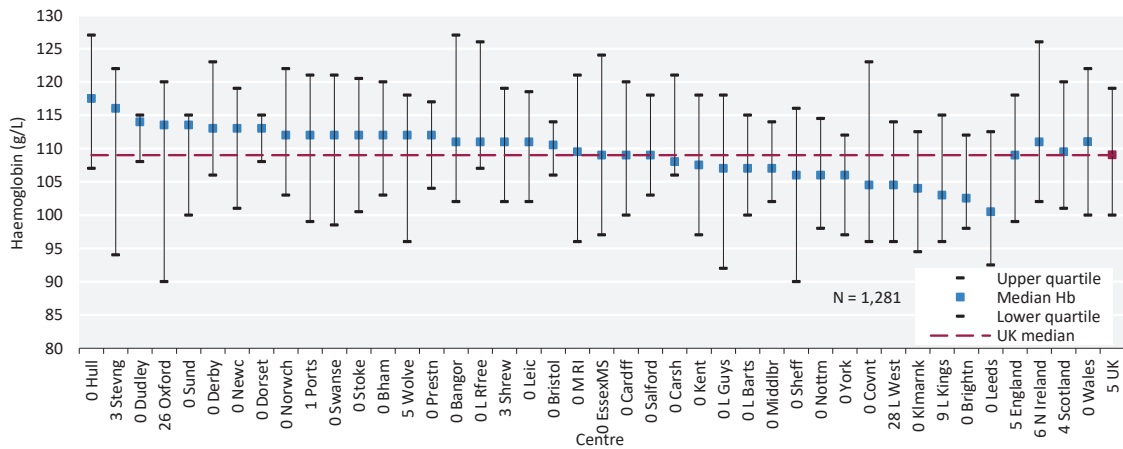
**Figure 7.6** Median haemoglobin (Hb) in adult patients prevalent to HHD on 31/12/2021 by centre
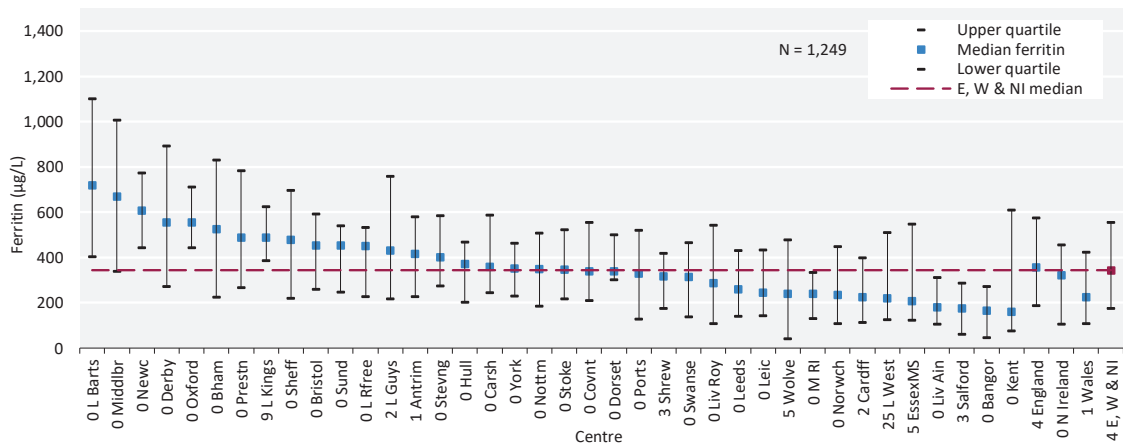


**Figure 7.7** Median ferritin in adult patients prevalent to HHD on 31/12/2021 by centre
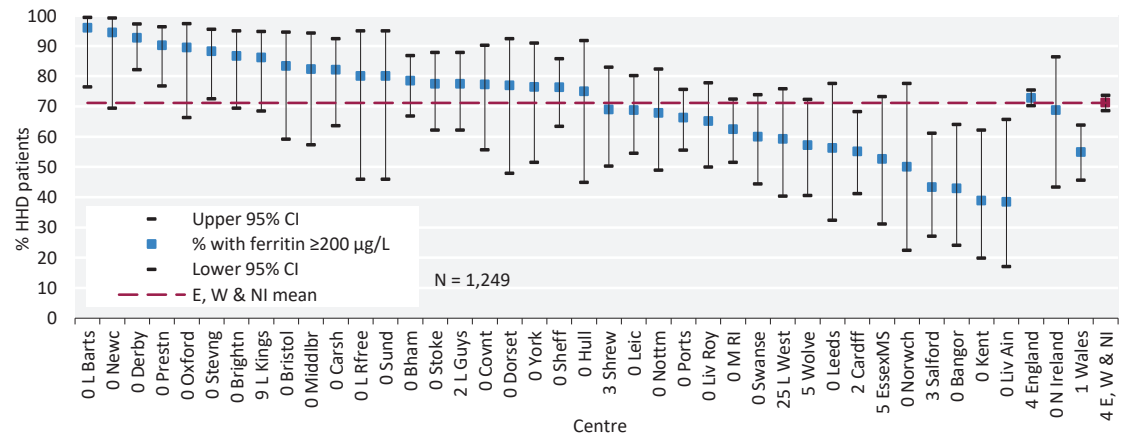


**Figure 7.8** Percentage of adult patients prevalent to HHD on 31/12/2021 with ferritin <200 µg/L by centre

CI – confidence interval

HHD
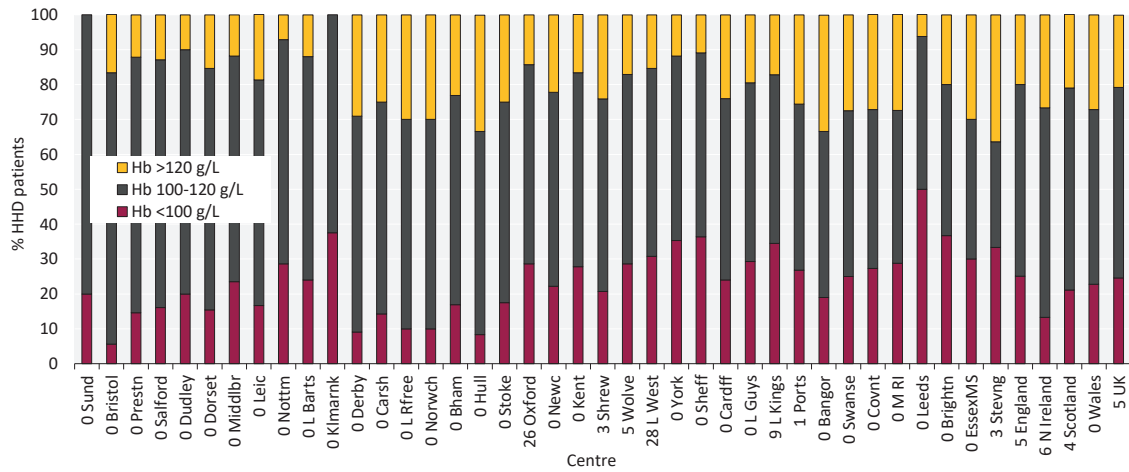
**Figure 7.9** Distribution of haemoglobin (Hb) in adult patients prevalent to HHD on 31/12/2021 by centre

# Cause of death in adult HHD patients

Cause of death was analysed in prevalent patients receiving HHD on 31/12/2020 and followed-up for one year in 2021. The proportion of HHD patients with each cause of death is shown for patients with cause of death data and these total 100% of patients with data. The proportion of patients with no cause of death data is shown on a separate line. Further detail on the survival of prevalent KRT patients is in chapter 3.

**Table 7.8** Cause of death in adult patients prevalent to HHD on 31/12/2020 followed-up in 2021 by age group

| | HHD all ages | | HHD < 65 years | | HHD ≥ 65 years | |
|---|---|---|---|---|---|---|
| Cause of death | N | % | N | % | N | % |
| Cardiac disease | 26 | 32.9 | 16 | 35.6 | 10 | 29.4 |
| Cerebrovascular disease | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| Infection | 11 | 13.9 | 7 | 15.6 | 4 | 11.8 |
| Malignancy | 5 | 6.3 | 2 | 4.4 | 3 | 8.8 |
| Treatment withdrawal | 7 | 8.9 | 4 | 8.9 | 3 | 8.8 |
| Other | 24 | 30.4 | 12 | 26.7 | 12 | 35.3 |
| Uncertain aetiology | 6 | 7.6 | 4 | 8.9 | 2 | 5.9 |
| **Total (with data)** | **79** | **100.0** | **45** | **100.0** | **34** | **100.0** |
| Missing | 49 | 38.3 | 25 | 35.7 | 24 | 41.4 |
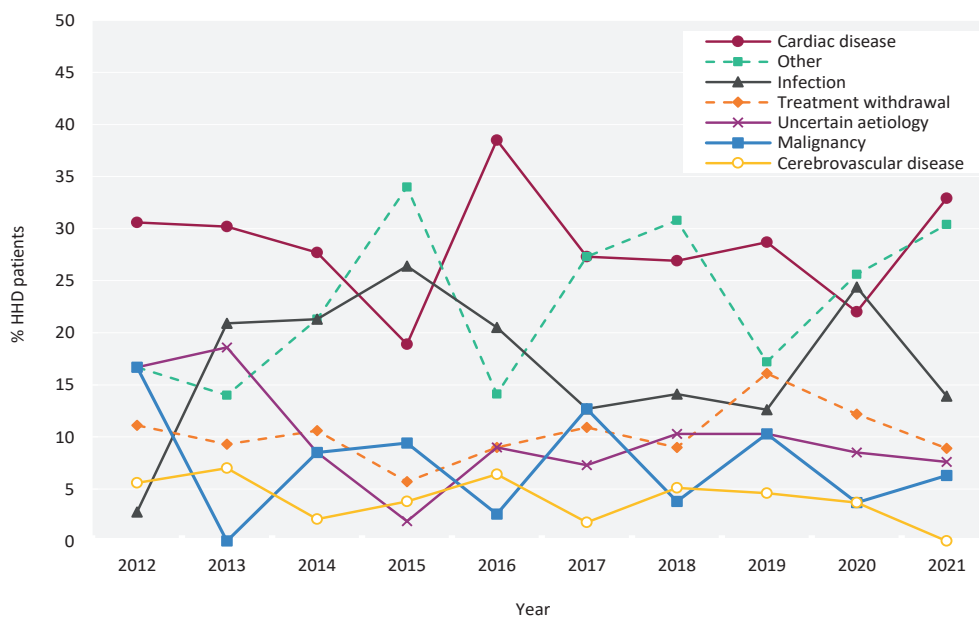


**Figure 7.10** Cause of death between 2012 and 2021 for adult patients prevalent to HHD at the beginning of the year

*Chapter 8*

# Children and young people on kidney replacement therapy (KRT) for end-stage kidney disease (ESKD) in the UK in 2021

# Contents

# Introduction

This chapter describes the population of children and young people aged <18 years with end-stage kidney disease (ESKD) who were on kidney replacement therapy (KRT) in the UK for at least 90 days in 2021 (figure 8.1). This included patients with a transplant (Tx) and patients on dialysis – in-centre haemodialysis (ICHD), home haemodialysis (HHD) and peritoneal dialysis (PD). Patients coded as acute kidney injury (AKI) or ESKD who recovered within the first 90 days of KRT were excluded from the analyses.

There are 13 paediatric kidney centres in the UK, all of which are equipped to provide both haemodialysis (HD) and PD. Ten of these centres also perform kidney transplantation. Children aged 16 to <18 years may be managed in either paediatric or adult services. This is variable across the UK and dependent on local practices, social factors and patient/family wishes. Children (aged <16 years) and young people (aged 16 to <18 years) are reported separately. Data about young people also include those managed in adult centres, to provide a more complete epidemiological picture for this population.
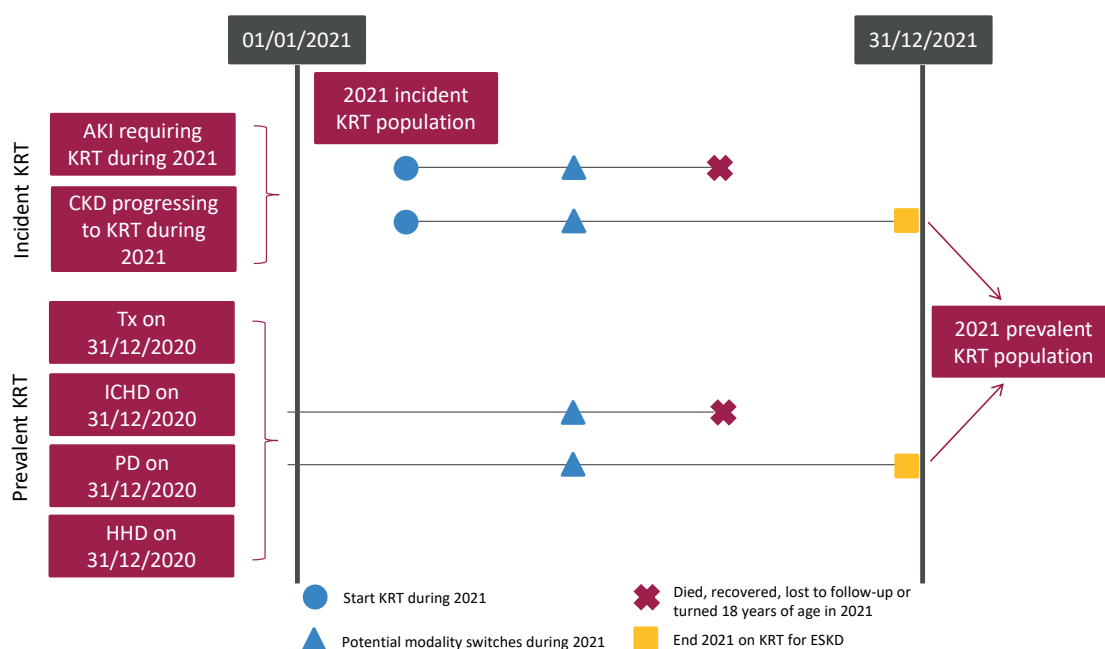


**Figure 8.1** Pathways children and young people could follow to be included in the UK 2021 incident and/or prevalent KRT populations

Note that patients who recovered kidney function before 90 days on dialysis are not included in this chapter.

CKD – chronic kidney disease

For children aged <16 years, the following populations included in this chapter are:

- **Incident population:** patients who started KRT during 2021 and remained on KRT for at least 90 days.
- **Prevalent population:** patients who were on KRT at the end of 2021 and still under the care of a paediatric kidney centre.
- **Five-year populations:** patients who started KRT and remained on KRT for at least 90 days in the periods 2007–2011, 2012–2016 and 2017–2021.

Paediatrics

For young people aged 16 to <18 years, the following populations included in this chapter are:

- **Incident population:** patients who started KRT during 2021 in either an adult or paediatric centre and remained on KRT for at least 90 days.
- **Prevalent population:** patients who were on KRT at the end of 2021 in either an adult or paediatric centre.

This chapter addresses the following key aspects of the care of children incident to or on KRT for which there are evidence-based guidelines (table 8.1):

- **Growth:** this includes age- and sex-adjusted heights and weights.
- **Cardiovascular risk factors:** these include age-adjusted blood pressure, cholesterol and body mass index (BMI).
- **Complications associated with KRT:** these include anaemia and mineral and bone disorders.

The sections for these aspects (and tables 8.2 and 8.3) use a restricted prevalent cohort.  Children who have moved centre, changed or started treatment in the quarter are not included.

For young people, the following aspects of care are addressed:

- **Cardiovascular risk factors:** these include blood pressure using raw systolic and diastolic values which are audited against European Society of Hypertension guidelines for the management of high blood pressure in children and adolescents (2016)
- **Complications associated with KRT:** these include anaemia and mineral and bone disorders. Paediatric reference ranges for children and young people up to 18 years are used as the standard measure.

Paediatrics

# Rationale for analyses

For both the children and young people sections, the analyses begin with a description of the 2021 incident and prevalent KRT populations, including the number on KRT per million age-related population (pmarp).

For children, height and weight are measures of healthy growth, which may be affected by kidney disease as well as its treatment. These measures are therefore presented for each centre in comparison to the UK median for this cohort.

The published guidelines listed below provide audit measures relevant to the care of children and young people on KRT and, where data permit, their attainment by UK paediatric kidney centres in 2021 is reported in this chapter (table 8.1). Due to the small numbers of young people identified, we have omitted reporting by centre for this population.

For children, reporting estimated glomerular filtration rate (eGFR) is dependent on the completeness of both creatinine and height data. For young people, the Full Age Spectrum (FAS) equation was used to calculate eGFR – height data for young people managed in adult centres were incomplete and therefore a height-free calculation was used to standardise reporting and enable direct comparison within this population.

**Table 8.1** Audit measures relevant to KRT incidence and prevalence that are reported in this chapter

| Audit guideline | Audit criteria | Related analysis/analyses |
|---|---|---|
| The UK Kidney Association: Treatment of adults and children with kidney failure: standards and audit measures (2002) | Height and weight to be monitored at each clinic visit and plotted on the growth charts of healthy children and adolescents | Figures 8.6–8.13 |
| | Blood pressure during PD or after HD to be maintained at <90th percentile for age, sex and height. Blood pressure in Tx patients to be maintained at <90th percentile for age, sex and height | Tables 8.14–8.15, figures 8.14–8.15 |
| | Serum phosphate and calcium should be kept within the normal range. Parathyroid hormone (PTH) levels should be maintained within twice the upper limit of the normal range but, contrary to adult standards, may be kept within the normal range if growth is normal | Table 8.17 |
| | Serum bicarbonate concentrations should be 20–26 mmol/L | Table 8.17 |
| | Typically maintain the aspirational haemoglobin range 100–120 g/L for young people and children aged ≥2 years and 95–115 g/L for children <2 years, reflecting the lower normal range in that age group | Table 8.17 |
| National Heart Lung and Blood Institute and Kidney Disease Improving Global Outcomes (KDIGO) (2013) | Screening children at risk of secondary dyslipidaemias including those with CKD is recommended | Tables 8.2–8.3, 8.15 |

Paediatrics

Detail about the completeness of data returned to the UK Renal Registry (UKRR) is available through the UKRR data portal (ukkidney.org/audit-research/data-portals). The completeness of both transferrin saturation and percentage hypochromic red cells was too low to be reported as measures of iron stores. Audit measures that cannot be reported because the required data items were not collected by the UKRR are omitted – this includes reticulocyte haemoglobin content.

For children, data for height, weight, BMI and blood pressure vary with age, sex and size and are therefore presented as z-scores. Z-scores are a way of expressing the deviation of a given measurement from the age and size-specific population mean. This relies on the completeness of height data during the period in question.

For definitions and methods relating to this chapter see appendix A. Centres were exluded from caterpillar plots and cells were blanked in tables where data completeness for a biochemical variable was <70% and/or the number of patients reported was <10. A patient first seen by kidney services within 90 days of starting KRT for ESKD is defined as a 'late presentation'. In this report 'late presentation' is used interchangeably with 'late referral'.

Paediatrics

# Key findings

## Children

- 110 patients aged <16 years started KRT for ESKD in the UK in 2021 compared to 106 patients in 2020.

- KRT incidence in patients aged <16 years was 8.9 pmarp compared to 8.3 pmarp in 2020.

- 842 patients aged <16 years were receiving KRT at UK paediatric kidney centres on 31/12/2021, an increase from 812 patients in 2020.

- KRT prevalence in patients aged <16 years was 68.4 pmarp. 76.4% had a functioning Tx (49.8% living donor and 26.6% deceased donor), 11.0% were receiving HD and 12.6% were receiving PD.

- Tubulointerstitial disease accounted for approximately 50% of all primary renal diseases (PRDs) in prevalent paediatric patients, with a high male:female ratio (2.8:1).

- Between 2007 and 2021, about a third of patients aged <16 years who were referred early received a pre-emptive Tx.

- At the time of transfer to adult services, 84.2% of paediatric patients had a functioning kidney Tx.

- The median height z-score for children on dialysis was −1.5 compared with -0.9 for those with a functioning Tx.

- The median weight z-score for children on dialysis was -1.0 compared with 0.1 for those with a functioning Tx.

- The overall median eGFR of the 611 children with a kidney transplant on 31/12/2021 was 61 mL/min/1.73m$^2$ and 5.6% had an eGFR of <30 mL/min/1.73m$^2$.

- Of those with complete data, 74.9% of the prevalent paediatric KRT population had 1 or more risk factors for cardiovascular disease; 4.6% had 3 risk factors.

- 59.6% and 63.4% of prevalent HD patients achieved systolic blood pressure (SBP) and diastolic blood pressure (DBP) values <90th percentile, respectively.

- 60.4% and 65.9% of prevalent PD patients achieved SBP and DBP values <90th percentile, respectively.

- 77.0% and 80.8% of prevalent Tx patients achieved SBP and DBP values <90th percentile, respectively.

## Young people

- 26 patients aged 16 to <18 years started KRT for ESKD in the UK in 2021.

- KRT incidence in young people was 17.1 pmarp.

- 225 patients aged 16 to <18 years were receiving KRT on 31/12/2021, of whom the majority (83.6%) were managed in paediatric kidney centres.

- KRT prevalence in patients aged 16 to <18 years was 147.7 pmarp.

- Tubulointerstital disease accounted for 42.0% of all PRDs in prevalent young people, followed by familial/hereditary nephropathies (22.6%) and glomerular disease (16.5%).

- The overall median eGFR of young people with a kidney transplant on 31/12/2021 was 71 mL/min/1.73m$^2$ and 6.1% had an eGFR of <30 mL/min/1.73m$^2$.

- The proportion of young people prevalent to KRT on 31/12/2021 with a blood pressure within the 'normal' range (<130/80 mmHg) was 50.0% of dialysis and 66.4% of transplanted patients.

Paediatrics

# Analyses – children

## Data completeness for prevalent paediatric KRT patients

Data returns of key variables for Tx and dialysis patients <16 years old at the end of 2021 are shown in tables 8.2 and 8.3, respectively, with further detail available through the UKRR data portal (ukkidney.org/audit-research/data-portals).

**Table 8.2** Data completeness for paediatric patients (<16 years old) prevalent to Tx on 31/12/2021 by centre

| Centre | N with Tx | Data completeness (%) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Height | Weight | BMI | SBP | DBP | Hb | Creat | Chol | Bicarb | PTH | Ca | Phos |
| Bham_P | 69 | 98.6 | 100.0 | 98.6 | 100.0 | 98.6 | 100.0 | 100.0 | 95.7 | 100.0 | 65.2 | 100.0 | 100.0 |
| Blfst_P | 23 | 34.8 | 95.7 | 34.8 | 34.8 | 34.8 | 100.0 | 100.0 | 87.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Brstl_P | 36 | 0.0 | 94.4 | 0.0 | 91.7 | 80.6 | 100.0 | 100.0 | 36.1 | 100.0 | 86.1 | 100.0 | 100.0 |
| Cardf_P | 20 | 0.0 | 100.0 | 0.0 | 100.0 | 5.0 | 100.0 | 100.0 | 90.0 | 100.0 | 75.0 | 100.0 | 100.0 |
| Glasg_P | 41 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 82.9 | 82.9 | 26.8 | 87.8 | 78.1 | 82.9 | 82.9 |
| L Eve_P | 65 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 58.5 | 100.0 | 98.5 | 100.0 | 100.0 |
| L GOSH_P | 110 | 93.6 | 100.0 | 93.6 | 50.9 | 50.9 | 40.0 | 42.7 | 10.0 | 6.4 | 19.1 | 0.0 | 42.7 |
| Leeds_P | 42 | 100.0 | 100.0 | 100.0 | 100.0 | 88.1 | 100.0 | 100.0 | 7.1 | 100.0 | 100.0 | 100.0 | 100.0 |
| Livpl_P | 26 | 0.0 | 11.5 | 0.0 | 7.7 | 3.9 | 0.0 | 96.2 | 69.2 | 96.2 | 92.3 | 96.2 | 96.2 |
| Manch_P | 65 | 0.0 | 0.0 | 0.0 | 100.0 | 98.5 | 100.0 | 100.0 | 89.2 | 100.0 | 93.9 | 100.0 | 100.0 |
| Newc_P | 25 | 0.0 | 0.0 | 0.0 | 100.0 | 4.0 | 100.0 | 100.0 | 80.0 | 100.0 | 88.0 | 100.0 | 100.0 |
| Nottm_P | 59 | 86.4 | 94.9 | 86.4 | 89.8 | 86.4 | 98.3 | 98.3 | 44.1 | 98.3 | 83.1 | 98.3 | 98.3 |
| Soton_P | 30 | 100.0 | 100.0 | 100.0 | 86.7 | 73.3 | 100.0 | 100.0 | 3.3 | 100.0 | 100.0 | 100.0 | 100.0 |
| **UK** | **611** | **66.8** | **80.5** | **66.8** | **82.7** | **72.7** | **83.6** | **88.2** | **49.6** | **82.0** | **75.1** | **80.5** | **88.2** |

Bicarb – bicarbonate; BMI – body mass index; Ca – calcium; Chol – cholesterol; Creat – creatinine; DBP – diastolic blood pressure; Hb – haemoglobin; Phos – phosphate; PTH – parathyroid hormone; SBP – systolic blood pressure

**Table 8.3** Data completeness for paediatric patients (<16 years old) prevalent to dialysis on 31/12/2021 by centre

| Centre | N on dialysis | Data completeness (%) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Height | Weight | BMI | SBP | DBP | Hb | Chol | Bicarb | PTH | Ca | Phos |
| Bham_P | 22 | 95.5 | 95.5 | 95.5 | 95.5 | 90.9 | 95.5 | 95.5 | 95.5 | 95.5 | 95.5 | 95.5 |
| Blfst_P | 1 | 0.0 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 0.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Brstl_P | 9 | 0.0 | 100.0 | 0.0 | 100.0 | 33.3 | 100.0 | 88.9 | 100.0 | 100.0 | 100.0 | 100.0 |
| Cardf_P | 6 | 0.0 | 100.0 | 0.0 | 66.7 | 16.7 | 100.0 | 33.3 | 100.0 | 100.0 | 100.0 | 100.0 |
| Glasg_P | 12 | 100.0 | 100.0 | 100.0 | 91.7 | 91.7 | 100.0 | 50.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| L Eve_P | 11 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| L GOSH_P | 32 | 90.6 | 100.0 | 90.6 | 81.3 | 81.3 | 93.8 | 50.0 | 34.4 | 84.4 | 0.0 | 96.9 |
| Leeds_P | 13 | 76.9 | 100.0 | 76.9 | 100.0 | 46.2 | 100.0 | 53.9 | 100.0 | 100.0 | 100.0 | 100.0 |
| Livpl_P | 12 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 33.3 | 41.7 | 100.0 | 100.0 | 100.0 | 100.0 |
| Manch_P | 15 | 0.0 | 33.3 | 0.0 | 93.3 | 33.3 | 100.0 | 40.0 | 100.0 | 93.3 | 100.0 | 100.0 |
| Newc_P | 8 | 0.0 | 0.0 | 0.0 | 75.0 | 12.5 | 100.0 | 50.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Nottm_P | 23 | 91.3 | 91.3 | 91.3 | 87.0 | 60.9 | 100.0 | 30.4 | 100.0 | 100.0 | 100.0 | 100.0 |
| Soton_P | 11 | 100.0 | 100.0 | 100.0 | 81.8 | 72.7 | 90.9 | 45.5 | 90.9 | 90.9 | 90.9 | 90.9 |
| **UK** | **175** | **65.7** | **81.1** | **65.7** | **82.3** | **60.6** | **93.1** | **56.0** | **86.9** | **95.4** | **80.6** | **98.3** |

Bicarb – bicarbonate; BMI – body mass index; Ca – calcium; Chol – cholesterol; DBP – diastolic blood pressure; Hb – haemoglobin; Phos – phosphate; PTH – parathyroid hormone; SBP – systolic blood pressure

Paediatrics

# Changes to the incident paediatric KRT population

The number of incident patients on KRT <16 years old was used to calculate age-related rate per million population and grouped by age, sex, five year time period, ethnicity, centre and PRD.

**Table 8.4** Paediatric patients (<16 years old) incident to KRT in 2021 by age and sex

| Age group (yrs) | All patients | | Male | | Female | |
|---|---|---|---|---|---|---|
| | N | pmarp | N | pmarp | N | pmarp |
| 0-<2 | 16 | 11.6 | 11 | 15.6 | 5 | 7.4 |
| 2-<4 | 11 | 7.6 | 9 | 12.1 | 2 | 2.8 |
| 4-<8 | 16 | 5.2 | 10 | 6.4 | 6 | 4.0 |
| 8-<12 | 29 | 8.9 | 18 | 10.8 | 11 | 6.9 |
| 12-<16 | 38 | 12.0 | 20 | 12.3 | 18 | 11.7 |
| **<16 yrs** | **110** | **8.9** | **68** | **10.8** | **42** | **7.0** |

pmarp – per million age-related population

**Table 8.5** Paediatric patients (<16 years old) incident to KRT by age and 5 year time period

| Age group (yrs) | 2007-2011 | | 2012-2016 | | 2017-2021 | |
|---|---|---|---|---|---|---|
| | N | pmarp | N | pmarp | N | pmarp |
| 0-<2 | 94 | 12.0 | 118 | 15.0 | 93 | 12.6 |
| 2-<4 | 55 | 7.3 | 75 | 9.1 | 58 | 7.3 |
| 4-<8 | 89 | 6.4 | 119 | 7.5 | 90 | 5.5 |
| 8-<12 | 124 | 8.7 | 137 | 9.5 | 140 | 8.5 |
| 12-<16 | 217 | 14.2 | 181 | 12.7 | 181 | 11.8 |
| **<16 yrs** | **579** | **9.8** | **630** | **10.4** | **562** | **8.9** |

pmarp – per million age-related population

**Table 8.6** Paediatric patients (<16 years old) incident to KRT by ethnicity and 5 year time period

| Ethnicity | 2007-2011 | | 2012-2016 | | 2017-2021 | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| White | 423 | 73.4 | 434 | 69.2 | 329 | 65.1 |
| Asian | 94 | 16.3 | 123 | 19.6 | 110 | 21.8 |
| Black | 28 | 4.9 | 30 | 4.8 | 33 | 6.5 |
| Other | 31 | 5.4 | 40 | 6.4 | 33 | 6.5 |
| **<16 yrs** | **576** | **100.0** | **627** | **100.0** | **505** | **100.0** |

3 children in 2007–2011, 3 in 2012–2016 and 57 in 2017–2021 with no ethnicity recorded were excluded

Paediatrics

**Table 8.7** Paediatric patients (<16 years old) incident to KRT by centre and 5 year time period

| Centre | 2007-2011 | | 2012-2016 | | 2017-2021 | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| Bham_P | 62 | 10.7 | 73 | 11.6 | 75 | 13.3 |
| Blfst_P | 29 | 5.0 | 15 | 2.4 | 9 | 1.6 |
| Brstl_P | 36 | 6.2 | 30 | 4.8 | 34 | 6.0 |
| Cardf_P | 14 | 2.4 | 26 | 4.1 | 21 | 3.7 |
| Glasg_P | 48 | 8.3 | 40 | 6.3 | 45 | 8.0 |
| L Eve_P | 65 | 11.2 | 70 | 11.1 | 55 | 9.8 |
| L GOSH_P | 107 | 18.5 | 110 | 17.5 | 97 | 17.3 |
| Leeds_P | 47 | 8.1 | 54 | 8.6 | 38 | 6.8 |
| Livpl_P | 22 | 3.8 | 34 | 5.4 | 34 | 6.0 |
| Manch_P | 48 | 8.3 | 72 | 11.4 | 57 | 10.1 |
| Newc_P | 24 | 4.1 | 26 | 4.1 | 22 | 3.9 |
| Nottm_P | 59 | 10.2 | 59 | 9.4 | 47 | 8.4 |
| Soton_P | 18 | 3.1 | 21 | 3.3 | 28 | 5.0 |
| **<16 yrs** | **579** | **100.0** | **630** | **100.0** | **562** | **100.0** |

PRDs were grouped into categories as shown in table 8.8, with the mapping of disease codes into groups explained in more detail in appendix A.

**Table 8.8** Paediatric patients (<16 years old) incident to KRT by primary renal disease (PRD) and 5 year time period

| PRD | 2007-2011 | | 2012-2016 | | 2017-2021 | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| Tubulointerstitial disease | 263 | 45.9 | 299 | 48.0 | 223 | 45.2 |
| - CAKUT | 254 | 44.3 | 290 | 46.5 | 206 | 41.8 |
| - Non-CAKUT | 9 | 1.6 | 9 | 1.4 | 17 | 3.4 |
| Glomerular disease | 78 | 13.6 | 99 | 15.9 | 91 | 18.5 |
| Familial/hereditary nephropathies | 122 | 21.3 | 102 | 16.4 | 87 | 17.6 |
| Systemic diseases affecting the kidney | 33 | 5.8 | 19 | 3.0 | 22 | 4.5 |
| Miscellaneous renal disorders | 77 | 13.4 | 104 | 16.7 | 70 | 14.2 |

6 children in 2007–2011, 7 in 2012–2016 and 69 in 2017–2021 with no PRD recorded were excluded
CAKUT – congenital anomalies of the kidneys and urinary tract

## Start modality of incident paediatric KRT patients

Start modality used by patients <16 years old starting KRT between 2007 and 2021 was grouped by five year time periods.
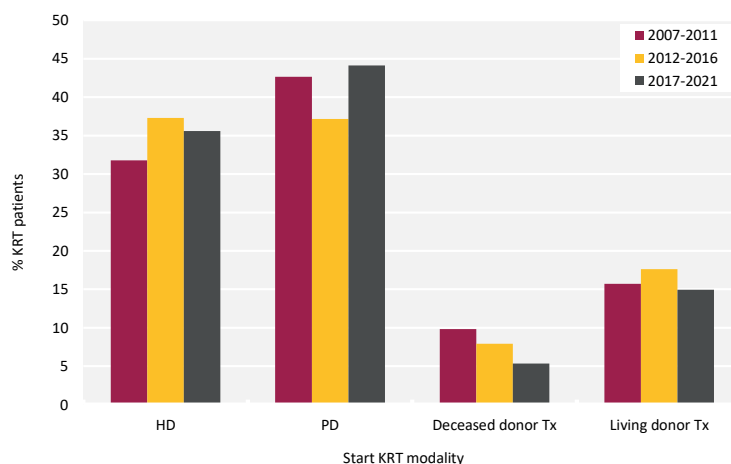
**Figure 8.2** Start KRT modality for paediatric patients (<16 years old) incident to KRT by 5 year time period

## Pre-emptive transplantation in incident paediatric KRT patients

The analysis of pre-emptive transplantation excluded patients starting KRT aged <3 months and patients presenting late.

**Table 8.9** Pre-emptive transplantation in the incident paediatric KRT population aged 3 months to 16 years by 5 year time period, sex, ethnicity, age at start of KRT and primary renal disease (PRD)

|  | N on KRT | N (%) with pre-emptive Tx |
|---|---|---|
| Total cohort analysed (2007-2021) | 1,330 | 418 (31.4) |
| **Time period** |  |  |
| 2007-2011 | 414 | 147 (35.5) |
| 2012-2016 | 468 | 157 (33.5) |
| 2017-2021 | 448 | 114 (25.4) |
| **Sex** |  |  |
| Male | 847 | 291 (34.4) |
| Female | 483 | 127 (26.3) |
| **Ethnicity** |  |  |
| White | 890 | 320 (36.0) |
| Asian | 245 | 49 (20.0) |
| Black | 63 | 12 (19.0) |
| Other | 79 | 20 (25.3) |
| **Age at start of KRT (yrs)** |  |  |
| 3 mths-<2 | 162 | 6 (3.7) |
| 2-<4 | 163 | 50 (30.7) |
| 4-<8 | 240 | 100 (41.7) |
| 8-<12 | 316 | 104 (32.9) |
| 12-<16 | 449 | 158 (35.2) |
| **PRD** |  |  |
| Tubulointerstitial disease | 647 | 276 (42.7) |
| Glomerular disease | 191 | 7 (3.7) |
| Familial/hereditary nephropathies | 232 | 63 (27.2) |
| Miscellaneous renal disorders | 148 | 37 (25.0) |
| Systemic diseases affecting the kidney | 42 | 16 (38.1) |

86 children were excluded because they were aged <3 months; 355 children were excluded because they presented late

Paediatrics

# Demographics of prevalent paediatric KRT patients

The number of prevalent patients on KRT <16 years old was used to calculate age-related rates per million population and grouped by age, sex and ethnicity.

**Table 8.10** Age and sex breakdown of paediatric patients (<16 years old) prevalent to KRT on 31/12/2021

| Age group (yrs) | All patients | | Male | | Female | | M/F pmarp ratio |
|---|---|---|---|---|---|---|---|
| | N | pmarp | N | pmarp | N | pmarp | |
| 0-<2 | 17 | 12.3 | 11 | 15.6 | 6 | 8.9 | 1.7 |
| 2-<4 | 44 | 30.3 | 27 | 36.3 | 17 | 24.0 | 1.5 |
| 4-<8 | 151 | 49.2 | 98 | 62.3 | 53 | 35.4 | 1.8 |
| 8-<12 | 261 | 80.4 | 179 | 107.6 | 82 | 51.8 | 2.1 |
| 12-<16 | 369 | 116.5 | 203 | 125.1 | 166 | 107.5 | 1.2 |
| **<16 yrs** | **842** | **68.4** | **518** | **82.1** | **324** | **53.9** | **1.5** |

pmarp – per million age-related population

**Table 8.11** Age and ethnicity breakdown of paediatric patients (<16 years old) prevalent to KRT on 31/12/2021

| Age group (yrs) | N | | | |
|---|---|---|---|---|
| | White | Asian | Black | Other |
| 0-<4 | 39 | 7 | 4 | 3 |
| 4-<8 | 96 | 28 | 10 | 10 |
| 8-<12 | 177 | 40 | 10 | 25 |
| 12-<16 | 220 | 78 | 20 | 26 |
| **<16 yrs** | **532** | **153** | **44** | **64** |

49 children with no ethnicity recorded were excluded

# Treatment modality in prevalent paediatric KRT patients

The current and start KRT modalities for prevalent KRT patients aged <16 years are shown in figures 8.3 and 8.4, respectively. Table 8.12 breaks down current modality for prevalent patients by age group.

**Table 8.12** KRT modality used by paediatric patients (<16 years old) prevalent to KRT on 31/12/2021 by age group

| Age group (yrs) | Total N | HD | | PD | | Living donor Tx | | Deceased donor Tx | |
|---|---|---|---|---|---|---|---|---|---|
| | | N | % | N | % | N | % | N | % |
| 0-<2 | 17 | 2 | 11.8 | 15 | 88.2 | 0 | 0.0 | 0 | 0.0 |
| 2-<4 | 44 | 9 | 20.5 | 17 | 38.6 | 14 | 31.8 | 4 | 9.1 |
| 4-<8 | 151 | 17 | 11.3 | 16 | 10.6 | 90 | 59.6 | 28 | 18.5 |
| 8-<12 | 261 | 26 | 10.0 | 21 | 8.0 | 139 | 53.3 | 75 | 28.7 |
| 12-<16 | 369 | 39 | 10.6 | 37 | 10.0 | 176 | 47.7 | 117 | 31.7 |
| **<16 yrs** | **842** | **93** | **11.0** | **106** | **12.6** | **419** | **49.8** | **224** | **26.6** |
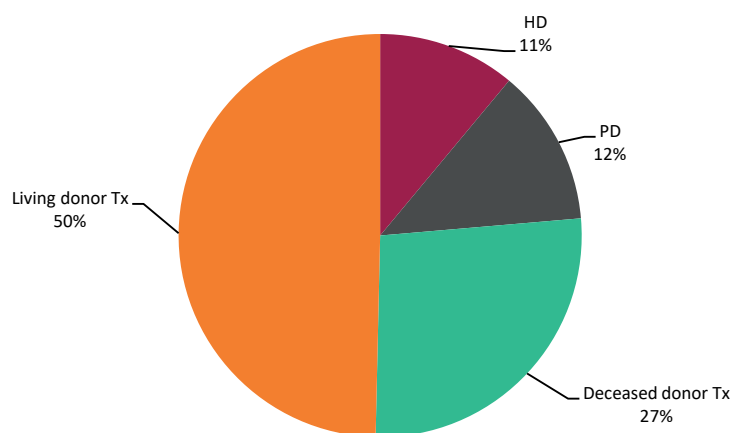
Paediatrics

**Figure 8.3** KRT modality used by paediatric patients (<16 years old) prevalent to KRT on 31/12/2021
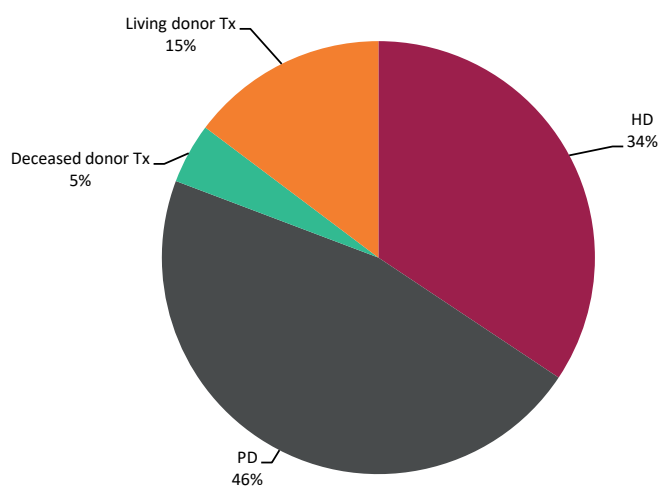


**Figure 8.4** KRT modality used at the start of KRT by paediatric patients (<16 years old) prevalent to KRT on 31/12/2021

## Causes of ESKD in prevalent paediatric KRT patients

PRDs were grouped into categories as shown in table 8.13.

**Table 8.13** Primary renal diseases (PRDs) of paediatric patients (<16 years old) prevalent to KRT on 31/12/2021 by sex and ethnicity

| PRD | N | % | N male | N female | % non-White |
|---|---|---|---|---|---|
| Tubulointerstitial disease | 385 | 49.4 | 284 | 101 | 29.2 |
| - CAKUT | 370 | 47.4 | 277 | 93 | 28.8 |
| - Non-CAKUT | 15 | 1.9 | 7 | 8 | 40.0 |
| Glomerular disease | 119 | 15.3 | 60 | 59 | 35.9 |
| Familial/hereditary nephropathies | 133 | 17.1 | 60 | 73 | 39.8 |
| Systemic diseases affecting the kidney | 37 | 4.7 | 20 | 17 | 16.7 |
| Miscellaneous renal disorders | 106 | 13.6 | 53 | 53 | 34.0 |
| **Total (with data)** | **780** | **100.0** | **477** | **303** | **32.1** |
| | | | | | |
| Missing | 62 | 7.4 | 41 | 21 | 55.2 |

CAKUT – congenital anomalies of the kidneys and urinary tract
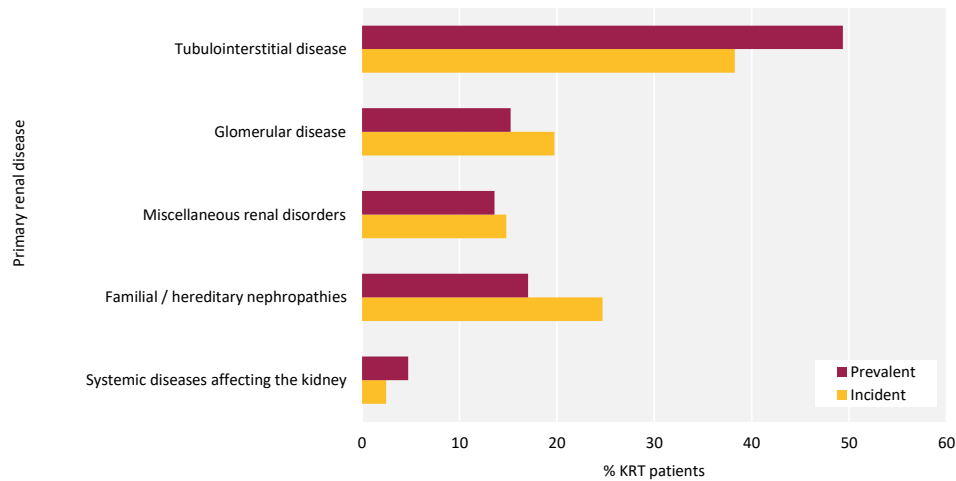
Paediatrics

**Figure 8.5** Comparison of primary renal diseases for paediatric patients (<16 years old) incident and prevalent to KRT in 2021 with no missing data

# Growth of prevalent paediatric KRT patients

The height and weight of children receiving KRT were compared to the age- and sex-matched general childhood population. The UK median score for each measure is represented by a red dotted line.

### *Height of paediatric KRT patients*
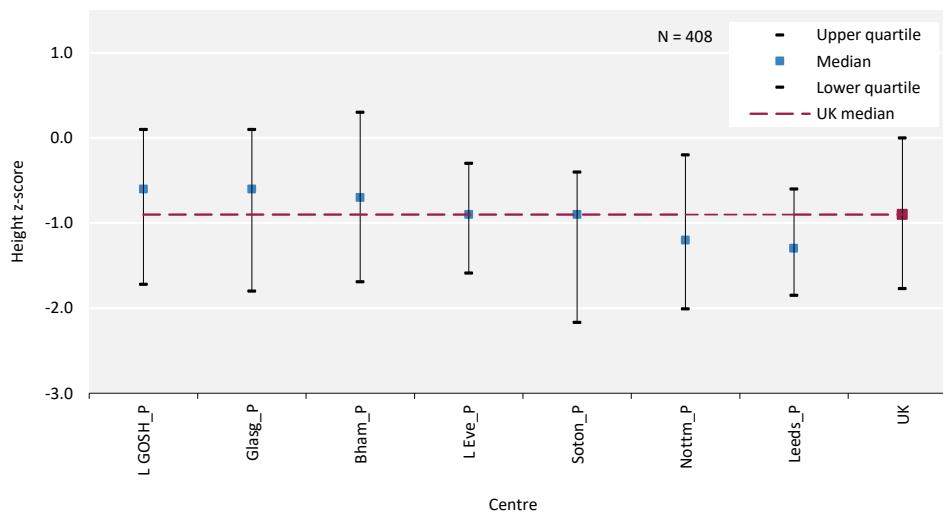


**Figure 8.6** Median height z-scores for paediatric patients (<16 years old) prevalent to Tx on 31/12/2021 by centre
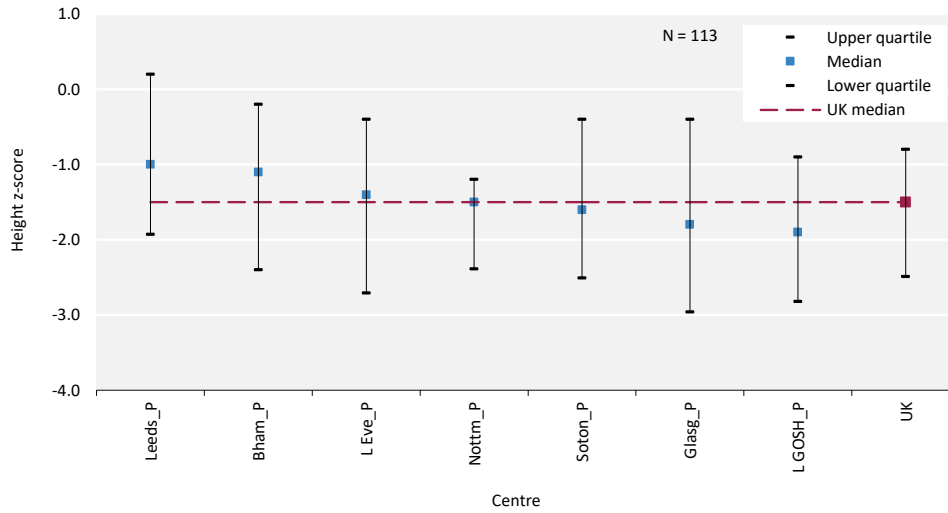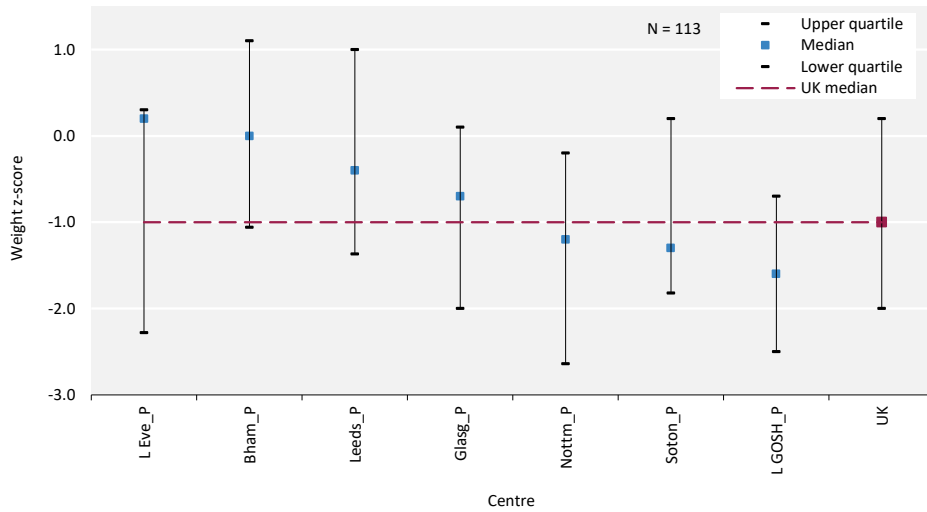
Paediatrics

**Figure 8.7** Median height z-scores for paediatric patients (<16 years old) prevalent to dialysis on 31/12/2021 by centre
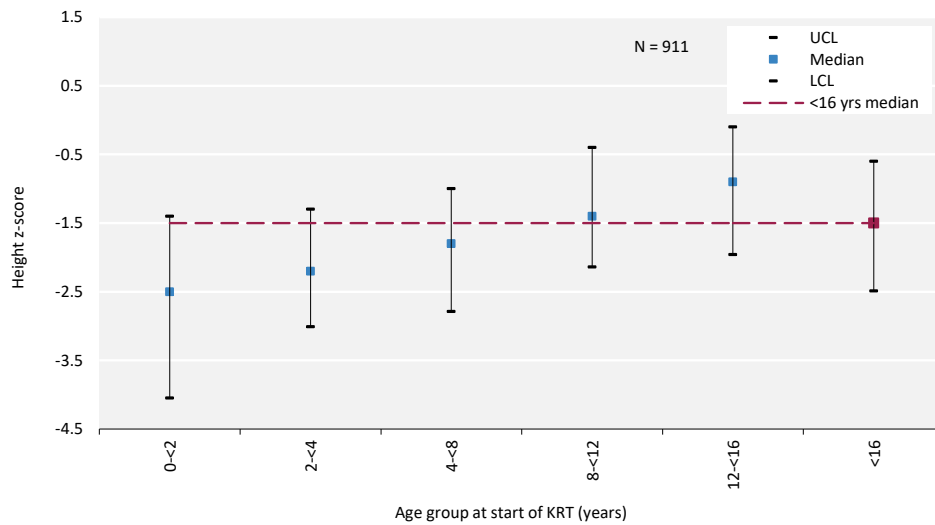


**Figure 8.8** Median height z-scores at start of KRT for incident paediatric KRT patients (<16 years old) between 2007 and 2021 by age group at start of KRT

Paediatrics

### Weight of paediatric KRT patients
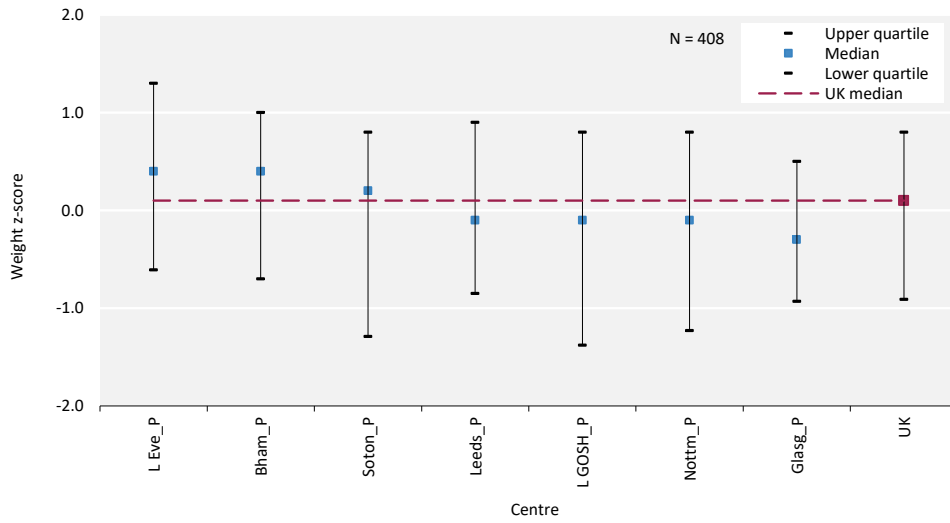


**Figure 8.9** Median weight z-scores for paediatric patients (<16 years old) prevalent to Tx on 31/12/2021 by centre



**Figure 8.10** Median weight z-scores for paediatric patients (<16 years old) prevalent to dialysis on 31/12/2021 by centre

Paediatrics

# Cardiovascular risk factor evaluation in prevalent paediatric KRT patients

## *Obesity in paediatric KRT patients*

BMI was calculated using the formula BMI = weight (kg)/height$^2$ (m). Height and weight were adjusted for age. To account for discrepancies in linear growth secondary to kidney disease, BMI was expressed according to height age, rather than chronological age. Height age corresponds to the age when a child's height is plotted at the 50th percentile on a UK growth chart.
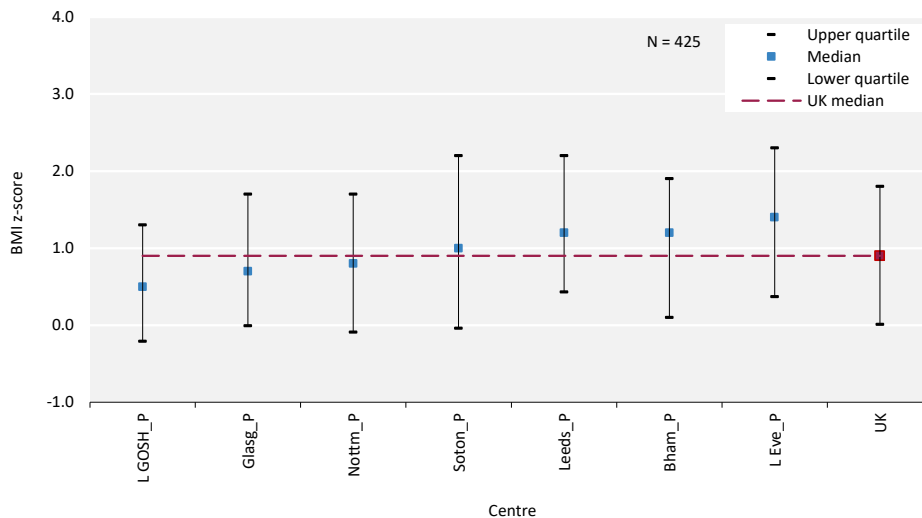


**Figure 8.11** Median body mass index (BMI) z-scores for paediatric patients (<16 years old) prevalent to Tx on 31/12/2021 by centre
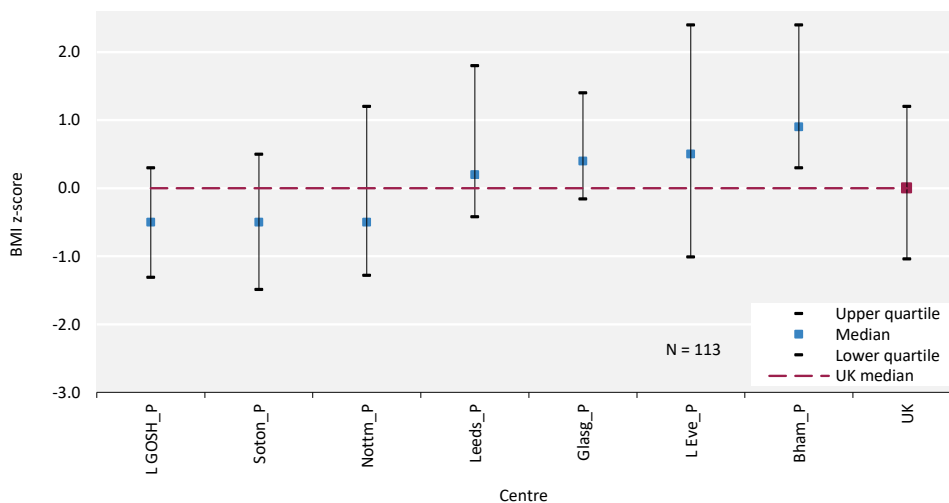


**Figure 8.12** Median body mass index (BMI) z-scores for paediatric patients (<16 years old) prevalent to dialysis on 31/12/2021 by centre
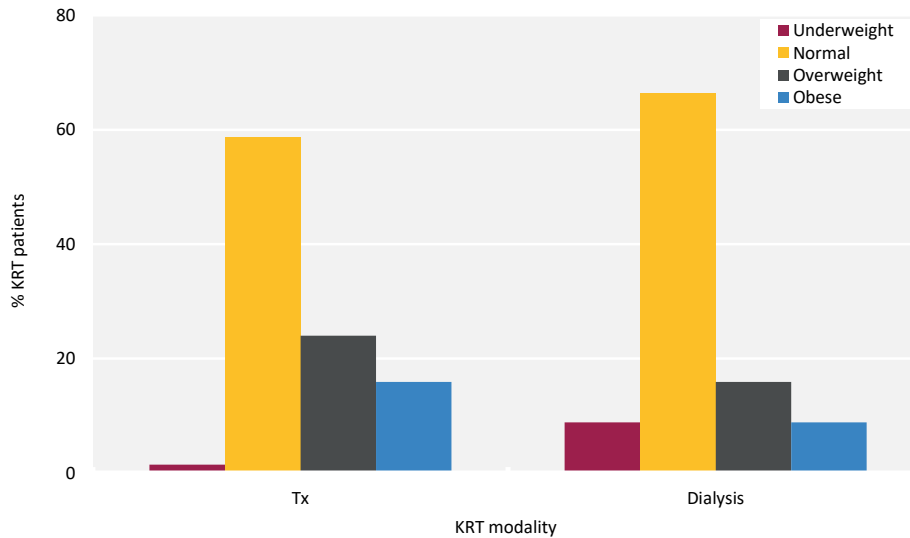
Paediatrics

**Figure 8.13** Body mass index categorisation of paediatric patients (<16 years old) prevalent to KRT on 31/12/2021 by KRT modality

### *Hypertension in paediatric KRT patients*

In paediatric KRT patients, the systolic blood pressure should be maintained at <90th percentile for age, sex and height.
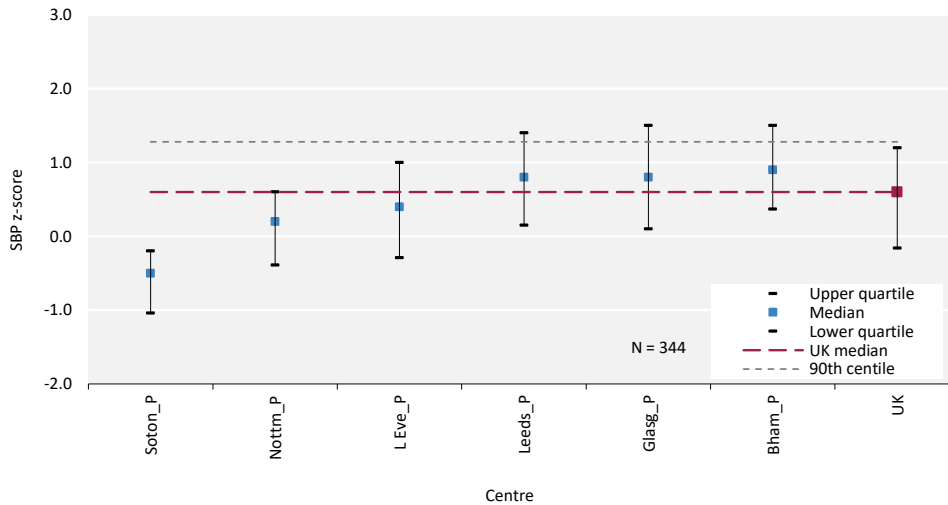


**Figure 8.14** Median systolic blood pressure (SBP) z-scores for paediatric patients (<16 years old) prevalent to Tx on 31/12/2021 by centre

Children and young people on KRT in the UK in 2021
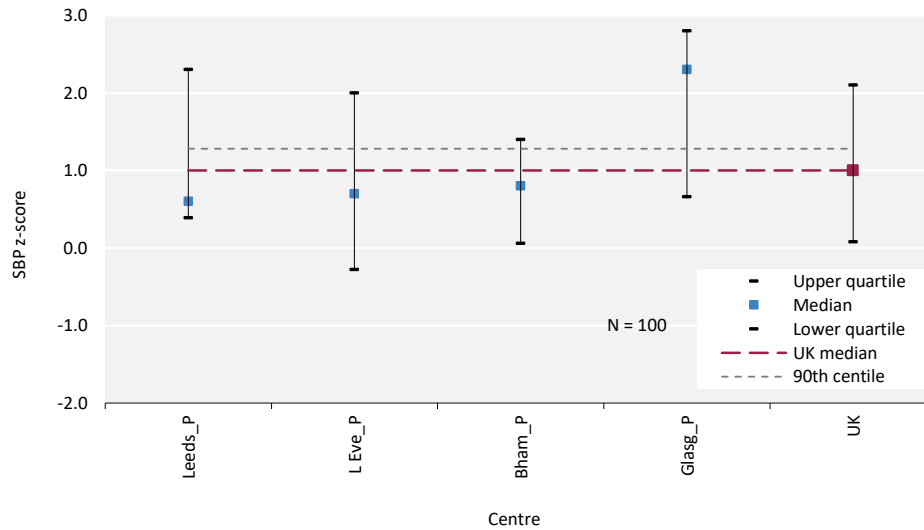
Paediatrics

**Figure 8.15** Median systolic blood pressure (SBP) z-scores for paediatric patients (<16 years old) prevalent to dialysis on 31/12/2021 by centre

**Table 8.14** Percentage of paediatric patients (<16 years old) prevalent to KRT on 31/12/2021 achieving the standards for blood pressures

| Characteristic | SBP | | DBP | |
|---|---|---|---|---|
| | N | % <90th percentile | N | % <90th percentile |
| **Total** | 444 | 73.2 | 398 | 77.4 |
| | | | | |
| **Age group (yrs)** | | | | |
| 0-<5 | 40 | 70.0 | 29 | 65.5 |
| 5-<12 | 201 | 73.6 | 177 | 77.4 |
| 12-<16 | 203 | 73.4 | 192 | 79.2 |
| | | | | |
| **Sex** | | | | |
| Male | 265 | 74.3 | 236 | 79.2 |
| Female | 179 | 71.5 | 162 | 74.7 |
| | | | | |
| **Ethnicity** | | | | |
| White | 261 | 74.3 | 234 | 79.9 |
| Asian | 95 | 66.3 | 81 | 72.8 |
| Black | 26 | 73.1 | 25 | 76.0 |
| Other | 37 | 75.7 | 35 | 74.3 |
| | | | | |
| **Modality** | | | | |
| HD | 47 | 59.6 | 41 | 63.4 |
| PD | 53 | 60.4 | 44 | 65.9 |
| Tx | 344 | 77.0 | 313 | 80.8 |

DBP – diastolic blood pressure; SBP – systolic blood pressure
HD – haemodialysis; PD – peritoneal dialysis; Tx – transplant

Paediatrics

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*Cardiovascular risk factors in paediatric KRT patients*

The analysis of the percentage of prevalent KRT patients with identified cardiovascular risk factors was restricted to the 223 of the 786 patients (28.4%) with data for all three risk factors.

**Table 8.15** Frequency of number of cardiovascular risk factors in paediatric patients (<16 years old) prevalent to KRT on 31/12/2021

| N cardiovascular risk factors | Hypertensive | Overweight/Obese | Hypercholesterolaemic | N | % | Total % |
|---|---|---|---|---|---|---|
| 0 | No | No | No | 56 | 25.1 | 25.1 |
| 1 | Yes | No | No | 43 | 19.3 | |
| | No | Yes | No | 42 | 18.8 | 48.4 |
| | No | No | Yes | 23 | 10.3 | |
| 2 | Yes | Yes | No | 18 | 8.1 | |
| | Yes | No | Yes | 12 | 5.4 | 22.0 |
| | No | Yes | Yes | 19 | 8.5 | |
| 3 | Yes | Yes | Yes | 10 | 4.5 | 4.5 |
| | | | | 223 | | 100.0 |
| **Total N with the risk factor** | **83** | **89** | **64** | | | |
| **Total % with the risk factor** | **37.2** | **39.9** | **28.7** | | | |

## Biochemistry parameters in prevalent paediatric KRT patients

The median values and the percentage with eGFR <30 mL/min/1.73m$^2$ for prevalent 2021 paediatric Tx patients are presented in table 8.16.

**Table 8.16** Median estimated glomerular filtration rate (eGFR) and percentage with eGFR <30 mL/min/1.73m$^2$ in paediatric patients (<16 years old) prevalent to Tx on 31/12/2021 by centre

| Centre | N with Tx | Median eGFR (mL/min/1.73m$^2$) | % eGFR <30 mL/min/1.73m$^2$ | % data completeness |
|---|---|---|---|---|
| Bham_P | 69 | 52 | 7.4 | 98.6 |
| Blfst_P | 23 | | | 34.8 |
| Brstl_P | 36 | | | 0.0 |
| Cardf_P | 20 | | | 0.0 |
| Glasg_P | 41 | 74 | 0.0 | 100.0 |
| L Eve_P | 65 | 56 | 3.1 | 100.0 |
| L GOSH_P | 110 | | | 33.6 |
| Leeds_P | 42 | 75 | 0.0 | 100.0 |
| Livpl_P | 26 | | | 0.0 |
| Manch_P | 65 | | | 0.0 |
| Newc_P | 25 | | | 0.0 |
| Nottm_P | 59 | 51 | 13.7 | 86.4 |
| Soton_P | 30 | 73 | 3.3 | 100.0 |
| **UK** | **611** | **61** | **5.6** | **56.0** |

Blank cells – centres with <70% data completeness or <10 patients
For most of the centres with missing data, completeness of creatinine data was good. Height data completeness was very low (heights are needed to calculate eGFRs from creatinine)

**Table 8.17** Attainment of targets for haemoglobin, calcium, phosphate, parathyroid hormone and bicarbonate in paediatric patients (<16 years old) (a) prevalent to dialysis on 31/12/2021 by centre and (b) prevalent to Tx on 31/12/2021 with estimated glomerular filtration rate (eGFR) <30 mL/min/1.73 m² in the UK

| Centre | N | % Hb below target | % Hb within target | % Ca below target | % Ca within target | % phos below target | % phos within target | % PTH within target | % bicarb below target | % bicarb within target |
|---|---|---|---|---|---|---|---|---|---|---|
| DIALYSIS PATIENTS | | | | | | | | | | |
| Bham_P | 22 | 4.8 | 57.1 | 0.0 | 71.4 | 4.8 | 38.1 | 47.6 | 0.0 | 66.7 |
| Blfst_P | 1 | | | | | | | | | |
| Brstl_P | 9 | | | | | | | | | |
| Cardf_P | 6 | | | | | | | | | |
| Glasg_P | 12 | 8.3 | 50.0 | 0.0 | 100.0 | 33.3 | 33.3 | 16.7 | 0.0 | 83.3 |
| L Eve_P | 11 | 45.5 | 36.4 | 9.1 | 45.5 | 0.0 | 54.6 | 18.2 | 27.3 | 72.7 |
| L GOSH_P | 32 | 16.7 | 50.0 | | | 16.1 | 45.2 | 66.7 | | |
| Leeds_P | 13 | 7.7 | 69.2 | 0.0 | 84.6 | 0.0 | 38.5 | 15.4 | 7.7 | 84.6 |
| Livpl_P | 12 | | | 0.0 | 66.7 | 8.3 | 41.7 | 25.0 | 8.3 | 58.3 |
| Manch_P | 15 | 6.7 | 60.0 | 0.0 | 26.7 | 26.7 | 53.3 | 42.9 | 0.0 | 86.7 |
| Newc_P | 8 | | | | | | | | | |
| Nottm_P | 23 | 17.4 | 47.8 | 0.0 | 82.6 | 0.0 | 47.8 | 26.1 | 0.0 | 78.3 |
| Soton_P | 11 | 20.0 | 70.0 | 0.0 | 50.0 | 0.0 | 60.0 | 70.0 | 0.0 | 70.0 |
| **UK** | **175** | **16.6** | **50.9** | **0.7** | **68.8** | **9.3** | **47.7** | **40.1** | **8.6** | **73.7** |
| TX PATIENTS WITH EGFR <30 ML/MIN/1.73 M² | | | | | | | | | | |
| **UK** | **19** | **22.2** | **77.8** | **6.7** | **93.3** | **5.3** | **79.0** | **50.0** | **26.7** | **73.3** |

Blank cells – centres with <70% data completeness or <10 patients
See appendix A for biochemical target ranges
Bicarb – bicarbonate; Ca – calcium; Hb – haemoglobin; Phos – phosphate; PTH – parathyroid hormone

**Table 8.18** Median estimated glomerular filtration rate (eGFR) in paediatric patients (<16 years old) prevalent to Tx on 31/12/2021 by time since transplantation and age group

| | Age group (yrs) | | | | | |
|---|---|---|---|---|---|---|
| | 0-<5 | | 5-<12 | | 12-<16 | |
| Time since transplantation | N | Median eGFR (mL/min/1.73 m²) | N | Median eGFR (mL/min/1.73 m²) | N | Median eGFR (mL/min/1.73 m²) |
| < 3 mths | | | | | 1 | |
| 0.25–<2 years | 17 | 75 | 38 | 68 | 29 | 64 |
| 2–<4 years | 3 | | 50 | 72 | 24 | 59 |
| 4–<7 years | | | 57 | 60 | 36 | 54 |
| ≥ 7 years | | | 19 | 57 | 65 | 49 |
| **Total (IQR)** | **20** | **79 (68-99)** | **166** | **62 (47-81)** | **156** | **55 (40-70)** |

IQR – interquartile range
This table includes 342 individuals with eGFR (as seen in table 8.16, completeness is 56% of N=611)

# Transfer to adult kidney services for prevalent paediatric KRT patients

One-hundred and forty-six paediatric patients transitioned to adult kidney centres in 2021. The median age of patients at transfer was 18.0 years with an IQR of 17.6–18.4 years. Overall, the demographics of this population reflected those of the prevalent paediatric KRT population.

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# Survival in paediatric KRT patients

Of patients aged <16 years, 1,643 started KRT between 2007 and 2020 at paediatric kidney centres and were included in survival analyses, to allow at least one year follow-up. At the end of 2021, 119 deaths had been reported in these children. Patients included in the analysis must have been alive on KRT for 90 days. The median follow-up time (beyond day 90) was 7.1 years (range 9 days to 14.8 years).

**Table 8.19** Unadjusted Kaplan-Meier survival (from day 90) of incident paediatric KRT patients (<16 years old) between

| | Age group (yrs) | | | | |
|---|---|---|---|---|---|
| | 0-<2 | 2-<4 | 4-<8 | 8-<12 | 12-<16 |
| Survival at 1 year (%) | 94.3 | 98.8 | 98.2 | 99.2 | 99.6 |
| 95% CI | 90.9-96.5 | 95.4-99.7 | 95.8-99.3 | 97.5-99.7 | 98.5-99.9 |
| Survival at 2 years (%) | 92.5 | 98.2 | 95.2 | 98.0 | 98.4 |
| 95% CI | 88.7-95 | 94.6-99.4 | 91.9-97.2 | 95.8-99 | 96.9-99.2 |
| Survival at 3 years (%) | 89.7 | 97.6 | 94.4 | 97.7 | 97.8 |
| 95% CI | 85.4-92.8 | 93.7-99.1 | 90.9-96.6 | 95.4-98.8 | 96.1-98.8 |
| Survival at 5 years (%) | 86.2 | 96.1 | 93.5 | 95.9 | 96.3 |
| 95% CI | 81.3-89.8 | 91.4-98.2 | 89.7-95.9 | 93-97.6 | 94.2-97.7 |
| Survival at 10 years (%) | 84.0 | 95.3 | 89.9 | 94.5 | 93.7 |
| 95% CI | 78.5-88.2 | 90.2-97.7 | 84.7-93.4 | 90.8-96.8 | 90.6-95.8 |

CI – confidence interval

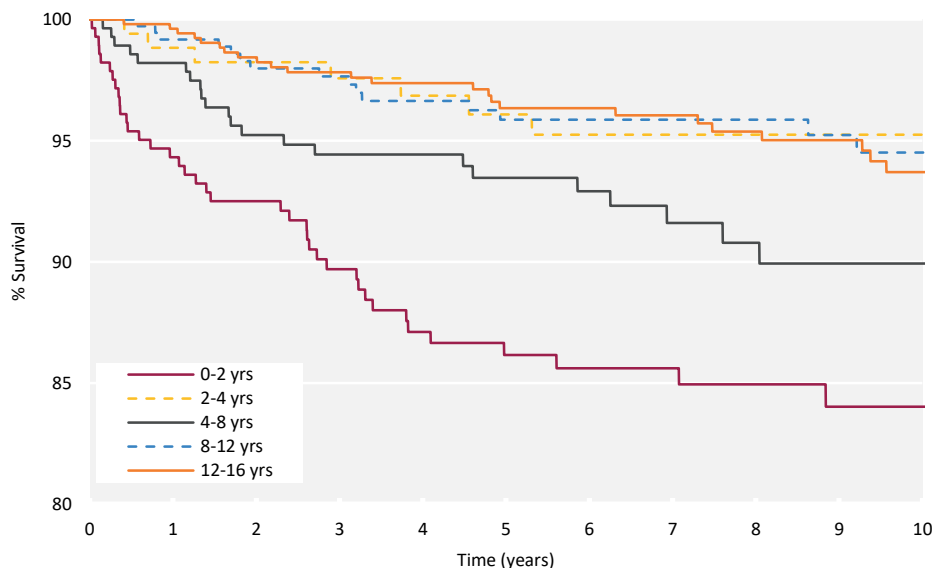2007 and 2020 by age group at start of KRT



**Figure 8.16** Unadjusted Kaplan-Meier survival (from day 90) of incident paediatric KRT patients (<16 years old) between 2007 and 2020 by age group at start of KRT

Paediatrics

# Analyses – young people

## KRT incidence and prevalence in young people

Table 8.20 reports the numbers of young people who started KRT in 2021 (incidence) as well as those on KRT as of 31/12/2021 (prevalence) in both paediatric and adult centres, as an estimated total pmarp and grouped by sex, ethnicity and PRD. For incident young people, start modality is reported; current treatment modality is reported for prevalent patients.

**Table 8.20** Demographics of young people (16–<18 years) incident to KRT in 2021 and/or prevalent to KRT on 31/12/2021, by care setting

| Characteristic | Incident | | | Prevalent | | |
|---|---|---|---|---|---|---|
| | Paediatric centres | Adult centres | All | Paediatric centres | Adult centres | All |
| N | 12 | 14 | 26 | 188 | 37 | 225 |
| pmarp | | | 17.1 | | | 147.7 |
| Median age (yrs) | 16.6 | 16.8 | 16.7 | 16.8 | 17.6 | 17.0 |
| % male | 66.7 | 50.0 | 57.7 | 62.8 | 67.6 | 63.6 |
| | | | | | | |
| **Ethnicity[1] (%)** | | | | | | |
| White | 70.0 | 64.3 | 66.7 | 71.8 | 58.3 | 69.6 |
| Asian | 20.0 | 28.6 | 25.0 | 18.8 | 25.0 | 19.8 |
| Black | 0.0 | 0.0 | 0.0 | 3.9 | 8.3 | 4.6 |
| Other | 10.0 | 7.1 | 8.3 | 5.5 | 8.3 | 6.0 |
| Missing ethnicity | 16.7 | 0.0 | 7.7 | 3.7 | 2.7 | 3.6 |
| | | | | | | |
| **PRD[1] (%)** | | | | | | |
| Tubulointerstitial disease | 30.0 | 9.1 | 19.1 | 41.0 | 47.1 | 42.0 |
| Glomerular disease | 0.0 | 27.3 | 14.3 | 17.4 | 11.8 | 16.5 |
| Familial/hereditary nephropathies | 40.0 | 36.4 | 38.1 | 21.9 | 26.5 | 22.6 |
| Systemic diseases affecting the kidney | 10.0 | 0.0 | 4.8 | 3.4 | 2.9 | 3.3 |
| Diabetes | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Miscellaneous renal disorders | 20.0 | 27.3 | 23.8 | 16.3 | 11.8 | 15.6 |
| Missing PRD | 16.7 | 21.4 | 19.2 | 5.3 | 8.1 | 5.8 |
| | | | | | | |
| Modality (%) | | | | | | |
| HD | 33.3 | 71.4 | 53.9 | 15.4 | 13.5 | 15.1 |
| PD | 25.0 | 28.6 | 26.9 | 9.0 | 18.9 | 10.7 |
| Tx | 41.7 | 0.0 | 19.2 | 75.5 | 67.6 | 74.2 |

[1]Percentages by ethnicity and PRD were calculated for those with data (excluding patients with missing data).

pmarp – per million age-related population; PRD – primary renal disease

HD – haemodialysis; PD – peritoneal dialysis; Tx – transplant

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Table 8.21 details the number and type of centres (adult or paediatric) that have contributed to the incident and prevalent numbers reported. The small proportion of adult centres identified may reflect that young people are often directed to centres with an established transition programme for early adult care; however, under-reporting of young people may also account for this finding.

**Table 8.21** Number of centres that submitted data for young people (16–<18 years) incident to KRT in 2021 and/or prevalent to KRT on 31/12/2021, by care setting

|  | Incident | Prevalent |
|---|---|---|
| Paediatric centres | 6 out of 13 | 13 out of 13 |
| Adult centres | 10 out of 68 | 21 out of 68 |

## Transplant parameters in young people

The median values for age, creatinine and eGFR, and the proportion with an eGFR <30 mL/min/1.73 m$^2$ for young people prevalent to Tx on 31/12/2021 are presented by care setting (adult or paediatric centre).

**Table 8.22** Measures of graft function in young people (16–<18 years) prevalent to Tx on 31/12/2021, by care setting

|  | N on Tx | Median age (yrs) | N with creatinine data | Median creatinine (µmol/L) | Median FAS-eGFR (mL/min/1.73m2) | % FAS-eGFR <30 mL/min/1.73m2 | % creatinine completeness |
|---|---|---|---|---|---|---|---|
| Paediatric centres | 142 | 16.8 | 127 | 105 | 70 | 4.7 | 89.4 |
| Adult centres | 25 | 17.7 | 21 | 107 | 73 | 14.3 | 84.0 |

Table 8.23 reports the median eGFR for all young people prevalent to Tx on 31/12/2021 by time since transplantation. Small numbers preclude further analysis by care setting (adult or paediatric centre).

**Table 8.23** Estimated glomerular filtration rate (eGFR) in young people (16–<18 years) prevalent to Tx on 31/12/2021 by time since transplantation

| Time since transplantation | N | Median FAS-eGFR (mL/min/1.73m2) |
|---|---|---|
| < 3 months | 4 |  |
| 0.25–<2 years | 23 | 73 |
| 2–<4 years | 25 | 78 |
| 4–<7 years | 30 | 73 |
| ≥ 7 years | 62 | 64 |
| **Total (IQR)** | **144** | **71 (54-85)** |

eGFR – estimated glomerular filtration rate; FAS – Full Age Spectrum

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# Biochemical and blood pressure measures in young people

Table 8.24 shows attainment of biochemical and blood pressure measures for young people prevalent to dialysis and transplant on 31/12/2021 for the total population and by care setting (adult or paediatric). Attainment of targets including haemoglobin, calcium, phosphate and bicarbonate are shown; median systolic and diastolic blood pressure values and the percentage of young people with blood pressure values within 'normal' range or that are 'high' are also reported.

**Table 8.24** Attainment of biochemical and blood pressure measures in young people (16–<18 years) prevalent to KRT on 31/12/2021, by modality and care setting

| Characteristic | Dialysis | | | Tx | | |
| --- | --- | --- | --- | --- | --- | --- |
| | Paediatric centres | Adult centres | All | Paediatric centres | Adult centres | All |
| N | 46 | 12 | 58 | 142 | 25 | 167 |
| Median (IQR) Hb (g/L) | 114 (103-121) | 99 (88-109.5) | 110 (102-121) | 126 (115.5-137) | 134 (111-139) | 126 (114-137) |
| % Hb <100g/L | 9.1 | 50.0 | 17.9 | 9.2 | 9.1 | 9.2 |
| Median (IQR) Ca (mmol/L) | 2.5 (2.4-2.6) | 2.4 (2.3-2.6) | 2.5 (2.4-2.6) | 2.4 (2.4-2.5) | 2.4 (2.4-2.5) | 2.4 (2.4-2.5) |
| % Ca in range | 56.8 | 66.7 | 59.2 | 86.7 | 86.4 | 86.7 |
| Median (IQR) Phos (mmol/L) | 1.7 (1.4-2.0) | 1.9 (1.6-2.0) | 1.7 (1.5-2.0) | 1.2 (1.0-1.3) | 1.2 (0.9-1.4) | 1.2 (1.0-1.3) |
| % phos in range | 46.7 | 41.7 | 45.6 | 70.4 | 57.1 | 68.5 |
| Median (IQR) bicarb (mmol/L) | 24 (22-26) | 24 (22-25) | 24 (22-26) | 23 (21-25) | 24 (21-25) | 23 (21-25) |
| % bicarb in range | 62.2 | 81.8 | 66.7 | 73.9 | 68.2 | 72.9 |
| Median (IQR) SBP (mmHg) | 118 (112-132) | 127 (121-135) | 121 (113-134) | 118 (110-125) | 122 (116-126) | 118 (110-125) |
| Median (IQR) DBP (mmHg) | 72 (62-81) | 81 (79-89) | 78 (65-83) | 70 (64-80) | 76 (70-81) | 71 (64-80) |
| % 'normal' BP range (<130/80 mmHg) | 54.1 | 33.3 | 50.0 | 67.4 | 58.3 | 66.4 |
| % high BP (≥140/90 mmHg) | 13.5 | 22.2 | 15.2 | 10.5 | 8.3 | 10.3 |

See appendix A for biochemical target ranges
bicarb – bicarbonate; BP – blood pressure; Ca – calcium; DBP – diastolic blood pressure; Hb – haemoglobin; IQR – inter-quartile range; phos – phosphate; SBP – systolic blood pressure

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*Abbreviations*

# UK kidney centre abbreviations and other shortened forms used in the 25th Annual Report

# UK kidney centre abbreviations

## Adult kidney centres

| Abbreviation | City | Hospital |
|---|---|---|
| | ENGLAND | |
| Bham | Birmingham | Heartlands Hospital and Queen Elizabeth Hospital |
| Basldn | Basildon | Basildon Hospital |
| Bradfd | Bradford | St Luke's Hospital |
| Brightn | Brighton | Royal Sussex County Hospital |
| Bristol | Bristol | Southmead Hospital |
| Camb | Cambridge | Addenbrooke's Hospital |
| Carlis | Carlisle | Cumberland Infirmary |
| Carsh | Carshalton | St Helier Hospital |
| Chelms | Chelmsford | Broomfield Hospital |
| Colchr | Colchester | Colchester General Hospital |
| Covnt | Coventry | University Hospital Coventry and Warwick |
| Derby | Derby | Royal Derby Hospital |
| Donc | Doncaster | Doncaster Royal Infirmary |
| Dorset | Dorchester | Dorset County Hospital |
| Dudley | Dudley | Russells Hall Hospital |
| Exeter | Exeter | Royal Devon and Exeter Hospital |
| Glouc | Gloucester | Gloucestershire Royal Hospital |
| Hull | Hull | Hull Royal Infirmary |
| Ipswi | Ipswich | Ipswich Hospital |
| Kent | Kent | Kent and Canterbury Hospital |
| L Barts | London | St Bartholomew's Hospital and The Royal London Hospital |
| L Guys | London | Guy's Hospital and St Thomas' Hospital |
| L Kings | London | King's College Hospital |
| L Rfree | London | Royal Free, Middlesex and UCL Hospitals |
| L St.G | London | St George's Hospital and Queen Mary's Hospital |
| L West | London | Hammersmith, Charing Cross and St Mary's Hospitals |
| Leeds | Leeds | St James's University Hospital and Leeds General Infirmary |
| Leic | Leicester | Leicester General Hospital |
| Liv Ain | Liverpool | Aintree University Hospital |
| Liv Roy | Liverpool | Royal Liverpool University Hospital |
| M RI | Manchester | Manchester Royal Infirmary |
| Middlbr | Middlesbrough | The James Cook University Hospital |
| Newc | Newcastle | Freeman Hospital and Royal Victoria Infirmary |
| Norwch | Norwich | Norfolk and Norwich University Hospital |
| Nottm | Nottingham | Nottingham City Hospital |
| Oxford | Oxford | Oxford Radcliffe Hospital |
| Plymth | Plymouth | Derriford Hospital |
| Ports | Portsmouth | Queen Alexandra Hospital |
| Prestn | Preston | Royal Preston Hospital |
| Redng | Reading | Royal Berkshire Hospital |
| Salford | Salford | Salford Royal Hospital |
| Sheff | Sheffield | Northern General Hospital |
| Shrew | Shrewsbury | Royal Shrewsbury Hospital |
| Stevng | Stevenage | Lister Hospital |
| Sthend | Southend | Southend Hospital |
| Stoke | Stoke | University Hospital of North Staffordshire |
| Sund | Sunderland | Sunderland Royal Hospital |
| Truro | Truro | Royal Cornwall Hospital |
| Wirral | Birkenhead | Arrowe Park Hospital |

**Adult kidney centres** Continued

| Abbreviation | City | Hospital |
|---|---|---|
| Wolve | Wolverhampton | New Cross Hospital |
| York | York | York District General Hospital |
| | NORTHERN IRELAND | |
| Antrim | Antrim | Antrim Hospital (Northern Trust) |
| Belfast | Belfast | Belfast City Hospital |
| Newry | Newry | Daisy Hill Hospital (Southern Trust) |
| Ulster | Belfast | Ulster Hospital |
| West NI | Londonderry and Omagh | Tyrone County Hospital (Western Trust) |
| | SCOTLAND | |
| Abrdn | Aberdeen | Aberdeen Royal Infirmary |
| Airdrie | Airdrie | University Hospital Monklands |
| D&Gall | Dumfries | Mountainhall Treatment Centre |
| Dundee | Dundee | Ninewells Hospital |
| Edinb | Edinburgh | Royal Infirmary of Edinburgh |
| Glasgw | Glasgow | Queen Elizabeth University Hospital |
| Inverns | Inverness | Raigmore Hospital |
| Klmarnk | Kilmarnock | University Hospital Crosshouse |
| Krkcldy | Kirkcaldy | Victoria Hospital |
| | WALES | |
| Bangor | Bangor | Ysbyty Gwynedd |
| Cardff | Cardiff | University Hospital of Wales |
| Clwyd | Clwyd | Ysbyty Glan Clwyd Hospital |
| Swanse | Swansea | Morriston Hospital |
| Wrexm | Wrexham | Wrexham Maelor Hospital |

# Paediatric kidney centres

| Abbreviation | City | Hospital |
|---|---|---|
| | ENGLAND | |
| Bham_P | Birmingham | Birmingham Children's Hospital |
| Brstl_P | Bristol | Bristol Royal Hospital for Children |
| L Eve_P | London | Evelina London Children's Hospital |
| L GOSH_P | London | Great Ormond Street Hospital for Children |
| Leeds_P | Leeds | Leeds Children's Hospital |
| Livpl_P | Liverpool | Alder Hey Children's Hospital |
| Manch_P | Manchester | Royal Manchester Children's Hospital |
| Newc_P | Newcastle | Great North Children's Hospital |
| Nottm_P | Nottingham | Nottingham Children's Hospital |
| Soton_P | Southampton | Southampton Children's Hospital |
| | NORTHERN IRELAND | |
| Blfst_P | Belfast | Royal Belfast Hospital for Sick Children |
| | SCOTLAND | |
| Glasg_P | Glasgow | Royal Hospital for Children Glasgow |
| | WALES | |
| Cardf_P | Cardiff | Children's Kidney Centre University Hospital Wales |

# Other shortened forms

| | |
|---|---|
| AKI | acute kidney injury |
| APD | automated peritoneal dialysis |
| AVF | arteriovenous fistula |
| AVG | arteriovenous graft |
| Bicarb | bicarbonate |
| BMI | body mass index |
| Ca | calcium |
| CAKUT | congenital abnormalities of the kidneys and urinary tract |
| CAPD | continuous ambulatory peritoneal dialysis |
| CC | conservative care |
| CKD-EPI | CKD Epidemiology Collaboration |
| Chol | cholesterol |
| CI | confidence interval |
| CKD | chronic kidney disease |
| CL | confidence limit |
| COVID-19 | coronavirus disease 2019 |
| Creat | creatinine |
| DBD | donor after brain death |
| DBP | diastolic blood pressure |
| DCD | donor after circulatory death |
| E | England |
| eGFR | estimated glomerular filtration rate |
| ESA | erythropoiesis stimulating agent |
| ESKD | end-stage kidney disease |
| FAS | Full Age Spectrum |
| Ferr | ferritin |
| GIRFT | Getting It Right First Time |
| Hb | haemoglobin |
| HbA1c | glycated haemoglobin |
| HD | haemodialysis |
| HES | Hospital Episode Statistics |
| HHD | home haemodialysis |
| ICHD | in-centre haemodialysis |
| IQR | interquartile range |
| K | potassium |
| KDIGO | Kidney Disease: Improving Global Outcomes |
| KRT | kidney replacement therapy |
| LKD | living kidney donor |
| MRSA | methicillin-resistant *Staphylococcus aureus* |
| MSSA | methicillin-sensitive *Staphylococcus aureus* |

| NHS | NAtional Health Service |
|---|---|
| NHSBT | NHS Blood and Transplant |
| NI | Northern Ireland |
| NICE | National Institute for Clinical Excellence |
| NTL | non-tunnelled line |
| PD | peritoneal dialysis |
| PEDW | Patient Episode Database for Wales |
| Phos | phosphate |
| pmarp | per million age-related population |
| pmp | per million population |
| PRD | primary renal disease |
| PTH | parathyroid hormone |
| SBP | systolic blood pressure |
| SD | standard deviation |
| TL | tunnelled line |
| Tx | transplant |
| UK | United Kingdom |
| UKHSA | UK Health Security Agency |
| UKKA | UK Kidney Association |
| UKRDC | UK Renal Data Collaboration |
| UKRR | UK Renal Registry |
| URR | urea reduction ratio |
| W | Wales |

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# UK Renal Registry 25th Annual Report

## Data to 31/12/2021

## The UK Renal Registry

The UKRR was established by the Renal Association in 1995 (now the UK Kidney Association after merging with the British Renal Society in 2020) to collate data centrally from all adult UK kidney centres to improve the care of patients with end-stage kidney disease. Although originally limited to patients on kidney replacement therapies (KRT) – dialysis treatments and kidney transplant recipients – the UKRR now collects cases of acute kidney injury in primary and secondary care and cases of advanced chronic kidney disease in secondary care not on dialysis. Data on children on KRT have been collated by the UKRR since 2009. The UKRR team manages data collection, analysis and reporting on both new and existing patients on KRT each year. The UK Kidney Assciation has an active and involved Patient Council. Each year the UKRR publishes an annual report comprising centre comparisons, attainment of the UK Kidney Association audit standards, national averages and long term trends.