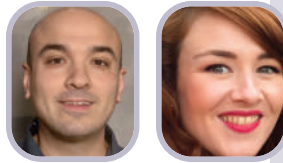


A MULTI-PROFESSIONAL RENAL WORKFORCE PLAN FOR ADULTS AND CHILDREN WITH KIDNEY DISEASE

Produced in collaboration with the affiliates of the British Renal Society



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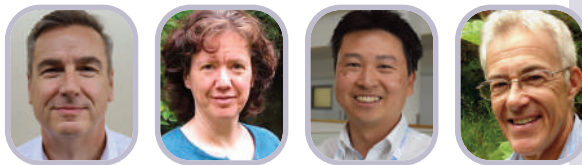
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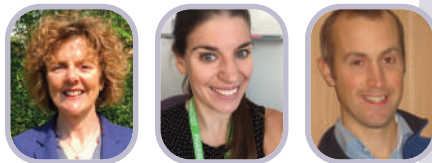
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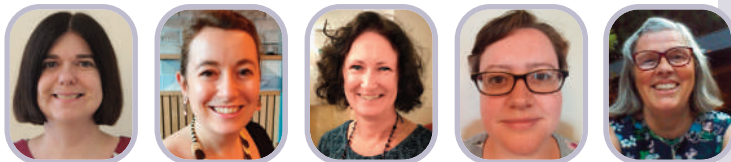
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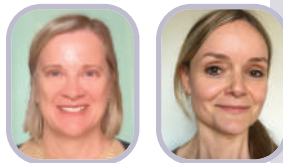
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EXECUTIVE SUMMARY

These recommendations, produced by the renal community, are intended to provide guidance on the workforce requirements needed to care for adults and children living with kidney disease. An efficient and effective kidney service requires integrated, multi-professional and multi-agency working.

There has been a sustained rise in the number of adults and children being diagnosed with and treated for kidney disease. The complexity of managing the care of these people has increased and requires additional and specialist clinical skills and support across primary and secondary care settings. Providing the right staff with the necessary skills, in the right place, at the right time is challenging. The recommendations in this report are based on the complex needs of people living with kidney disease, and the associated skills required to deliver specialist care. The need for flexibility and new ways of working to make the best use of skills and knowledge is recognised.

High quality care and efficient use of resources throughout the patient journey from diagnosis to end of life requires a whole-systems, holistic approach. Patients require support and specialist care from a whole range of healthcare professionals and primary care practitioners. Involving people living with kidney disease, and those supporting them, is of paramount importance to the planning and delivery of their care. The delivery of kidney care should be in partnership with well-informed people who are empowered to play a central role in how their condition is managed. To be achieved, this requires a workforce with appropriate skills, knowledge, competencies and resources.

The roles and responsibilities of the various professional groups are outlined in this document. The information collated reflects current workforce skills, competencies, recognised acuity tools, career frameworks, and innovative ways of working that are being used to provide high quality kidney care across the UK.

NHS England, Scotland, Wales and Northern Ireland have each developed strategies to improve quality and reduce inequality in health and social care. These strategies are likely to influence and inform future workforce directives.

This document is intended to be used in conjunction with other current and future national workforce planning guidance to inform commissioners and providers of healthcare, in recognition of the diverse range of healthcare needs and systems that span the UK. The recommendations for workforce within the document are based upon the best available evidence. It is a 'living document' which will be reviewed and updated accordingly on a two-yearly cycle, to reflect innovations in practice, research and the changing demographic of the UK population.

On behalf of the British Renal Society, we would like to thank all those who volunteered their time to contribute to this document.



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INTRODUCTION

Quality Outcomes Framework data in 2017-18 indicated that the prevalence of Chronic Kidney Disease (CKD) stages 3-5 in England was 4.1 per 100 among those ≥ 18 years, compared to 3.19 per 100 in Scotland.¹ The 21st Annual UK Renal Registry Report also indicates that the incidence rate of renal replacement therapy (RRT) in the UK increased from 118 per million population (pmp) in 2016 to 121 in 2017. The UK overall prevalence was 983 pmp at the end of 2017.²

STATISTICS

There are currently 71 Adult and 13 paediatric renal centres in the UK; of these, 23 adult centres and 10 paediatric centres perform transplants.²

Renal replacement therapy take on rates

In 2018, 7,959 adult patients started RRT for ESKD in the UK, a decrease of 1.4% from 2017. 115 patients aged < 16 years started RRT for ESKD in the UK in 2018, compared to 99 patients in 2017.² Diabetes remains the most common identifiable primary renal disease for patients starting RRT (29.4%), whilst Tubulointerstitial disease accounts for more than 50% in incident paediatric patients.²

Transplantation

By the end of 2018 37,302 adult patients had a kidney transplant for ESKD in the UK, which represented 55.7% of the RRT population. At the time of transfer to adult services, 86.4% of paediatric patients had a functioning kidney transplant.

The ever-changing landscape of kidney healthcare requires a workforce which is responsive and adaptive, never more so than in a population with complex health and social care needs. People living with kidney disease require support from many different healthcare professionals and agencies throughout their healthcare journey. Whole systems' working is essential for the delivery of high-quality care.

The British Renal Society convened a multi-professional National Renal Workforce Planning Group in November 2018 to review and revise the 2002 workforce planning recommendations.³ Affiliate and partner groups of the British Renal Society led the revision of their own individual professional sections, producing recommendations for the provision of specialist kidney care.

The workforce planning group recognise that different models of team working exist in practice and that there is a need to consider local demographics, equity of access to services and continuous quality improvement. Banding of posts and job descriptions vary nationally. It is the decision of each trust/service provider to locally determine the model of care and skill mix that is most appropriate for the delivery of high-quality kidney care. Therefore, this document reflects skill mix requirements and levels of practice, rather than absolute recommendations for job banding.

The purpose of this document is to provide a robust renal workforce plan to support the implementation of national workforce planning directives. It is intended to be of value to:

- Organisations involved in the development and management of renal services based upon patient pathways including primary care trusts; care commissioning groups (CCG), specialised commissioning, secondary and tertiary care providers, the re-emerging renal networks and commercial companies providing renal services;
- The Kidney Quality Improvement Partnership (KQUIP);
- Sustainability and transformation planning;
- Applicable national guidelines groups/national standards;
- People living with kidney disease, and those who support them;
- Organisations who support people living with kidney disease.

This document should be considered alongside other national guidance, including: National Institute for Health and Care Excellence (NICE) guidance;⁴ the NHS Long Term Plan;⁵ Renal Clinical Reference Group (CRG) recommendations; Renal service specifications,⁶ Renal Getting It Right First Time (GIRFT),⁷ Kidney Health Delivering Excellence ambitions.⁸

The ability to utilise data from the Renal Registry, particularly patient reported experience measures (PREMs) and patient reported outcome measures (PROMs) may lead to innovative service design and delivery, including creation of new posts.

This is a 'living document' which will be reviewed and updated accordingly on a two-yearly cycle, to reflect innovations in practice, research and the changing demographic of the UK population.

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ABBREVIATIONS

ACEi – Angiotensin-converting enzyme inhibitors
 ADL – Activities of daily living
 AfC – Agenda for Change
 AKI – Acute kidney injury
 ART – Association of Renal Technologists
 AVF – Arteriovenous Fistula
 AVG – Arteriovenous graft
 BACPR – British Association for Cardiovascular Prevention and Rehabilitation
 BAPN – British Association for Paediatric Nephrology
 BASES – British Association of Sport and Exercise Sciences
 BASW – British Association of Social Workers
 BDA – British Dietetic Association
 BiPAP – Bilevel positive airway pressure
 BMI – Body mass index
 BRS – British Renal Society
 BTS – British Transplantation Society
 CCG – Care Commissioning Group
 CCT – Certificate of Completion of Training
 CEP – Clinical Exercise Physiologist
 CF – Cystic Fibrosis
 CKD – Chronic Kidney Disease
 CKD-MBD – Chronic Kidney Disease Mineral Bone Disease
 CLODS – Clinical Leads in Organ Donation
 CNS – Central nervous system
 COPD – Chronic Obstructive Pulmonary Disease
 CPAP – Continuous positive airway pressure
 CPD – Continuing professional development
 CRG – Clinical reference group
 CRRT – Continuous renal replacement therapy
 DCD – Donation after circulatory death
 DFPP – Double Filtration Plasmapheresis
 DNA – Did not attend
 EBME – Electrical and biomedical engineering
 ECG – Electrocardiogram
 eGFR – Estimated glomerular filtration rate
 EPR – Electronic prescribing systems
 ESCA – Essential shared care agreement
 ESKD – End stage kidney disease
 GIM – General Internal Medicine
 GIRFT – Getting It Right First Time
 GNVQ – General National Vocational Qualification
 GP – General Practitioner
 GTN – Glycerol trinitrate
 HCPC – Health and Care Professions Council
 HD – Haemodialysis
 HHD – Home haemodialysis
 H&I – Histocompatibility and Immunogenetics
 HIV – Human Immunodeficiency Virus
 IA – Intra-arterial
 IAPT – Improving Access to Psychological Therapies
 INR – International normalised ratio
 IR – Interventional Radiologist

ITU – Intensive Therapy Unit
 IV – Intravenous
 KDOQI – Kidney Disease Outcomes Quality Initiative
 KQuIP – The Kidney Quality Improvement Partnership
 LDC – Living donor coordinators
 LDL – Low-density lipoprotein
 MELAS – Mitochondrial Encephalopathy, Lactic Acidosis, and Stroke-like episodes
 MMA – Methylmalonic Acidemia
 MPT – Multi-Professional Team
 NHS – National Health Service
 NHSBT – National Health Service Blood and Transplant
 NHSI – National Health Service Improvement
 NICE – The National Institute for Health and Care Excellence
 NPPG – Neonatal and Paediatric Pharmacist Group
 NORS – National Organ Retrieval Service
 NTNC – Non-training non-consultant
 ODTF – Organ Donation Taskforce
 ONS – Office of National Statistics
 OOPE/R/T – Out of Programme for Experience, Research or Training
 PA – Programmed activities
 PCA – Patient controlled analgesia
 PD – Peritoneal dialysis
 PICU – Paediatric Intensive Care Unit
 POD – Patients own drugs
 PMP – Per million population
 PREMS – Patient reported experience measures
 PRiNG – Paediatric Renal interest Nutrition Group
 PROMS – Patient reported outcome measures
 PSA – Professional Standards Authority
 QI – Quality improvement
 RA – Renal Association
 RCPCH – Royal College of Paediatrics and Child Health
 RDPDC – Renal Dialysis Patient Dependency Classification
 RNG – Renal Nutrition Group
 ROATP – Register of Approved Training Providers
 RPG – Renal Pharmacy Group
 RPS – Royal Pharmaceutical Society
 RPT – Renal Psychological Therapists
 RRT – Renal Replacement Therapy
 RSPWC – Royal Stoke Pharmacy Workforce Calculator
 SNODS – Specialist Nurses in Organ Donation
 SPIN – Special Interest training module
 Tx – Transplant
 UF – Ultrafiltration
 UHNM – University Hospitals of North Midlands NHS Trust
 UKLKSS – UK Living Kidney Sharing Scheme
 UKRR – UK Renal Registry
 VAC – vacuum assisted closure
 WHO – World Health Organisation
 WTE – Whole time equivalent



DIETITIANS: ADULT AND PAEDIATRIC SERVICES

1.1 ADULT SERVICES

Dietary management plays a key role in the care of people living with CKD. Specialist renal dietitians hold central responsibility for nutritional assessment and dietary therapy in the prevention and management of CKD and in more advanced stages of Acute Kidney Injury (AKI). Individualised dietary advice from specialist renal dietitians working as an integral part of the multi-professional team (MPT) improves patient outcomes.^{1,2} Dietary intervention employed in CKD relates specifically to the functions of the impaired kidneys and is therefore unique to the specialist management of this condition. Specialist renal dietitians, with their unique knowledge and skills, are essential in all renal services to provide optimal care to people living with CKD stage 4,5 and RRT.

People living with CKD have multi-morbidities leading to complex dietary requirements which influence their nutritional status. Specialist renal dietitians take a holistic approach, tailoring dietary advice and prioritising nutritional goals to the person's clinical, physical, social and psychological status. The specialist skills of a renal dietitian can be found in Table 1.

TABLE 1. ROLES OF THE SPECIALIST RENAL DIETITIANS.

Roles	Description of the role	Quality and cost effectiveness of renal dietetic intervention
Roles for all settings	<ul style="list-style-type: none"> Holistic patient assessment of nutritional status, fluid status, biochemistry, co-morbidities, current diet, social factors, motivation Develop, implement and monitor nutritional care plans; including salt, fluids, electrolytes, and associated symptoms Empower and educate people living with kidney disease, supporting them with self-management Education and training for staff Development of information & educational resources Service evaluation, quality improvement, audit, research Supporting a patient centred approach to improve the patient experience 	<ul style="list-style-type: none"> Manage under-nutrition (independent predictor of mortality) in CKD 4-5, dialysis, transplantation and AKI^{3,4} Ensure regular renal dietetic review in progressive CKD and pre-dialysis to improve nutritional status, quality of life, mortality and morbidity rates⁵⁻⁷
Inpatient settings	<ul style="list-style-type: none"> Assessment, treatment, and monitoring of those who are malnourished, or at risk of malnutrition, including: dietary modification, oral nutritional supplements, enteral/parenteral nutrition Work with nutrition and pharmacy teams to provide safe parenteral nutrition Provide dietary counselling to those who are newly diagnosed with CKD, new to dialysis, complex AKI or being conservatively managed⁶⁻⁸ Provide dietary advice to those who have received a kidney transplant Work with the MPT to manage renal complications including: hyperkalaemia, mineral bone disease (CKD-MBD), fluid overload and other electrolyte imbalances^{9,10,11} Liaise with catering departments and nursing colleagues to ensure appropriate food provision 	<ul style="list-style-type: none"> Improved muscle mass/nutritional status before commencing RRT Dietetic management has the potential to delay the initiation of dialysis as well as manage symptoms of patients with CKD Assess and review serum phosphate levels and recommend interventions. Use supplementary prescribing where possible/indicated
Outpatient settings	<ul style="list-style-type: none"> Prevent or delay onset of malnutrition and undesirable changes in body weight and lean body mass Assessment, treatment and monitoring of people with CKD who are at risk of malnutrition or malnourished Promote a healthy lifestyle and weight Delay the progression of CKD Provide timely dietary education to people receiving RRT Work in collaboration with other members of the MPT Support the management of: uraemia and related symptoms; salt and fluid management; hypertension, lipid abnormalities Assist the achievement of target levels of serum potassium (to avoid both hyperkalaemia and hypokalemia) Assist the achievement of target levels/trends of serum phosphate (to avoid both hyperphosphatemia and hypophosphatemia) Providing cost effective care in CKD-MBD by focusing on quality of life⁹⁻¹¹ Assist the achievement of optimal glycaemic control Promote regular exercise/physical activity Support self-management in people living with CKD and their family/carers 	<ul style="list-style-type: none"> Prevention of episodes of hyperkalaemia through appropriate education to avoid hospital admission and potentially the significant associated costs Appropriate fluid and salt assessment to help reduce co-morbidities and prevent hospital admission Weight management to help reduce risk or manage comorbidities; increase suitability for transplant; reduce rejection of graft post-transplant; reduce risk of developing post transplant diabetes

Recommended staffing levels

Table 2 shows the current estimated renal dietetic workforce in the UK (based on a 2015 workforce survey with a 79% response rate).

TABLE 2. THE ESTIMATED RENAL DIETETIC WORKFORCE FOR ADULT PATIENTS IN 2015.

Renal dietetic workforce	(WTE)	Percentage (%)
Specialist renal dietitian (Band 6)	122.81	54
Advanced renal dietitian (Band 7)	71.78	32
Renal dietetic assistant (Band 3-4)	16.72	7
Dietitian (Band 5)	10.0	4
Consultant renal dietitian (Band 8a)	7.46	3
Total	228.77	100

When considering how many specialist renal dietitians are required; the number of patients, their complexity, the frequency of reviews required for each patient group, and any additional specialist roles, need to be taken into account.

The British Dietetic Association (BDA) Safe Staffing and Safe Workload Guidance and NHS Improvement (NHSI) guidance on Job Planning have been used to make the recommendations in this document.¹²

On average, each specialist renal dietitian working in clinical practice will be expected to spend approximately 75% of their time in face-to-face contact with patients, and 25% for other duties (e.g. audit, service development teaching, training).

Where there is a lack of evidence to support practice recommendations, the expert consensus of the BDA Renal Nutrition Group (BDA RNG) has been provided. The BDA RNG is led by a committee of eight Specialist & Advance Practice Renal Dietitians working across the UK. Their consensus recommendations were made available to the wider Renal Nutrition Group (>280 Dietitians with a special interest or working within the specialist field of renal nutrition) for consultation in September 2018. Where opinions were raised the document was amended and ratified as appropriate.

Inpatient services

Renal inpatient services usually provide access to dietetic expertise five days a week. The recommendations in Table 3 include face-to-face consultations, ward education, training, family meetings, documentation, audit, service development liaising with others (e.g. catering/pharmacy for nutritional products, enteral/parenteral nutrition) and attendance to ward rounds/MPT as relevant.

We recommend that all people with a new kidney transplant be assessed and seen at least once prior to hospital discharge by a specialist renal dietitian. Resources additional to those highlighted in Table 3 may also need to be considered (for example, a seven-day service to access renal dietetic expertise).

TABLE 3. RECOMMENDATIONS FOR SPECIALIST RENAL DIETITIANS IN THE ADULT INPATIENT SETTING.¹³⁻¹⁵

Setting	Recommendations (average)
Renal wards (either with or without a transplant centre)	60-78 hours (0.03 WTE – 0.04 WTE) of a renal dietitian per bed per year (Level 6/7)
Renal HDU/ITU	98-195 hours (0.05 – 0.1 WTE) specialist renal dietitian per bed per year. (Level 7) Higher level to meet the capabilities expected of advanced clinical practice

Examples:

Renal ward with 30 beds: 60–78 hours X 30 beds = 1800–2340 hours per year.

Each specialist renal dietitian will spend ~ 75% of their time in face-to-face contact with patients, 25% in indirect contact.

Take into consideration 20% absence for annual leave/ sickness/study. Hours available would be $37.5 \times 52 \times (75/100) \times (80/100) = 1170$ hours ¹²1800 hours required /1170 available = 1.5 whole time equivalent (WTE); 2340 hours required /1170 available = 2.0 WTE. Hence a renal ward with 30 renal beds should have a minimum 1.5 WTE specialist renal dietitian.

Additional staffing considerations for inpatients

- Specialist renal dietitians may be responsible for seeing all patients with kidney disease (in many units renal dietitians attend consultant ward rounds), or supporting other dietetic staff reviewing patients on outlying wards. Additional services may need to be considered when applying these guidelines at local level;
- Centres where inpatients with Encapsulating Peritoneal Sclerosis are managed may require an independent service in view of the need for higher renal dietetic input;¹⁶
- Centres where specialist renal dietitians directly manage all renal inpatients requiring parenteral nutrition;
- Centres where specialist renal dietitians manage all patients with AKI stage 3 requiring RRT in critical care settings.

Outpatient settings

Pre-dialysis clinics

People living with CKD stage 1-3a do not require specialist renal dietetic input, and we recommend that they should be managed within primary care dietetic services.

People living with progressive CKD stage 4 should be seen every 6-8 months. However, those with unstable CKD stage 4 will be seen more frequently according to clinical need. Those with stable renal function are likely to require less input (Table 4).¹⁵

Every person with stage 5 CKD approaching RRT should be regularly assessed and monitored every 2-3 months by a specialist renal dietitian. Renal dietitians should also be involved in the care of people who are managed conservatively. This may include symptom management and nutritional support. The time required to provide this service is difficult to quantify but should be considered within staffing requirements (Table 4).¹⁵ Renal outpatient dietetic services should offer flexibility in providing an accessible service, this includes delivering evening and/or late clinics, either run as a consultant led, MPT led or renal dietetic led clinics.

TABLE 4. RECOMMENDATIONS FOR SPECIALIST RENAL DIETITIANS IN THE ADULT OUTPATIENTS SETTING.¹⁷⁻²⁰

Setting	New appointment	Follow up (average time per year)	Comments
CKD stage 4	30 minutes first appointment	2 hours	Assess nutritional status needs to be assessed regularly in patients with eGFR <15ml/min
Pre-dialysis, AKC (CKD stage 5)	45 minutes first appointment	3 hours	

The following two calculations guide renal dietetic service provision.

Example 1

A pre-dialysis clinic a week which referred 20 new patients a year and 200 follow ups a year will equal to, on average hours per year:
 $(3 \text{ hours} \times 200 \text{ patients}) + (0.75 \times 20 \text{ new patients}) = 615 \text{ hours per year}$. Hours available are $37.5 \times 52 \times (75/100) \times (80/100) = 1170 \text{ hours}$.
 Therefore, $615 / 1170 = 0.5 \text{ WTE}$ Minimum requirement.

Example 2

A four hour clinic with 45 min appointments for new patients and 20 min appointments for follow up, specialist renal dietitian will be expected to see a minimum of five new patients or a maximum of 12 patients follow up.
 Time allocated for face-to-face contact (4hrs=0.11 WTE) plus clinic prep/monitoring, and possibly travel (3.5 hrs =0.09WTE) equivalent 0.2WTE to deliver one CKD stage 5 clinic/week.
 To deliver a CKD stage 4 clinic a week 0.2 WTE specialist renal dietitian will also be needed, but these patients may be monitored less frequently.

Renal Replacement Therapy

Recommendations for RRT (Haemodialysis HD, peritoneal dialysis PD, home haemodialysis HHD, transplantation) are shown in Table 5.

The incident and prevalent age of people receiving RRT is increasing and this population is more likely to be living with frailty and have more complex needs compared to the population prevalent at the time of the 2002 recommendations.²⁰⁻²²

Renal dietetic services need to offer flexibility and provide an accessible service, including twilight shifts and working time adjusted accordingly as per local work patterns.

TABLE 5. RECOMMENDATIONS FOR SPECIALIST RENAL DIETITIANS IN RRT.^{14-16,21-23}

Setting	New appointment	Follow up (average time per year)	Comments
HD main and satellite units	30-60 mins within first 4 weeks of starting treatment	6-8 hours (depending on complexity)	Renal dietetic assessment on a quarterly basis in patients with unstable diet-related electrolytes, or a consistent trend in flesh weight change. The frequency of monitoring may need to increase to monthly in a proportion of patients who have a reduced appetite, weight loss or complex electrolyte or fluid management issues.
HHD	30-45 mins (within first month of HHD training)	2 hours	As a minimum standard, those stable on dialysis (stable weight and stable diet-related electrolytes) should have a full renal dietetic review at least once every six months. The prioritisation and frequency of review will be decided by the specialist renal dietitian.
PD	1 hour first month	4 hours	Providers to supply a drink and an appropriate snack directed by dietetic advice during HD.
Transplantation	1 hour within the first 3 months	3 hours	People with a failing transplant will require the same access to the specialist renal dietitian as shown in Table 4.

Suggested calculation for workforce

Satellite unit HD: 100 patients; 40 new patients/ year ~720 hours/year (6-8 hours x 100 patients) + (1 hour x 40 new patients) = 640-840 hours per year (average 740 hours/year).
Each specialist renal dietitian will spend ~ 75% of their time in face-to-face contact with patients, 25% in indirect contact. Take into consideration 20% absence for annual leave/ sickness/study. Hours available would be 37.5 x 52 x (75/100) x (80/100) = 1170 hours; 740 /1170 = 0.63 WTE specialist renal dietitian.

Young people and transitions services

Specialist renal dietitians should be involved in the care of young people and transitions services. The time required to provide this service is difficult to quantify and dependent on their stage of CKD, but should be considered within staffing requirements. Children who transition to adult services will require more dietetic input (i.e. artificially fed) for the first 3-6 months of transition (for example two hours in the first month; one hour in first six months).

Career pathway guide

The 2015 BDA RNG workforce survey demonstrated the majority (93%) of UK renal dietetic workforce is formed of qualified roles and registered with the Health and Care Professions Council (HCPC) with a validated qualification as a registered dietitian.

Registered renal dietitians operate across levels 5-8 of the Skills for Health Career Framework (Table 7 at the end of this section, on page 7).²⁴ It is recommended that dietitians new to the specialty attend the UK Renal Nutrition Group post-registration course. Since April 2017 specialist renal dietitians can train to become supplementary prescriber, managing the prescription of phosphate binders to support the MPT.

1.2 PAEDIATRIC SERVICES

Children with CKD stages 2 to 5, AKI, nephrotic syndromes, renal tubular disorders and many other rare renal disorders require the support of an experienced paediatric dietitian with specialist expertise in a range of childhood diseases affecting the kidney.

Nutrition is a cornerstone in kidney care management; it facilitates control of symptoms and blood biochemistry, delays progression of CKD and improves growth and mortality outcomes.²⁵⁻²⁷

The need to preserve growth, as well as treating the underlying renal disease, results in complex dietary management, involving: prescription of specialised feeds; care planning and monitoring; and maintenance of quality standards of nutritional care individualised for each child.²⁵

Specialist paediatric renal dietitians have the skills to plan and implement complex nutritional care plans based on assessment of a number of factors which affect nutritional status, namely blood biochemistry, anaemia, fluid shifts, renal replacement modality, symptoms, medications, family understanding, cooking skills, readiness to change and psychosocial functioning.²⁸

Published dietary recommendations are evidence-based or are best practice clinical guidelines that consider the phases of growth throughout childhood alongside variation in kidney function.^{2,9,29,30}

Nutrition is the primary driver of growth in the first two years of life and the provision of optimal nutrition is one of the biggest challenges.^{25,26,28} This can be highly complex in this patient group and the correct interpretation of guidelines by an experienced specialist renal dietitian is crucial to ensure safe practice.

Psychosocial and cultural factors have a significant influence on the way children with renal diseases are managed, therefore a wider team approach is necessary to provide individualised support for children and their families. The paediatric renal dietitian liaises with families, the renal multi-professional team, the child's local hospital team, health visitors, other community healthcare staff, school staff/catering teams and general practitioners to involve them in dietary education and the delivery of treatment plans.

Specialist training takes investment and time, and should be supported by a competency-based training package (as devised by Paediatric Renal Interest Nutrition Group [PRiNG]) to provide training within each hospital region that has a specialist paediatric renal unit. This is essential to ensure that every child has equitable access to dietetic expertise and quality care, irrespective of where they live.³¹

Figures 1-4 outline the aims, clinical management areas, roles and components of a paediatric renal dietetic service.

FIGURE 1. AIMS OF DIETETIC MANAGEMENT OF CKD

- Optimise growth
- Optimise blood biochemistry
- Delay progression of disease
- Prevent nutritional deficiencies
- Reduce morbidity & mortality
- Support the child & family

FIGURE 2. CLINICAL MANAGEMENT AREAS/TREATMENT STAGES

- Acute presentation
- Supportive (dietetic) management of CKD to prevent deterioration
- Promotion of self-management
- Dialysis
- Transplantation
- Nephrotic syndromes, renal tubular disorders and many other rare paediatric renal disorders

FIGURE 3. CLINICAL ROLES IN ASSESSMENT, MONITORING AND EDUCATION

- Assessment of nutritional status and growth, with ongoing growth monitoring (weight, length/height, Body Mass Index [BMI], handgrip and mid upper arm circumference, occipital frontal circumference) throughout childhood
- Interpretation of complex blood biochemistry
- Identification of nutritional deficiency and excess
- Prevention of malnutrition (over and under nutrition)
- Nutritional support
- Electrolyte and fluid disturbances
- Mineral and bone disorder management
- Management of dietary related co-morbidities
- Dietary manipulations and allowances

FIGURE 4. COMPONENTS OF RENAL DIETETIC SERVICE

Face-to-face patient activities

- Individualised patient-centred care plans
- Specialised feed recipes and regimens
- Strategies to support adherence to diet and treatment interventions
- Ongoing monitoring plans

Liaison

- Catering services (both hospital and educational establishments)
- Multi-professional team including acute, community and respite care
- Networking with international, national and regional paediatric renal dietitians and multi-professional teams

Participation

- Guideline development and expert panels
- Audit, quality improvement and research
- MPT working, clinical and non-clinical activities
- Duties to support and promote the specialty and profession e.g. members of professional bodies/committee members of PRiNG/KQuIP/British association of paediatric nephrologists (BAPN)

Education

- International, national and regional dietitians, paediatricians and nephrology specialists
- In-centre, all MPT staff (dietitians, doctors, nurses, play specialists, health care assistants, housekeepers)
- Supporting local hospitals
- Students

Proposed staffing levels

The establishment of paediatric renal dietitians necessary for the safe running of a renal unit should take into account the number and complexity of patients; it is not relevant to simply compare staffing levels with those of other allied health professionals.

Considering CKD alone, the 2011 document 'Improving the standard of care of children with chronic kidney disease through paediatric nephrology networks'⁹ states that dietetics should be funded at 2.0 WTE for 3.5 million total population if the patient care is shared. Currently the 2011 recommendation is not being met and nationally provision is inequitable. However, there is a risk that specific workforce recommendations based purely on population size do not take into account changes in prevalence, clinical complexities, age of population, renal treatment modalities and their corresponding individual time-requirements for dietetic care.³¹ The 2011 BAPN standard also does not take into account staffing levels needed to treat other childhood renal diseases.

The international Paediatric Nutrition Renal Taskforce supports the recommended minimum contact frequency for children with CKD suggested by Kidney Disease Outcomes Quality Initiative (KDOQI) and Coleman *et al.*^{9,32} as outlined in Table 6.

TABLE 6. RECOMMENDED MINIMUM CONTACT FREQUENCY FOR CHILDREN WITH CKD

Dietetic Contacts	CKD 2-3	CKD 4-5	CKD 5D
0-6 months of age	3 months	1 month	weekly
6-12 months of age	3 months	1 month	1 month
Age 1 year and older	1 year	3 months	monthly

"Contacts" includes in person, phone or secure digital communication

Career pathway guide

Dietitians must be registered with the HCPC and have a validated qualification as a dietitian. There are no specific qualifications required to become a renal paediatric dietitian. The title is reserved for those who have experience working with children with a range of paediatric kidney diseases.

The PRiNG (Paediatric Renal interest Nutrition Group) has developed a national competency-driven training package and this should be undertaken by all dietitians starting a career in paediatric renal dietetics. Introductory training can be gained from the University of Plymouth Masters module 'Clinical Dietetics for Infants and Children'; Module 3/ADV743. Renal dietetics comprises approximately twenty percent of the syllabus. In addition, many tertiary renal paediatric centres host their own renal dietetic training packages.

Lead renal paediatric dietitians at specialist centres should be at least a highly specialised paediatric dietitian (equivalent to level 7 in skills for health) and where there is more than one dietitian in post in a specialist centre it is recommended that there is a network and/or leadership role (clinical and/or academic) at a higher level (equivalent to level 8 in skills for health).

The NHS Skills for Health Career Framework²⁴ needs to be considered to standardise quality and level of practice for specialist healthcare professionals (see Table 7).

TABLE 7. SKILLS FOR HEALTH CAREER FRAMEWORK FOR REGISTERED AND NON-REGISTERED ADULT AND PAEDIATRIC DIETETIC PRACTITIONERS

Level	Explanation	Examples
8	<ul style="list-style-type: none"> Require highly specialised knowledge, some of which is at the forefront of knowledge in a field of work Leaders with considerable responsibility, and the ability to research and analyse complex processes Have responsibility for service improvement or development May have considerable clinical and/or management responsibilities, be accountable for service delivery or have a leading education or commissioning role 	<p>Consultant dietitian</p> <ul style="list-style-type: none"> Advance renal dietetic practising at a senior level Leading research, service development, improvement and education Teaching at national and international level Directing and contributing to renal dietetic service policy and commissioning
7	<ul style="list-style-type: none"> Have a critical awareness of knowledge issues in the field and at the interface between different fields They are innovative and have a responsibility for developing and changing practice and/or services in a complex and unpredictable environment 	<p>Manager/Lead renal dietitian Highly specialised</p> <ul style="list-style-type: none"> Assessment, management and treatment of adults and children with CKD (including rare paediatric renal disorders for paediatric dietitians) Skills in behaviour change techniques Significant contribution to research, service delivery and management; leading and managing a team <p>Advanced practitioner or highly specialist renal dietitian In addition to level 6 skills</p> <ul style="list-style-type: none"> Responsibility for service evaluation and development (e.g. supplementary prescribing) Specialist renal dietetic assessment and treatment skills including behaviour change techniques Advise, guide and teach assistant, junior and less experienced staff
6	<ul style="list-style-type: none"> Require a critical understanding of detailed theoretical and practical knowledge Specialists and/or have management and leadership responsibilities Demonstrate initiative and are creative in finding solutions to problems Some responsibility for team performance and service development and they consistently undertake self-development 	<p>Specialist renal dietitian Usually have a minimum of two years' experience as a registered dietitian Able to:</p> <ul style="list-style-type: none"> Manage the dietary needs of a complex range of patients Complete renal dietetic assessments and treatment Assist in audit and service development Advise, guide and teach assistant, and junior staff <p>May require assistance for more complex patient management</p>
5	<ul style="list-style-type: none"> Have a comprehensive, specialised, factual and theoretical knowledge within a field of work and an awareness of the boundaries of that knowledge Can use knowledge to solve problems creatively, make judgments which require analysis and interpretation, and actively contribute to service and self-development. May have responsibility for supervision of staff or training 	<p>Renal dietitian Work within narrow areas of practice and specific tasks under close supervision from specialist renal dietitians Able to:</p> <ul style="list-style-type: none"> Complete renal dietetic assessments, care plan development and monitoring for straightforward adults and children with CKD and AKI Advise, guide and teach assistants and students Assist in audit and service development <p>Requires assistance for more complex patient management</p>
4	<ul style="list-style-type: none"> Require factual and theoretical knowledge in broad contexts within a field of work. Work is guided by standard operating procedures, protocols or systems of work, but the worker makes judgements, plans activities, contributes to service development and demonstrates self-development May have responsibility for supervision of some staff 	<p>Experienced dietetic technician/assistant Able to:</p> <ul style="list-style-type: none"> Undertake tasks delegated by the renal dietitian but may have some independence (e.g. in addition to level 3 roles, they may be able to amend oral nutritional supplements in accordance with specific protocols) Complete basic dietetic reviews and collect limited basic dietetic information Contribute to audit, data collection and service development <p>In addition, an experienced paediatric dietetic technician/dietetic assistant is able to:</p> <ul style="list-style-type: none"> Prepare and teach home feeding recipes to families Develop renal specific recipes Order special meals utilising a good understanding of renal biochemistry
3	<ul style="list-style-type: none"> Require knowledge of facts, principles, processes and general concepts in a field of work May carry out a wider range of duties than the person working at level 2, and will have more responsibility, with guidance and supervision available when needed Contribute to service development and are responsible for self-development 	<p>Dietetic assistant Able to undertake tasks delegated by the renal dietitian, following an assessment of competency, including:</p> <ul style="list-style-type: none"> Completing basic assessment with supervision Liaising and booking more complex patients in with a renal dietitian Completing routine anthropometric measurements Recording biochemistry results in dietetic records Administration <p>In addition, a paediatric dietetic assistant/diet support worker is able to:</p> <ul style="list-style-type: none"> Support with setting up home enteral tube feeding Contact GP for prescription requests for feeds

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NURSING: ADULT AND PAEDIATRIC

2.1 ADULTS

Registered and non-registered nurses

Renal nursing involves a wide range of activities which support patients throughout their various care pathways, providing continuity during their journey with chronic kidney disease. A nurse is often the key link professional for a patient to the system of care provided by the multi-professional team. The role involves patient and carer education, support and advocacy. In addition, nurses require clinical skills and competencies to care for people with kidney disease at different stages of their illness from diagnosis to death. The clinical role of the nurse will vary depending on the level at which they trained, either as a registered or non-registered practitioner. Optimal staffing in hospitals is fundamental for safe and high-quality patient care and has been an area of increased focus in helping to improve quality of care and the working environment for staff.

Nursing workload and the ability to provide quality care is influenced by many variables including patient acuity and dependency. Other issues are also known to influence nursing workload more locally, including:

- The clinical model;
- The labour market;
- Staff capacity and capability, seniority and confidence;
- Organisational factors; i.e. support roles, support external to the ward, ward layout and senior sister/charge nurse supervisory time and leadership capability (Shelford Group, Safer Nursing Care Tool).¹

As a health service we are constantly revising and developing the roles of nurses in response to patient and service need. To address the workforce gap, new routes into nursing are being introduced. This includes use of the apprenticeship levy to train nursing associates and in some areas this funding may be used to further develop nursing graduates and advanced care practitioners. The apprenticeship levy is a UK tax on employers, which can only be used to fund apprenticeship training. Trusts will pay a percentage of the total pay bill into the levy 'pot' and then draw down this funding for apprenticeship training. To provide apprenticeship training and be able to access levy funding the Trust has to be a registered training provider. Registered trusts can be found on the Government Register of Approved Training Providers register (ROATP).²

It is important that these new frameworks provide good quality education and skills development so people can have lifelong nursing careers. Within the renal setting we struggle to recruit ready-trained renal nurses. In order to address this we need to think of career pathways to creatively develop our workforce utilising resources available, such as in-house education programmes and apprenticeship funding. A strategic vision of skills, competency-based practice, flexible careers and a holistic approach to patient care is required.

Nursing roles in kidney care

The complex nursing needs of people with kidney disease has led to the development of numerous specialist nursing roles which are well established and embedded in renal nursing and include: advanced kidney care, dialysis access, anaemia management, and transplantation. Titles can vary as can job descriptions and banding of posts depending on the skill set required. The needs and expectations of people with kidney disease and local demographics are constantly changing. Implementation of competency-based frameworks for education and development for registered and unregistered nurses can help meet such needs and expectations.

The levels of practice at which such nurses deliver care will vary depending on local workforce structures and, to a degree, funding. In relation to the career framework, a specialist practitioner will have a critical understanding of detailed theoretical and practical knowledge, have specialist and/or have management and leadership responsibilities. They must demonstrate initiative and be creative in finding solutions to problems. They may have some responsibility for team performance and service development and they consistently undertake self-development. This definition lends itself to roles in areas such as anaemia management, dialysis access, advanced kidney care, bone management and aspects of transplantation.

The advance practitioner role **interfaces** between different fields and is likely to have a wider remit than the specialist practitioner who may focus on a **single** aspect of kidney care. There is often confusion between advanced practice and specialist nurse roles, but the focus should be on level of practice not job titles. The skills required to practice at an advanced level are guided by the multi-professional framework for advanced clinical practice in England (Health Education England) and include four pillars: clinical practice; leadership and management; education, and research.³

The consultant practitioner requires highly specialised knowledge, some of which is at the forefront of knowledge in a field of work, which they use as the basis for original thinking and/or research. They are leaders with considerable responsibility, and the ability to research and analyse complex processes. They have responsibility for service improvement or development. They may have considerable clinical and/or management responsibilities, be accountable for service delivery or have a leading education or commissioning role.

Organ donation and transplantation

Organ donation and transplantation is a rapidly changing landscape, which continues to increase in complexity and diversity. The implementation of the 2008 'Organ Donation Taskforce' (ODTF) recommendations and delivery of the UK 2020 Strategies for Organ Donation and Transplantation has led to a 98% increase in deceased organ donors.⁴ In the past 10 years, there has been a 67% increase in deceased donors, an overall increase of 33% in kidney transplantation and a 31% fall in the kidney transplant waiting list.⁵ The UK is a world leader in donation after circulatory death (DCD) and, in more recent years, there has also been an increase in donation after brain death.⁶ Although living donation has plateaued in recent years, it still accounts for 28% of kidney transplant activity and benefits more than 1,000 patients every year in the UK. The UK Living Kidney Sharing Scheme (UKLKSS) is the largest scheme in Europe and continues to expand. More than 1,000 patients have been transplanted through the scheme since 2007, significantly reducing the need for antibody incompatible transplantation. With the addition of non-directed altruistic kidney donors into the UKLKSS, the scheme has been effective in transplanting long-waiting patients with Black and Asian ethnicity, as well as immunologically complex recipients.⁶

As in all aspects of kidney care, nurses are embedded in every part of the organ donation to transplantation pathway and play a vital role in both donor care, living and deceased, and recipient care. Services are commissioned by different providers and roles and responsibilities may vary depending upon the clinical setting and model of care delivery. The diversity of job titles and roles, particularly in transplantation, reflects this.

Models of Care

NHS Blood and Transplant (NHSBT) is commissioned to deliver deceased organ donation retrieval, whilst living kidney donation is commissioned by the health Departments in each UK country and by NHS England as part of the transplantation pathway.

There are currently 23 adult kidney transplant centres across the UK each providing transplantation services, and most receive referrals from one or more non-transplanting centres. Preparation and follow-up of living donors and recipients is shared between 'linked' transplant and referring nephrology units within a 'transplant hub and non-transplanting spoke' model of care.

Deceased Organ Donation

The UK model for deceased organ donation is based upon a whole hospital approach to promote and maximise each donation opportunity. In each Trust/Board teams of Specialist Nurses in Organ Donation (SNODS) work collaboratively with Clinical Leads in Organ Donation (CLODS, senior intensive care doctors) and the Trust Organ Donation Committee.

The nursing workforce, employed directly by NHSBT, is organised into regional teams, each team varies in geographical size, the number of hospitals within each region and the donation potential and the workforce is distributed accordingly.

The current workforce comprises SNODs, team managers and regional managers, each of whom is responsible for two geographical regions.

The service is also supported by UK-wide lead nurse posts that provide leadership and support, including diversity and paediatric donation, plus a professional development team that is responsible for all specialist nurse training and education. The National Organ Retrieval Service (NORS) was established in 2010⁷ and NHSBT have introduced new nursing roles to support this, employing experts to meet the training and development needs of the new and existing workforce, oversee workforce transformation and provide appropriate professional leadership.

Living Kidney Donation

Living donor coordinators (LDCs) are employed within individual Trusts to co-ordinate donor evaluation and oversee continuity of care throughout the pathway.⁷ In 2019, every transplant centre and non-transplanting referring centre had at least one nurse supporting living donor kidney transplantation. In 2014 (updated 2015), NHSBT developed

an LDC workforce planner taking into account the key variables that impact on the role to provide an objective measure of workforce requirements by centre/unit for living donor kidney transplantation. It provides an objective measure of LDC workforce requirements.⁸

Recipient Co-ordinator

Recipient co-ordinators' responsibilities include maintaining transplant waiting lists, recipient preparation for transplantation and recipient post-transplant follow-up. To date, a bespoke workforce calculator has not been produced to assess workforce requirements, however, the LDC workforce calculator could be adapted for this purpose.

Post-transplant Nursing

Models of care vary from completely nurse-led to collaborative MPT-style and workforce requirements must be adjusted accordingly. As with other specialist nurse roles within kidney care there are no specific tools available to calculate care requirements or optimum nursing levels in the out-patient environment. A workforce calculator, similar to the LDC tool, would be helpful to support future developments. However patient self-reported outcomes measures (PREM, PROM) and Getting It Right First Time (GIRFT) may be helpful to influence future workforce development.

Looking ahead

The current strategies for organ donation and transplantation ended in March 2020 and a new UK strategy has been launched, combining both deceased and living donor transplantation and aiming to close the gap between supply of organs available for transplant and the demand for transplantation. Sustainability is at the heart of the next strategy; new ways of working and objective measures of workforce requirements, which accurately reflect centre differences in case-mix, size and complexity of programmes, are needed to underpin service delivery.

Table 2 (at the end of this section, on page 15) shows a suggested workforce and career framework using the non-medical clinical career framework produced by Skills for Health to describe levels of competence and provide a consistent language for each role.⁹

Safer care and patient acuity tools

Nursing workload and the ability to provide good care is influenced by many variables including patient acuity and dependency and other issues including quality indicators and professional judgement (Figure 1) as identified in the Nursing Staffing Levels (Wales) Act (2016).¹⁰

FIGURE 1. ACUITY AND DEPENDENCY



It is recognised that the acuity level of patients in both inpatient and outpatient areas has increased in recent years, and most projections suggest this trend will continue. Renal Registry data show an increase in prevalence and age of the dialysis population, which will inevitably have a significant impact on staffing levels both in terms of absolute numbers and skill mix of nursing staff.¹¹ Tools for measuring patient acuity levels in inpatient areas are well developed and validated. The Safer Nursing Care Tool developed by the Shelford Group is recommended for use within NHS inpatient areas and we would recommend the use of that tool in assessing acuity levels in renal ward areas (Table 1). This tool uses a multiplier based on levels of care and care requirements.¹

TABLE 1. SHELFORD SAFER NURSING CARE TOOL.

Levels of Care	Descriptor
<p>Level 0 (Multiplier = 0.99*) Patient requires hospitalisation. Needs met by provision of normal ward cares</p>	<p>Care requirements may include the following:</p> <ul style="list-style-type: none"> • Elective medical or surgical admission • May have underlying medical condition requiring on-going treatment • Patients awaiting discharge • Post-operative/post-procedure care - observations recorded half hourly initially then 4-hourly • Regular observations 2-4 hourly • Early Warning Score is within normal threshold • Electrocardiogram (ECG) monitoring • Fluid management • Oxygen therapy less than 35% • Patient-controlled analgesia • Nerve block • Single chest drain • Confused patients not at risk • Patients requiring assistance with some activities of daily living, require the assistance of one person to mobilise, or experiences occasional incontinence
<p>Level 1a (Multiplier = 1.39*) Acutely ill patients requiring intervention or those who are UNSTABLE with a GREATER POTENTIAL to deteriorate.</p>	<p>Care requirements may include the following:</p> <ul style="list-style-type: none"> • Increased level of observations and therapeutic interventions • Early Warning Score - trigger point reached and requiring escalation • Post-operative care following complex surgery • Emergency admissions requiring immediate therapeutic intervention • Instability requiring continual observation/invasive monitoring • Oxygen therapy greater than 35% +/- chest physiotherapy 2-6 hourly • Arterial blood gas analysis – intermittent • Post 24 hours following insertion of tracheostomy, central lines, epidural or multiple chest or extra ventricular drains • Severe infection or sepsis
<p>Level 1b (Multiplier = 1.72*) Patients who are in a STABLE condition but are dependent on nursing care to meet most or all of the activities of daily living</p>	<p>Care requirements may include the following:</p> <ul style="list-style-type: none"> • Complex wound management requiring more than one nurse or takes more than one hour to complete • Vacuum assisted closure (VAC) therapy where ward-based nurses undertake the treatment • Patients with spinal instability/spinal cord injury • Mobility or repositioning difficulties requiring the assistance of two people • Complex intravenous drug regimens (including those requiring prolonged preparatory/administration/post-administration care) • Patient and/or carers requiring enhanced psychological support due to poor disease prognosis or clinical outcome • Patients on End of Life Care Pathway • Confused patients who are at risk or requiring constant supervision • Requires assistance with most or all activities of daily living • Potential for self-harm and requires constant observation • Facilitating a complex discharge where this is the responsibility of the ward-based nurse
<p>Level 2 (Multiplier = 1.97*) May be managed within clearly identified, designated beds, resources with the required expertise and staffing level OR may require transfer to a dedicated Level 2 facility/unit</p>	<p>Care requirements may include the following:</p> <ul style="list-style-type: none"> • Deteriorating/compromised single organ system • Post-operative optimisation (pre-op invasive monitoring)/extended post-op care • Patients requiring non-invasive ventilation/respiratory support; continuous positive airway pressure (CPAP)/Bilevel Positive Airway Pressure (BiPAP) in acute respiratory failure • First 24 hours following tracheostomy insertion <p>Requires a range of therapeutic interventions including:</p> <ul style="list-style-type: none"> • Greater than 50% oxygen continuously • Continuous cardiac monitoring and invasive pressure monitoring • Drug infusions requiring more intensive monitoring e.g. vasoactive drugs (amiodarone, inotropes, Glyceryl trinitrate [GTN]) or potassium, magnesium • Pain management intrathecal analgesia • Central nervous system (CNS) depression of airway and protective reflexes • Invasive neurological monitoring
<p>Level 3 (Multiplier = 5.96*) Patients needing advanced respiratory support and/or therapeutic support of multiple organs</p>	<p>Care requirements may include the following:</p> <ul style="list-style-type: none"> • Monitoring and supportive therapy for compromised/collapse of two or more organs/ systems • Respiratory or central nervous system (CNS) depression/compromise requires mechanical/invasive ventilation • Invasive monitoring, vasoactive drugs, treatment of hypovolaemia/sepsis or neuro-protection

The safer care model uses a multiplier allied to acuity and dependency measurements to calculate numbers of whole time equivalent for inpatient care as seen in Figure 2.

FIGURE 2. NUMBERS OF WHOLE TIME EQUIVALENT FOR INPATIENT CARE CALCULATED USING THE SAFER CARE MODEL

Level 0	0.99* WTE nurse per bed
Level 1a	1.39* WTE nurse per bed
Level 1b	1.72* WTE nurse per bed
Level 2	1.97* WTE nurse per bed
Level 3	5.96* WTE nurse per bed
* this includes a 22% uplift for annual leave, study leave etc.	
For example, if a 28-bedded ward has 12 patients at Level 0, 7 patients at Level 1a, 8 patients at Level 1b, and 1 patient at Level 2, a total of 37.34 WTE nursing staff would be required.	
Sum	
12 patients at Level 0	= 0.99 x 12 = 11.88
7 patients at Level 1a	= 1.39 x 7 = 9.73
8 patients at Level 1b	= 1.72 x 8 = 13.76
1 patient at Level 2	= 1.97 x 1 = 1.97
Total	= 37.34 WTE

This number is a baseline against which to set nurse staffing levels. Two 28-bedded wards may have different activity. One may have few admissions, discharges or ward attenders, whereas another may have many. Professional judgement is required to ensure that establishments are adjusted appropriately under these circumstances.

Nurse Sensitive Indicators¹² can also be used to ascertain the impact of acuity, dependency and activity on quality outcomes. These are quality indicators that can be linked to nurse staffing issues, including leadership, establishment levels, skill-mix and training and development of staff. Such information can be used to further support ward staffing requirements identified through acuity and dependency measurement.

Data collected by the Renal Registry and Kidney Care UK patient reported outcome measures (PROMS) and patient reported experience measures (PREMS) surveys and the GIRFT peer reviews highlight areas of exemplar practices and areas requiring improvement.¹³ These resources can be powerful in influencing future workforce development.

The National Institute for Health and Care Excellence (NICE) also have safe staffing guidelines for adult inpatient wards in acute hospitals which can reasonably be applied in renal inpatient areas.¹⁴

Finally, the NHS in Wales have mandatory safe staffing levels under the auspice of the Nurse Staffing Levels (Wales) Act 2016 which should be applied to all areas in Wales but may also provide guidance in other areas of the United Kingdom and it is possible that similar legislation may be passed for the NHS in England and/or Northern Ireland.¹⁵

Acuity tools for haemodialysis areas are less well developed, and the inpatient tools available do not tend to suit these areas very well. We believe that work still needs doing to test and validate tools for use in dialysis areas, although a Renal Dialysis Patient Dependency Classification Instrument (RDPDC) has been introduced and validated in the Republic of Ireland which does provide a useful tool for assessment of patient acuity levels in haemodialysis areas (Appendix I).¹⁶ Appendix II gives an example of how the Shelford acuity tool has been adapted for haemodialysis (Courtesy of Kent Kidney Care Centre).

Skill mix decisions rely on consideration of the levels of experience and competency of nursing staff within areas and this should be supported by renal-specific nurse education and professional development programmes including the use of nursing competencies, such as those developed by Skills for Health.⁹

Haemodialysis nursing requires the skills and competencies to manage both the technical aspect of the haemodialysis process and the holistic care of patients receiving this form of renal replacement therapy. The majority of patients wish to dialyse close to their homes often in satellite dialysis, such that the staffing levels and skill mix should reflect the patient case mix and the changing workforce. The staffing ratios and skill mix should be assessed locally in relation to both case mix and patient dependency/acuity and recruitment and retention in line with the national agenda for workforce planning and development.

Peritoneal dialysis (PD) nursing also requires the skills and competencies to manage both the technical aspect of the peritoneal dialysis process and the holistic care of patients receiving this form of renal replacement therapy. The National PD Forum have identified many ways of working for PD nurses from providing a standalone PD service, to those combined with Home therapies, or pre-dialysis. The way in which the services are designed will impact on the skills competencies and levels of practice within the workforce. Currently there are no specific acuity tools available that have been validated for use in this area.

2.2 PAEDIATRICS

There are 13 paediatric nephrology centres in the UK of which 10 provide renal transplantation. The model of service delivery provided by each centre varies across the country due to the geographical area cover, the number of hospitals from which the tertiary centre receives referrals and the populations served. Many children live long distances from their tertiary renal centre and, where appropriate, care is delivered by local services.¹⁷

Paediatric renal nursing is becoming increasingly complex due to parental expectations and the increased numbers of patients with co-morbidities opting for renal replacement therapies extending from neonates to adolescents and young people. There are now more renal units in the UK that have the resources and medical expertise to offer this choice. There is also the added dimension of growth and development and supporting the family and extended family which adds another layer of complexity in healthcare delivery. The Royal College of Nursing attempted to define staffing levels for children and young people's services in specialist children's wards and departments, however there was no direct reference to how this could be interpreted in an inpatient renal unit, or for haemodialysis and specialist paediatric renal nursing roles.¹⁸ Many tertiary centres will cohabit their ward with other specialties creating challenges when trying to decipher staffing levels and skill mix. Appendix II gives an example of an adapted Safer Nursing Care Tool¹ for Paediatric Haemodialysis. Figure 3 an example of inpatient staffing levels and Figure 4 specialist nurse caseload.

There are varying configurations of children's in-patient renal services and therefore some units are required to offer an on-call renal nursing service to offer dialysis or specialist advice outside of working hours. Staffing levels will be dependent on the on-call time period covered by the renal nursing team in each unit.

FIGURE 3. NURSE STAFFING REQUIREMENTS FOR CHILDREN'S INPATIENT RENAL SERVICES

Treatment	Staff Ratio
General paediatric nephrology beds	1:3 to 1:4
High dependency nephrology beds	1:1 to 1:2
Immediate post-operative care of transplants	1:1 (for 48 hours for > 5 year olds; for 72 hours for < 5 year olds)

FIGURE 4. CASELOAD MANAGEMENT FOR SPECIALIST PAEDIATRIC RENAL NURSES

Patient Group	Caseload Ratios
Home peritoneal dialysis	1:10
Home Haemodialysis	1:10
Pre-transplant	1:50
Transplantation	1:100
Nephrotic Nurse	1:300

Advanced practice

The increasing number of children with End-Stage Kidney Disease has led to an ideal environment for the advanced practice roles to help meet the capacity, demand and complex needs of patients. Advanced practice roles encompass aspects of education, research and management but are grounded in direct care provision.¹⁹ These advanced roles can help paediatric renal centres to bridge the gap between nursing and medical care, ultimately improving patient experience and care.

Education and training

Education and the maintenance of competence in paediatric renal nursing is imperative for safe and sustainable care. Consequently, a practice educator is required to ensure nursing staff working in specialist areas undertake continuing education to maintain high standards.¹⁸ Paediatric nephrology wards and dialysis units should ideally be managed on a day-to-day basis by a registered children's nurse with a university-accredited specialist paediatric renal nursing course.

Transition

Increasing numbers of children with chronic kidney disease are now surviving into adult life. It is recognised that there are substantial risks of non-adherence at the time of transfer from paediatric to adult care and amongst young people.²⁰ The Care Quality Commission highlighted the need for a key accountable individual responsible for supporting their move to adult health services.²¹ A dedicated paediatric renal transition nurse may be of benefit for larger renal centres.

Specialist paediatric renal nurses

Specialist paediatric renal nursing care varies from completely nurse-led to collaborative MPT-style and workforce requirements must be adjusted accordingly. In some units, the specialist nurse will manage a caseload of a combination of dialysis modalities, i.e. PD, HD and HHD. There are no specific tools available to calculate care requirements or optimum nursing levels in the outpatient environment. Again, patient self-reported outcomes measures (PREM, PROM) and GIRFT may be helpful to influence future workforce development.

TABLE 2. SKILLS FOR HEALTH CAREER FRAMEWORK FOR ADULT AND PAEDIATRIC NURSING

Level	Explanation	Career Level	Descriptor	Examples in practice
8	<ul style="list-style-type: none"> Require highly specialised knowledge, some of which is at the forefront of knowledge in a field of work Leaders with considerable responsibility, and the ability to research and analyse complex processes Have responsibility for service improvement or development May have considerable clinical and/or management responsibilities, be accountable for service delivery or have a leading education or commissioning role 	<ul style="list-style-type: none"> Consultant practitioner Independent practitioner MSc/PhD - Service development, lead educator and clinical supervisor 	<p>Job plan structured around 4 domains:</p> <ul style="list-style-type: none"> Expert practice (as below for advanced clinical practitioner) Professional leadership and consultancy Education, training and development Practice and service development, research and evaluation <p>Works independently within Trust/organisation and professional guidelines Accountable for own practice and patient care</p>	<ul style="list-style-type: none"> Chronic kidney disease Inpatient/day care Transplantation Ward care – inpatient/day care Peritoneal dialysis In centre haemodialysis (acute or chronic, satellite) Combined home therapies Research
7	<ul style="list-style-type: none"> Have a critical awareness of knowledge issues in the field and at the interface between different fields They are innovative and have a responsibility for developing and changing practice and/or services in a complex and unpredictable environment 	<ul style="list-style-type: none"> Advanced clinical practitioner Independent practitioner MSc - continually learning and facilitating learning for others 	<ul style="list-style-type: none"> Advanced patient assessment Independently prescribing treatments and medicines Patient pathway planning and implementation Refer and discharge patients Works independently within trust and professional guidelines Accountable for own practice and patient care 	<ul style="list-style-type: none"> Chronic kidney disease Advanced kidney care Transplantation Inpatient/day care Peritoneal dialysis Combined home therapies In centre haemodialysis (acute or chronic, satellite) Community CKD link/education Research
6	<ul style="list-style-type: none"> Require a critical understanding of detailed theoretical and practical knowledge Specialists and/or have management and leadership responsibilities Demonstrate initiative and are creative in finding solutions to problems Some responsibility for team performance and service development and they consistently undertake self-development 	<ul style="list-style-type: none"> Specialist/senior practitioner Works within a defined scope of practice Specialist/post graduate studies 	<ul style="list-style-type: none"> Specialist knowledge and skills in defined area May prescribe medicines Required to make judgments based on theoretical and practical knowledge Accountable for own practice and patient care 	<ul style="list-style-type: none"> Chronic kidney disease Advanced kidney care Transplantation Peritoneal dialysis Home haemodialysis management and training Dialysis access Anaemia management Bone management Research
5	<ul style="list-style-type: none"> Have a comprehensive, specialised, factual and theoretical knowledge within a field of work and an awareness of the boundaries of that knowledge Can use knowledge to solve problems creatively, make judgments which require analysis and interpretation, and actively contribute to service and self-development. May have responsibility for supervision of staff or training 	<ul style="list-style-type: none"> Practitioner/registered practitioner Degree studies 	<ul style="list-style-type: none"> Professional registration and continuous professional development (CPD) Comprehensive specialised, factual and theoretical knowledge Required to make judgments and recognise own boundaries of knowledge Accountable for own practice and patient care 	<ul style="list-style-type: none"> Chronic kidney disease Advanced kidney care Transplantation Peritoneal dialysis Home haemodialysis Inpatient ward Day care Outpatient areas
4	<ul style="list-style-type: none"> Require factual and theoretical knowledge in broad contexts within a field of work. Work is guided by standard operating procedures, protocols or systems of work, but the worker makes judgements, plans activities, contributes to service development and demonstrates self-development May have responsibility for supervision of some staff 	<ul style="list-style-type: none"> Associate Guidance and supervision available when needed Foundation degree studies 	<p>Associate practitioner:</p> <ul style="list-style-type: none"> Knowledge of facts, processes, principles and concepts within specified field of work Knowledge of facts, processes, principles and general concepts within nursing Carries out clinical/technical work to established protocols and procedures Responsible for personal development Accountable to registered practitioner in area of work 	<ul style="list-style-type: none"> Ward care – inpatient/day care Outpatient care Peritoneal dialysis Home therapies Haemodialysis (with additional training and assessment in intravenous administration of drugs)
3	<ul style="list-style-type: none"> Require knowledge of facts, principles, processes and general concepts in a field of work May carry out a wider range of duties than the person working at level 2, and will have more responsibility, with guidance and supervision available when needed Contribute to service development and are responsible for self-development 	<ul style="list-style-type: none"> Support worker Directly supervised A Level/NVQ/apprenticeship 	<ul style="list-style-type: none"> Responsible for personal development Works to established protocols and procedures Accountable to registered practitioner in area of work 	<ul style="list-style-type: none"> Ward care – inpatient/day care Outpatient care Peritoneal dialysis Haemodialysis

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APPENDIX I - IRISH HEALTH SERVICE EXECUTIVE RENAL DIALYSIS PATIENT DEPENDENCY CLASSIFICATION INSTRUMENT



1. Age	Score
18-64	1
65-74	2
75 +	3

2. Co-morbidity	Score
Intervention not required	0
Intervention required -1	3
Intervention required -2	6
Intervention required -3	9
Intervention required -4	12

3. Physical	Score
Nutrition	
Self Care	1
Requires minimal assistance at mealtime	2
Requires significant assistance at mealtime	3
Mobilisation	
Requires no assistance	0
Requires assistance at intervals	2
Requires assistance with walking	3
Depends on carers for mobilisation	4
Waterlow	
Not at risk	0
10+ at risk	1
15+ high risk	2
20+ very high risk	3
Wound care	
No wound	0
Simple wound	2
Vascular access site requiring intervention (infected)	3
Complex wound	4
Vital signs - requirement for intervention	
Hourly assessment & recording	1
30 minute interval assessment and recording	2
15 minute interval assessment and recording	3
15 minute or more frequent interval assessment, recording requiring interventions	4
Contenance	
Continent	0
Urinary incontinence	1
Faecal incontinence (including ileostomy/colostomy requiring care)	2
Total	

Hospital details

Patient details

Nurse Assessor: _____
Date: _____

4. Psycho-social	Score
Orientation	
Orientated	0
Occasional forgetfulness / requires re-orientation	1
Disorientated to time and place. Requires re-orientation regularly	3
Confused / disorientated requiring constant supervision	6
Behaviour	
Relaxed, no behavioural problems/challenges	0
Restless / irritable at times	2
Challenging - Verbal or physical	3
Un-predictable challenging, requiring intervention	4
Communication	
No communication challenges (verbal & non-verbal)	0
Some difficulty understanding what is said	1
Often unresponsive to verbal commands, interaction and suggestions	2
Lack of comprehension / understanding	3
Language	
Fluent in English	0
Difficulty with English	1
Social support	
Good social support	0
Poor support	4
Total	

Sections	Score
1. Age	
2. Co-morbidity	
3. Physical	
4. Psycho-social	
5. Dialysis	
Total score	

Additional category	Language
Requires interpreter	High Care - 3
Patient dependency category	
Standard care	0-12
Intermediate care	13-18
High care	19+

5. Dialysis	Score
Access	
Good functioning CVC, includes standard access site dressing	1
Poor functioning CVC < 300ml/min	2
Good functioning AVF/AVG	2
Poor functioning AVF/AVG < 350 mls/min	3
Poor functioning AVF/AVG < 350 mls/min multiple interventions	6
Poor functioning CVC multiple interventions	6
Stability on dialysis	
Stable on dialysis	0
Decrease in B/P. Min intervention. Full recovery	1
Decrease in B/P + muscle cramps. Min intervention. Full recovery	2
Recurring episodes of decrease BP +/- Some recovery. Monitoring required	4
Decrease BP +/- no recovery. Requiring treatment stop. Monitoring + investigation	5
Renal Diet Adherence	
No referrals to dietetics for dietary non-compliance	0
Occasional referral to dietetics	4
Fluid restriction adherence	
Intradialytic fluid gain typically < 1.5 litres	0
Intradialytic fluid gain typically 1.5-2 litres	1
Intradialytic fluid gain typically 2-2.5 litres	2
Intradialytic fluid gain typically 2.5-3.5 litres	2
Intradialytic fluid gain typically > 3.5 litres	5
Medication regime adherence	
Awareness and demonstrates adherence and/or knowledge of routine medications	1
May need occasional educational input to improve knowledge and/or adherence	2
On regular basis demonstrates a lack of knowledge and/or adherence (at each routine check)	3
On going issues with knowledge deficits and/or adherence with routine medications	4
Total	

APPENDIX II - EXAMPLE OF ADAPTED SAFER NURSING CARE TOOL FOR ADULT HAEMODIALYSIS

Levels of care	Inclusion criteria	Care required	Staffing ratio
<p>Level 0 Patients whose needs can be met through normal haemodialysis care</p>	<ul style="list-style-type: none"> Chronic, stable HD patient May have other co-morbidity: diabetes, COPD, hypertension, stable ischaemic heart disease, focal deficit/Neuromuscular disease, chronic pain Pre-operative patient requiring haemodialysis No HD access problems On-going assessment of dry weight Self-care patients Patients requiring 1 person assistance with some ADL or experiences occasional incontinence DNA patient requiring follow-up appointments 	<ul style="list-style-type: none"> Routine HD assessment & observations incl. fluid assessment, blood sugar monitoring Monthly bloods Intravenous iron administration Erythropoietin administration Health advice and promotion of self-care Routine antibiotic treatment (incl. level monitoring) INR screening for Warfarin prescription Routine referral to MPT Rearrangements of haemodialysis appointment, hospital transport etc. 	<p>1:4</p>
<p>Level 1 Patients – appropriately managed on a dialysis unit but requires or more than baseline resources</p>	<p>Level 1A Increased acuity patients have become acutely ill requiring intervention Those who are unstable with a greater potential to deteriorate</p> <ul style="list-style-type: none"> Acute exacerbation of existing medical condition and/or deteriorating while on dialysis At risk of frequent hypotensive episodes Post-operative/invasive investigation incl. post parathyroidectomy At risk of bleeding Requires blood transfusions Symptomatic fluid overload requiring regular monitoring Sepsis Unstable patient being dialysed in isolation 	<ul style="list-style-type: none"> ½ hourly observation Frequent blood testing and monitoring Blood transfusion Sepsis, on vancomycin and/or gentamicin Oxygen therapy requiring oxygen saturation monitoring Sliding scale of insulin Monitoring actual clotting times Requiring urgent consultation from medical team and/or arranging transport 	<p>1:3</p>
<p>Level 1B Increased dependence – Patients who are in a stable condition but have an increased dependence on nursing support</p>	<ul style="list-style-type: none"> HD access problems requiring intervention: on-going needle repositioning (AVF/AVG); poor line flows Clotting blood circuits during HD First dialysis and assessment Patient with prolonged bleeding time from AVF/AVG requiring intervention Reduced mobility – requires 2 staff assistance with ADL or repositioning Patient known to be violent and aggressive Confused patient Patients requiring mental health intervention Isolated patient 	<ul style="list-style-type: none"> Frequent nursing intervention due to access problems Frequent intervention to resolve clotted blood circuits Thrombolytic lock post HD Intervention required for prolonged bleeding time e.g. Applying extended pressure to access ≥ 15 minutes Two person assistance with ADL due to reduced mobility Intervention required for psychological or psychiatric problems Isolation procedure Complicated referrals to MPT 	<p>1:3</p>
<p>Level 2 Patients who are unstable and at risk or deteriorating with uncorrected major physiological abnormalities whose needs cannot be met through normal haemodialysis care</p>	<ul style="list-style-type: none"> New acute dialysis patient ≤ 10 days on dialysis Patients with acute kidney injury Patients requires plasma exchange/filtration Patients requires ‘on call’ dialysis 	<ul style="list-style-type: none"> Haemodynamic instability Continual observation ¼ to ½ hourly observations Requiring vasoactive drug infusion Requiring non-invasive ventilation/respiratory support – CPAP/BiPAP in acute respiratory failure Care of chest tube, tracheostomy, epidural or PCA Continuous cardiac monitoring and invasive pressure monitoring 	<p>1:2</p>
<p>Level 3 Patients needing advanced respiratory support and/or therapeutic support of multiple organs</p>	<ul style="list-style-type: none"> Patients requiring dialysis in ITU Patients transferred from ITU with unstable cardiac condition, who are haemorrhaging or respiratory instability Patients requiring dialysis in an ITU environment/requiring ventilation 	<ul style="list-style-type: none"> Respiratory or CNS depression/compromise requires mechanical/ invasive ventilation Invasive monitoring 	<p>1:1</p>

ADL, activities of daily living; AVF, arteriovenous fistula; AVG, arteriovenous graft; BiPAP, bilevel positive airway pressure; CNS, central nervous system; COPD, chronic obstructive pulmonary disease; CPAP, continuous positive airway pressure; DNA, did not attend; HD, haemodialysis; INR, international normalised ratio; ITU, intensive therapy unit; MPT, multi-professional team; PCA, patient controlled analgesia.

APPENDIX III - EXAMPLE OF ADAPTED SAFER NURSING CARE TOOL FOR PAEDIATRIC HAEMODIALYSIS

Levels of care	Inclusion criteria	Care required	Staffing ratio
Level 1 Patients whose needs can be met through basic haemodialysis care	<ul style="list-style-type: none"> Chronic, stable HD patient No HD access problems Pre-operative patient requiring HD Ongoing assessment of dry weight Competent self-care patients Over 5 years of age 	<ul style="list-style-type: none"> Routine HD assessment & observations including fluid assessment Hourly observations Monthly bloods Intravenous iron administration Erythropoietin administration Routine chronic renal failure medication administration INR screening for Warfarin prescription Health advice and promotion of self-care Routine referral to MPT Rearrangements of HD appointment, hospital transport etc. 	1:3
Level 2 Patients appropriately managed on a dialysis unit but requires more than baseline resources	<ul style="list-style-type: none"> First dialysis session and assessment Under 5 years of age with a carer At risk of frequent hypotensive episodes Post-operative At risk of bleeding Requires blood transfusions Unstable patient being dialysed in isolation Challenging ultrafiltration Challenging behaviour Needle phobias with AVF cannulation Tracheostomy and/or chronic ventilation cared for by additional carer/parent Complex medical conditions e.g. MMA HD access problems requiring intervention Patient with bleeding over needle sites and/or prolonged bleeding time requiring intervention 	<ul style="list-style-type: none"> Half hourly observation Frequent blood testing and monitoring Blood transfusion Albumin infusions/primes IV antibiotic treatment (incl. level monitoring) Frequent nursing intervention with dialysis vascular access Frequent referral to psychosocial team and/or escalation using acceptable behaviour policy Intervention required for bleeding around needle sites during the HD session and/or prolonged bleeding time at needle removal from AVF e.g. Applying extended pressure to access ≥ 20 minutes 	1:2
Level 3 Increased dependence - patients who are acutely unwell or have a greater potential to deteriorate on a HD unit	<ul style="list-style-type: none"> Acutely unwell e.g. sepsis; pulmonary oedema, hypertension, AKI Acute behavioural issues, aggression, confusion Under 6kg Tracheostomy and/or chronic ventilation cared for by nursing staff Extracorporeal therapies i.e. LDL apheresis, IA, DFPP 	<ul style="list-style-type: none"> Intervention required for psychological or psychiatric problems Continuous cardiac monitoring Single needle dialysis due to patient weight Blood circuit prime Albumin infusions Frequent/urgent medical reviews in a deteriorating child – e.g. sepsis Frequent fluid assessment due to UF discrepancy on machine in low weight children 	1:1 * * In patients who are unstable it may be necessary to provide additional nursing support at ratio of 2:1 Most haemodialysis units are not staffed to manage unstable patients and may need staffing support
Level 4 Patients in intensive care who require RRT	<ul style="list-style-type: none"> AKI due to multi-organ failure or other medical complication** Known renal patient on PICU 	<ul style="list-style-type: none"> CRRT from intensive care team due to instability of patient Some renal teams will provide dialysis and apheresis to PICU environments Renal team may choose to provide dialysis in children with AVF's to preserve vascular access 	2:1 **many patients requiring CRRT on PICU are not referred to renal team due to transient nature of condition

AKI, acute kidney injury; AV, arteriovenous fistula; CRRT, continuous renal replacement therapy; DFPP, Double Filtration Plasmapheresis; HD, haemodialysis; IA, intra-arterial; INR, international normalised ratio; LDL, low density lipoprotein; MPT, multi-professional team; MMA, Methylmalonic Acidemia; PICU, paediatric intensive care; UF, ultrafiltration.

3



PHARMACY: ADULT AND PAEDIATRIC SERVICES

3.1 ADULT SERVICES

The fundamental objective of adult renal pharmacy services is to provide effective pharmaceutical care (direct and indirect), to promote and deliver medicine optimisation, supporting people with CKD to get the best healthcare outcomes from their medicines. The pharmacist is an integral member of the renal multi-professional team, who provides support to renal services in addition to direct pharmaceutical patient care by:

- Writing, reviewing and implementing medicines-related clinical guidelines;
- Overseeing medicine expenditure analysis including management of high cost medicines, compliance with regulatory authorities, medicines evaluation and horizon scanning;
- Providing patient/staff education and training;
- Undertaking audit and clinical/practice research.

Experienced renal pharmacists also contribute to and influence national medicines policies.

Chronic kidney disease and medicine optimisation

People with CKD are prescribed on average ten to twelve regular medications per day.¹ Drug dosing is frequently complex due to renal impairment. Polypharmacy is commonplace for patients with CKD. It is well documented that around 1 in 20 admissions to hospital are related to adverse drug reactions.² Frequent medication changes, from different healthcare providers, also pose a risk of drug related morbidity. One medication related problem is reported to be identified within this population for every 6.5 medications prescribed. It is reported that in CKD, 20% of hospital admissions are directly related to medication related problems and 5% of these hospital admissions are avoidable.³ Dialysis patients see multiple prescribers which further increases the risk of errors in records.³ Hospitalisation rates amongst haemodialysis patients in the United States are reported at 1.7 admissions per patient year, double that of transplant patients (0.8 admissions per patient year).⁴ Improving the medicines reconciliation process decreased the length of hospital admission for renal transplant patients, therefore regular pharmacist medication review and medicine optimisation is essential for these 'at risk' patients.⁵

Clinical pharmacists have an essential and enhanced role in management of renal patients and can identify potential or actual medication problems.⁶ Individualised medication regimens require frequent monitoring and evaluation to ensure optimal pharmacotherapy, adherence to medication together with control of co-morbidities and other risk factors to produce specific health outcomes.⁷ Medicines reconciliation, medicine review and optimisation should be undertaken throughout the renal patient pathway, especially during admission and discharge from hospital/transfer to another care setting; at each outpatient clinic visit; when a new medicine is commenced or there is a change in kidney function.^{5,8}

As many medicines are renally excreted and/or potentially nephrotoxic, renal pharmacists have a key role to review and optimise medication regimens.⁵ Therapeutic aims and recommendations include:

- Adjusting medicine/dose/dosage frequency in relation to kidney function to maximise therapeutic effect and minimise adverse effect;
- Change, initiate or discontinue medicines as appropriate;
- Additional monitoring e.g. drug levels or blood tests, especially when rapidly changing kidney function;
- Improve patients' knowledge and understanding of their medicines;
- Identify/manage medicine-associated side effects/allergies/contraindications;
- Identify and avoid potential interactions with other medicines, especially immunosuppressants, when initiating any new medicine;
- Detect potential medication errors;
- De-prescribe and reduce pill burden;
- Improve disease-orientated and person-centred outcomes by optimising medicines;
- Prevent disease progression by optimising medicines;
- Aid management of co-morbid conditions;
- Referral to a nephrologist when necessary.

Medication adherence

It is estimated 30-50% of medicines prescribed for long-term conditions are not taken as intended.⁹ Complex medicine regimens and pill burden are barriers to adherence. Adherence is well recognised as a significant modifiable factor that can affect treatment outcome and quality of life in chronic disease management.⁷ No single intervention has proven decisive in improving adherence and clinicians should consider a variety of options to improve adherence with prescribed medicines. Regular structured patient review with a renal pharmacist can support adherence, improve patient medication knowledge, and optimise medication regimens to align with patients' wishes and lifestyle.⁷

Pharmacy homecare provision

As most renal units are involved with supply of medicines via pharmacy homecare teams (e.g. immunosuppressants, Eculizumab and erythropoietin-stimulating agents) the renal pharmacist often prescribes and arranges homecare medication. Pharmacy homecare staffing (processing/invoicing prescriptions) is usually separate from clinical renal pharmacy services and has not been included in this review. Further information on homecare staffing is detailed by the National Homecare Medicines Committee.¹⁰

Hospital pharmacy standards

Renal pharmacy services observe the Royal Pharmaceutical Society (RPS) Hospital Pharmacy Standards¹¹ to deliver person-centred care, medicines optimisation, with regular reviews to ensure safe, appropriate and cost-efficient prescribing. Robust medicines reconciliation processes are also key to prevent medication error at the time of hospital in-patient admission, and on transfer between care settings. Clinical pharmacy services should be available seven days a week, as per NHS England guidance.¹² However, as a minimum renal pharmacy services should be provided five days a week (Monday-Friday), with on-call pharmacy support outside of these hours.

Advanced level practice and the renal pharmacy team

Advanced level pharmacists may be independently assessed by the RPS Faculty across six domains of pharmacy practice using the RPS Advanced Pharmacy Framework.¹³ Three levels are awarded to recognise the stage of advanced practice: Advanced Stage I, Advanced Stage II and Fellow (Mastery).¹⁴

A senior pharmacist with specialist renal training who is competent at Advanced Stage II would be responsible for the provision and delivery of pharmaceutical care of people with kidney disease due to their complex needs and requirements. Advanced Stage I pharmacists should have access (locally or via network) to at least Advanced Stage II renal pharmacists for advice and referral. Where there is a renal pharmacy team, there should be a structured range of expertise, from trainee to Fellow level and appropriate skill mix to optimise service delivery. Accredited pharmacy technicians are also integral members of many renal pharmacy teams and have numerous and varied supporting roles (see Table 1). They may also have specific involvement to assist with management of homecare services.

The components of renal pharmacy services have been described in Table 1, and professional competencies assigned using this nomenclature in line with the RPS specialist Renal Expert Professional Practice Curriculum.¹⁵ Examples of enhanced/advanced models of renal pharmacy practice are included separately in Table 2.

TABLE 1. COMPONENTS OF THE RENAL PHARMACY SERVICE, INCLUDING PROFESSIONAL COMPETENCIES.

Activity (direct and indirect pharmaceutical patient care)	Technician support	Pharmacist support & experience required to complete work		
		Advanced Stage I	Advanced Stage II	Fellow
Patient medicines optimisation clinics/specialist clinics/prescribing			●	●
Homecare governance – assurance, technical/invoice reconciliation	●	●		
Patient telephone consult service			●	●
Consultant/MPT medicine enquiries		●	●	●
GP/primary care pharmacist enquiries			●	●
Support writing evidence based clinical guidelines and attendance/presentation at unit clinical guideline meetings			●	●
Writing/reviewing Essential Shared Agreements for wider health economy e.g. Mycophenolate			●	●
Support with implementing medicine guidelines (National & local)		●	●	●
Implementation and compliance with national patient safety alerts e.g. alfacalcidol, mycophenolate			●	●
Management (procurement, prescribing and funding +/- blueteq) of high cost medicines e.g. etelcalcetide, eculizumab			●	●
Management (reporting) of out-of-tariff medicines	●	●	●	●
Support with completion of individual funding requests for individual medicines			●	●
Inpatient support, including medicines reconciliation, use of patients' own medicines, self-medication training	●	●	●	●
Anti-microbial stewardship (in-patient & out-patient)		●	●	●
Review of medicine-related patient safety incidents, implement change as needed			●	●
Unit governance meetings – prepare/present pharmacy report, implement change as needed			●	●
Procurement of unlicensed drugs e.g. levamisole		●	●	●
Education and training: Undergraduate/postgraduate – medical, nursing, pharmacy			●	●
Research, audit and service development	●	●	●	●
Horizon scanning			●	●

Renal Pharmacy Service provision detailed in Table 1 includes five principle areas of kidney care:

- Chronic Kidney Disease;
- Acute Kidney Injury;
- Haemodialysis and home therapies;
- Transplantation;
- Young peoples' and transition services.

Conservative management, whilst not specifically reviewed, would include the same core service components.

Many renal pharmacists are non-medical prescribers and use this advanced role in their daily clinical practice. They work as independent practitioners, often in outpatient clinics, providing pharmaceutical care to patients with complex medicine management and clinical needs, including:

- Hypertension;
- Vasculitis;
- Autosomal Dominant Polycystic Kidney Disease;
- Anaemia;
- Transplantation.

Some examples of extended/advanced renal pharmacy practice roles are included in Table 2.

TABLE 2. EXAMPLES OF ENHANCED RENAL PHARMACY PRACTICE ACROSS UK.

Enhanced renal pharmacy practice	Advanced level pharmacist activity
General nephrology: Autosomal Dominant Polycystic Kidney Disease management: Tolvaptan management	Undertake joint multi-professional clinics (including prescribing) or independent clinics to support the management of these patients, who require frequent monitoring and review.
Transplant: Individualised immunosuppression dose finding/tolerability trial for transplant assessment	Pharmacist-led, individualised trials are an essential component of transplant workup, with the aim of maximising success of transplantation and minimising rejection and adverse effects. Patients include: <ul style="list-style-type: none"> • Specific co-morbid states (e.g. HIV, MELAS) where complex drug-drug, pharmacodynamic drug interactions arise • Previous immunosuppression intolerance, adherence difficulties
Specialist/complex renal disease: Glomerular Disease Clinics	Pharmacists work autonomously and with the wider multi-professional team to: <ul style="list-style-type: none"> • Provide specialist and bespoke drug education to facilitate shared decision making • Initiate and monitor subsequent immunosuppressive therapy, including chemotherapy and monoclonal antibody therapies • Secure funding for individual patient; manage the clinical, governance and financial risks
Renal anaemia	Example: South West Wales has a dedicated regional anaemia service whereby renal pharmacy technical staff co-ordinate all elements of the service, while pharmacists and anaemia nurses provide clinical management, electronically prescribe drug treatments and authorise blood transfusion
Acute Kidney Injury (AKI)	Involvement in AKI teams, including: <ul style="list-style-type: none"> • Review medications and their dosing in general hospitals and renal centres • AKI prevention: setting up initiatives across secondary and primary care. e.g. a prescribing quality scheme which encourages primary care prescribers to give patients sick day guidance and supporting written information developed for patients prescribed ACEi and other medications

Pharmacy service staffing

There is countrywide variation in renal pharmacy service skill mix and staffing levels ranging from a sole renal pharmacist practitioner, possibly part time, to a multi-staffed and multi-skilled renal pharmacy team (incorporating 8-10 WTE staff graded between band 3-8c Agenda for Change [AfC]).¹⁶ In line with recent and updated guidance, some localities have and others may review and identify a need and opportunity to appoint a consultant pharmacist to deliver care and drive change across the healthcare system.¹⁷

The reason for this variation is multifactorial, often based on historical, local funding arrangements, renal unit size, MPT skill mix and direct patient need. Transplanting centres generally are found to have the higher staffing levels.

The UK RPG staffing summary recommendation is derived from three principle sources:

1. Pharmaceutical renal patient care (direct and indirect) – expert opinion;
2. Royal Stoke Pharmacy Workforce Calculator (RSPWC) – evidence based, single unit data;¹⁸
3. Shelford Group, Renal Pharmacy team staffing levels –2018 real-time staffing levels.¹⁹

Service provision for renal, as for other services, should be based upon local patient case-mix whilst considering acuity, dependency and patient complexity. Where electronic prescribing systems (EPR) are in place, pharmacy medicines reviews and prescribing are inherently more time-consuming and this should be borne in mind when reviewing the figures below. The time/activity data in Table 3 does not allow for use of EPR but will be revised in future as EPR becomes more commonplace across the country.

Consideration must also be given to renal pharmacy service continuity during annual leave, sick leave and training leave. Additional resources will be required to provide this cover (20% minimum is recommended).

Pharmaceutical patient care (direct and indirect)

Experienced renal pharmacists (Advanced Stage II or Mastery level) have reviewed and agreed the time required to complete the following essential core pharmaceutical activities (direct patient care) (Table 3). This can be used to support local service development, as mentioned previously, where full electronic prescribing systems are in place, these activities are inherently more time consuming.

TABLE 3. CORE PHARMACEUTICAL CARE (DIRECT PATIENT CARE) PRACTICE FOR RENAL PHARMACY SERVICES.

Essential Core Renal Pharmacist Activity – direct patient care (Technician & Pharmacist)	Time/patient activity (excluding use of full EPR systems)
Nephrology ward <ul style="list-style-type: none"> New inpatient admission pharmacist review, medicines reconciliation and checking patients own drugs (POD) on admission Existing in-patient daily pharmacy review Discharge planning Complex discharges – e.g. patients requiring multi-compartmental compliance aids (dosette boxes), care home referrals, district nurse/other healthcare professional referrals. This is set up time and does not include dispensing 	40 mins/patient 10 mins/patient 20 mins/patient 60 mins/patient
Transplant ward <ul style="list-style-type: none"> New transplant in-patient admission pharmacist review, medicines reconciliation and admission POD checking Existing in-patient daily pharmacy review New transplant discharge planning and health education Discharge planning (for any subsequent admission) 	45 mins/patient 10 mins/patient 60 mins/patient 20 mins/patient
AKI patient review (if not nephrology admission)	15 mins/patient
Day case attenders e.g. IV cyclophosphamide, home IV therapy, medication teaching	30 mins/patient
Haemodialysis (HD) patient out-patient medication review (on HD unit) <ul style="list-style-type: none"> New HD patient review 6monthly HD patient review 	30 mins/patient 20 mins/patient
Specialist clinic work (e.g. Tolvaptan, Medicine Optimisation clinics, Transition) <ul style="list-style-type: none"> New patient Follow up 	30-40 mins/patient 20 mins/patient
Transplant and autoimmune immunosuppression review clinics, including homecare prescribing	10-20 mins/patient
Patients with multi-compartmental compliance aids (set up time, excludes dispensing time)	20-30 mins/patient
MPT reviews e.g. CKD/MBD, anaemia, other	60 mins per week per MPT

Indirect pharmaceutical patient care has not been formally evaluated but is integral to renal pharmacy service provision. There is, again, variation across the country, and experienced renal pharmacists have stated that between 10% and 50% of their time is involved with indirect pharmaceutical patient care. These activities are detailed in Table 1.

For example, using the time/patient activities for direct pharmaceutical patient care practice from Table 3, a 30 bed renal ward (per day: 2 new admissions, 26 in-patient reviews, 2 discharges, of which one complex) would require 1.65WTE pharmacist. This calculation allowed for 70:30 direct versus indirect patient care, 5 day/week service and allowance for continued service during annual/training leave.

Royal Stoke Pharmacy Workforce Calculator (RSPWC)

University Hospitals of North Midlands NHS Trust (UHNM) developed and validated a Pharmacy Workforce Calculator (RSPWC) on a range of medical and surgical wards in 2017.¹⁸

Using the RSPWC, preliminary data from a single centre, renal inpatient 28 bedded ward, demonstrated pharmacy staffing for delivery of pharmaceutical patient care (direct and indirect) to be:

- 1.71 WTE pharmacist (band 8a)
- 1.12 WTE pharmacy technician (band 5)

where average length of stay was 5.1 days, average 18 drug chart items (included regular, as required and injectable medicines) and a 365 day pharmacy service was provided.

The UK RPG is currently collaborating with UHNM to trial and validate this tool in the highly specialised area of renal and transplant. Once data are available UK Renal Pharmacy Group (RPG) renal pharmacy service provision recommendations will be revised.

Shelford Group, renal pharmacy team staffing levels

The Shelford Group is a collaboration between ten of the largest teaching and research NHS hospital trusts in England.¹⁹ Nine out of these ten NHS Trusts have renal units, and eight also have renal transplant units. Renal Pharmacy teams staffing levels from a 2018 data set are included below and support previous data for multi-staffed and multi-skilled renal pharmacy team incorporating 8-10WTE staff.¹⁶

TABLE 4. RENAL PHARMACY TEAM STAFFING LEVELS.¹⁹

Renal pharmacy team WTE staffing	Mean	Median	Range
Pharmacist – Nephrology ward	1.2	1	0.5-2
Pharmacist – Renal transplant ward	1.19	1	0.2-2
Pharmacist – Renal dialysis unit	0.41	0.05	0-1.3
Pharmacist – Outpatient clinics	0.7	0.4	0-2.5
Pharmacy technicians	0.8	1	0-2
No. of pharmacist non-medical prescribers within team	2	2	0-6

Staffing summary

Whilst work is being undertaken to validate the specific requirements for renal pharmacy staffing, based on the data outlined above, the UK RPG expert panel recommendations for minimum staffing complement to provide essential and core adult renal pharmacy service (using average 70:30 direct versus indirect pharmaceutical patient care), as a five day clinical service are presented within Figure 1. The WTE pharmacist range is indicative for renal unit staffing at District General Hospitals and Teaching Hospitals and relates specifically to activities that can only be performed by the pharmacist.¹¹ Enhanced and extended clinical pharmacy practice, examples of which were outlined earlier in this document, will require local business case submission as part of service development and MPT staff skill mix review. It is for this reason that a recommendation for pharmacist staffing in outpatient clinics and homecare medication-related activities has been excluded.

FIGURE 1. UK RPG EXPERT PANEL RECOMMENDATIONS FOR MINIMUM STAFFING FOR ESSENTIAL AND CORE ADULT RENAL PHARMACY SERVICE (DIRECT AND INDIRECT PATIENT CARE)

1-2 WTE pharmacist for nephrology ward
 1-2 WTE pharmacists for transplant ward (transplant centres only)
 0.5-1.5 WTE pharmacists for Renal Dialysis Units
 1-1.5 WTE pharmacy technician

Career pathway, qualifications and competencies

Pharmacist professional registration is revalidated annually by the General Pharmaceutical Council, the regulatory body for pharmacists in England, Scotland and Wales, to ensure professional skills and knowledge are up to date.

Chief pharmacists (or equivalent) have a responsibility to ensure that pharmacists are competent for their role. The RPS Advanced Pharmacy Framework¹³ and specialist renal professional practice curriculum, identifies the key knowledge, skills, experience and behaviours required to be an advanced specialist renal pharmacist.¹⁵ The UK RPG developed this specialist curriculum and recommends and supports its members to become RPS faculty members.

Whilst no specific qualifications are required to become an advanced specialist renal pharmacist (adult or paediatric) the individual should have undergone a recognised credentialing process to verify their competence level of advanced pharmacy practice (see page 21 for further information).

3.2 PAEDIATRIC SERVICES

Introduction

Clinical pharmacy is an integral part of the paediatric renal multi-professional team, optimising medicine use for individual patients and on a service-wide strategic level. Due to their in-depth knowledge of the complexities of medicines, paediatric renal pharmacists are pivotal to the delivery of effective and safe pharmaceutical care to children of all ages with a wide variety of acute and chronic kidney conditions.²⁰ When sufficiently resourced, paediatric renal pharmacists provide all of the roles outlined in Table 1 of the adults section to children living with kidney disease, drawing on the support of other pharmacist colleagues working in procurement and finance, medicines information and medicines safety as required. These key roles are in line with the RPS Professional Standards for Hospital Pharmacy Services.¹¹ Further detail is provided within the Paediatric Renal Pharmacy Standards document.²¹

Medicines optimisation in children with Acute Kidney Injury (AKI) and Chronic Kidney Disease (CKD)

The challenges associated with polypharmacy and medication adherence highlighted in the adult renal pharmacy services section (see pages 20-21) are also commonplace in both paediatric AKI and CKD.^{22,23} Additionally, children and young people with acute and chronic kidney disease have complex medication needs due to altered pharmacokinetics, over and above the normal variation seen with age and development.

Information on how medicine doses should be adjusted for children with renal dysfunction and in those receiving different forms of renal replacement therapy is often sparse. Paediatric renal pharmacists are often required to consider conflicting information from a range of sources when making recommendations on dosing adjustments; frequently needing to extrapolate data from adult studies. Determining the current level of a patient's renal function can also be complex, especially in AKI and in infants. All these factors mean that a high degree of clinical judgment and expertise are required to determine the optimal approach to an individual patient's treatment.

As well as the many complexities of caring for patients with acute or chronic kidney disease, there is a need for paediatric renal pharmacists to consider and navigate the challenges inherent in prescribing and administering medicines to children more generally. These include a significant proportion of off-label medicines use, the need to use unlicensed medicines and in many patients administration of medicines via enteral feeding tubes. These challenges are exacerbated by a need to calculate drug doses according to age and body weight, and the need to manipulate medicine formulations that are only licensed for use in adults. Consequently, children are known to be at a higher risk of medication errors than adult patients²⁰ and pharmacists are in a prime position to maximise the safe and effective use of medicines in children and young people.²⁴ Internationally too, the World Health Organisation (WHO) recognises pharmacists as an essential resource for the safe and effective use of medicines.²⁵

Pharmacists are central to the identification and prevention of potential medication errors in paediatric patients, both in centres using paper-based medication charts and those using electronic prescribing systems.²⁶ Minimising the harm from medication is the key aim in the latest WHO global patient safety challenge – medication without harm.²⁷ The National Kidney Foundation's KDOQI recommends medication reviews at all visits to hospital, to prevent problems such as inappropriate doses, drug interactions, inadequate monitoring, potential adverse drug effects and disease complications.²⁸

Person-centred care and improving outcomes

Medicines reconciliation and medication review and optimisation should be undertaken throughout the paediatric renal patient pathway, especially at admission and discharge from hospital or transfer to another care setting; at each out-patient clinic visit; when a new medicine is commenced or there is a change in kidney function.^{5,8}

As with adult pharmacy services, a regular structured patient review with a paediatric renal pharmacist can support adherence, improve knowledge, optimising medication regimens to align with the wishes and lifestyle of patients and their families.⁷ The paediatric renal pharmacist can help provide tailored information about medicines used for paediatric kidney diseases, maintaining confidence in both the therapy and the MPT.²⁴ Evidence suggests that a significantly greater proportion of patients adhere to their immunosuppressive medications 1 year after transplant when a pharmacist is involved in their care.²⁹

Repeat prescribing and shared care

Many of the medicines used for paediatric renal patients are highly specialist, requiring repeat prescribing to remain within the hospital, either via Homecare or hospital pharmacy dispensing rather than being undertaken in primary care. Paediatric renal pharmacists are often responsible for the clinical screening of these prescriptions, and in some cases will increasingly have a role in prescribing these medicines.

Due to the large geographical coverage of each paediatric renal service in the UK, many tertiary centres provide outreach care in other hospitals within their region. This adds to the complexity regarding medicine prescribing and supply, and there is often variation in the availability of medicines within different regions. The paediatric renal pharmacist has a key role in facilitating the supply of medicines across affiliated Trusts in their region, liaising with colleagues in primary and secondary care as required.

Paediatric renal pharmacy services and staffing

The full Paediatric Renal Pharmacy Standards document can be downloaded from the Neonatal and Paediatric Pharmacists Group (NPPG) website.²¹ As highlighted within the adult renal pharmacy section (page 21), NHS England guidance on the availability of clinical pharmacy services over seven days a week also applies to paediatric pharmacy services.¹² As a minimum, specialist paediatric renal pharmacy services should be provided daily Monday-Friday; it recognised that outside of these hours it will be necessary for non-specialists to provide ad-hoc support.

Lord Carter's 2016 report highlighted unwarranted variations in care between different NHS organisations.³⁰ Paediatric renal pharmacists are key to standardising medication use both within and between centres, particularly given the hub and spoke nature of many of these services.

The following suggested staffing levels, based on expert consensus, describe the resource required solely within a single tertiary paediatric renal centre: additional pharmacy staff resource is required to support significant pharmacist input into outreach centres and Operational Delivery Networks where they exist. Due to the higher proportion of paediatric repeat prescribing in secondary care, when compared to adults and the regional nature of services, describing workforce requirements relative to population size is more appropriate than basing resource on the number of inpatient beds.

1. Clinical pharmacists are essential practitioners within the paediatric renal MPT and are vital to the routine delivery of medicines optimisation within the specialty. Every tertiary paediatric renal service must have access to a senior pharmacist practising in this field.
2. The lead senior pharmacist must be practising at Advanced Stage II as a minimum. Clinical pharmacist cover can be provided by change to equivalent pharmacist at Advanced Stage I, with support from the more experienced lead pharmacist.
3. The paediatric renal pharmacist must have sufficient time allocated to fulfil their specialist role. In practice, a team of individuals is usually required to deliver the clinical pharmacy service to paediatric renal patients. There should be a minimum of 0.2 WTE pharmacist per million total (i.e. adult and children combined) population for the geographical area covered by the tertiary paediatric renal service.

For example:

If the geographical area covered by the service has a total population of 5 million, the minimum pharmacist resource required is $5 \times 0.2 \text{ WTE} = 1 \text{ WTE}$.

This staffing resource is required to allow sufficient "non-patient-facing" time to support the full range of clinical pharmacist activities, including (but not limited to) guideline development, multidisciplinary education and training, supporting repeat prescribing and patient review, as well as audit and quality improvement work. Where the staffing resource falls short of the recommended level, direct patient care will be prioritised over other activities. A team-based approach helps to ensure service resilience, succession planning and provide the necessary educational and professional support.

4. In addition to the above recommendations, consideration must also be given to service continuity during planned and unplanned leave; an uplift of 20% minimum is recommended.
5. The pharmacist must attend daily multidisciplinary inpatient ward rounds and other relevant meetings of the paediatric renal MPT.
6. Paediatric renal pharmacists should be encouraged to be active independent prescribers.
7. Alongside pharmacist provision, inpatient paediatric renal wards need suitable levels of pharmacy assistant and technician time to ensure access to medicines seven days a week, with regular stock top ups in accordance with demand, but no less than once a week.
8. Ward-based pharmacy technicians also provide a valuable role, supporting medicines reconciliation, medicines management and expenditure reporting, releasing more time for medicines optimisation activities by clinical pharmacists. A 10-bedded inpatient paediatric renal ward should have ward-based technician support to a level of 0.2 WTE as a minimum.

Career pathway, qualifications and competencies

In addition to the information provided in the corresponding section of the adult renal pharmacy section (see page 21), the specialist competencies set out by the Royal Pharmaceutical Society Faculty and the NPPG in the Neonatal and Paediatric Care Expert Professional Practice Curriculum are also required.^{31,32}

Paediatric renal pharmacists should undergo an independent, recognised process to verify competence level. Specialist paediatric renal pharmacists must be able to demonstrate competency at least to the level of advanced stage II, and should progress towards mastery level.

Professional support

A paediatric pharmacist in a district general hospital is likely to be a lone specialist, as is a paediatric renal pharmacist working in a smaller unit. As such peer support, often from outside of the individual's own organisation, is critical to ensuring competency. Senior renal pharmacist support should preferably be provided within the organisation, but may be provided through a professional network or on a regional basis.

Pharmacists practising in paediatrics should be members of the NPPG to enable shared working, and provide peer support for lone paediatric pharmacists.³³ Those specialising in paediatric renal medicine should also consider being members of the UK RPG.³⁴ Access to pharmacists practising in critical care is also available through professional bodies such as NPPG or the RPG.

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4

PHYSICIANS: ADULTS AND PAEDIATRICS

4.1 ADULTS

Renal physicians (nephrologists) provide a wide range of services for people with kidney disease. The many roles of the consultant nephrologist are described in detail by the Royal College of Physicians document *Consultant Physicians Working for Patients* (5th Edition).¹ There is great variation between units in the way the service is delivered, but consultants working collaboratively (often with subspecialty roles) as part of an integrated multi-professional team is usual. Twenty-three out of 72 renal departments in the UK are also transplant centres where nephrologists have specialist duties in acute transplantation in conjunction with surgical colleagues.

Role of the renal physician

Renal replacement therapy

Renal physicians provide long-term care for patients receiving dialysis (haemodialysis and peritoneal dialysis) and those who have received a kidney transplant. Often these patients are allocated to a named consultant. These patients are complex and require care which extends beyond their renal management. This leads to a high administrative burden which is directly linked to clinical care and should be regarded as such by trusts. The appropriate amount of time for these duties can be estimated by relating the administrative burden to the number of outpatient clinics. The Royal College of Physicians recommends 1.5 to 2 Programmed Activities (PA) per nephrology clinic.¹

In some trusts, the management of acute renal replacement therapy in acutely sick patients lies entirely within the remit of intensive therapy physicians. In others, it is included in the duties of the nephrologists who may run specialist high-dependency wards with a high degree of consultant oversight. Where the latter arrangement is adopted, more consultant PAs will clearly be required.

Outpatients

Added to nephrologists' work with patients on renal replacement therapy (RRT) programmes is the provision of a specialist outpatient referral service for primary care and an inpatient referral system for other specialties. These duties place increased demands on some renal centres (e.g. those with cardiothoracic centres, vascular surgery hubs or liver units) and these local factors need to be taken into account when trusts establish the requirement for renal physicians. Unlike many specialties, renal departments usually provide outreach clinics and inpatient in-reach to neighbouring trusts. Travel time for these duties (which should be included as direct clinical care in job plans) varies greatly depending on geography and population density. This factor will affect the number of physicians a renal unit requires to provide an adequate service to its catchment area and must be taken into account in setting consultant staffing levels.

Inpatient care

In many trusts, physicians undertake clinical procedures (peritoneal catheter insertion, vascular access procedures, biopsies). In others, many of these practical procedures are undertaken by surgical colleagues or radiologists. Some nephrologists have sub-specialised into "interventional nephrologists". Most consultants involved in this work also teach techniques and supervise junior doctors. Where responsibility for practical procedures forms part of the consultants' duties, this must be reflected in staffing numbers.

About 30% of nephrologists contribute to General Internal Medicine (GIM) duties. The 2013 *Shape of Training Report*² states: "Patients and the public need more doctors who are capable of providing general care in broad specialties across a range of different settings" (p5). It is therefore possible that nephrology consultant appointments over the next 5-10 years will include greater amounts of GIM duties. It is important to emphasise that these GIM duties are not included in the renal workforce data described in this document.

Transplantation

There are 23 adult kidney transplant centres across the UK³, each providing transplantation services for their local kidney patients and most receive referrals from one or more non-transplanting centres, where the preparation and follow-up of living donors and recipients is shared between 'linked' transplant and referring nephrology units. Several kidney transplant centres contribute to the abdominal National Organ Retrieval Service teams.

The 2010 British Transplantation Society report on the provision of transplant services⁴, recommended that a transplant centre supporting a population of 2 million and delivering 75 transplants per year required five surgeons to cover an on call rota of 1:4, but this was subsequently increased to a 1:5 rota, which remains the current standard. Appropriate transplant workforce planning will be aided by coordination between adjacent units (as exemplified by the Oxford-Coventry network and the recently established London Transplant Collaborative).

Histocompatibility and immunogenetics (H&I)

Currently, there is no comprehensive information available to inform physician workforce planning in H&I laboratories although it is recognised as a core support service to deliver transplantation.⁴

Academia

Academic nephrology has been a major driver for the development of renal medicine in the UK. There is good evidence that research improves the quality of patient care in addition to attracting capable trainees into the specialty.⁵ Job plans which include academic roles are therefore to be encouraged. Our workforce planning recommendations relate to NHS-funded Programmed Activities but it is implicit that university and other academic sessions funded from outside the NHS are integral to the delivery of a quality renal service.

Current workforce

Age, ethnicity and the maturity of the renal replacement programme all affect the number of RRT patients within a given population. For this reason, it is usual to relate workload (and thus the number of renal physicians required) to the number of patients on a unit's RRT programme, taking into consideration if it is a transplanting centre. This is an imperfect metric because it does not account for the intensity of other nephrology duties, including number of regional clinics provided, and the availability of support from trainees and non-training non-consultant (NTNC) doctors. Recent census data shows that disequilibrium in the availability of non-consultant support clearly exists and this factor needs to be accounted for when interpreting the data relating to the number of consultants per RRT patient. Another important factor is the extent to which the work of other members of the MPT (notably nurse specialists) reduces demands on consultants. There are no accurate data to show the effect of this, but the degree of support (or its absence) needs to be taken into account when interpreting physician staffing requirements. Despite these caveats, the ratio of consultants to RRT remains the most readily available comparator for which there are reliable data relating to previous years. Accordingly, it will be used in this description of current staffing levels.

A survey of the consultant physician workforce survey carried out by the Renal Association in 2018, (internal document, unpublished) concluded that there had been an increase in the total number of nephrology consultants of 27.3% (37.2% WTE) in the period 2013-18. This compares with an increase of RRT patients of 15.1% (total dialysis patient numbers 6.2%) during the same period. Results are shown in Tables 1 and 2.

TABLE 1. NUMBER OF CONSULTANTS PER COUNTRY.

	England	Scotland	N.Ireland	Wales	UK
No of consultants (% of whom are women)	616 (31%)	79 (39%)	24 (29%)	28 (21%)	747 (30%)
WTE of renal work (10PAs)	526	64.4	22.6	24.1	637
No. of WTE per million population	9.4	11.9	11.9	7.7	10.2

TABLE 2. NUMBER OF RRT PATIENTS PER WTE CONSULTANT (10PAS OF RENAL) BY COUNTRY.

	England	Scotland	N.Ireland	Wales	UK (all units)	UK (Transplant centres)
Mean No RRT patients per consultant	102	84	60	98	96	121
Highest No RRT patients per consultant	193	121	76	166	193	175
Lowest No RRT patients per consultant	29	50	45	46	29	65
Median No RRT patients per consultant	97	81	59	94	94	115

The 2002 Report of the National Renal Workforce Planning Group recommended that there should be approximately 100 RRT patients per WTE nephrologist (75/RRT for physicians participating in GIM).⁶ Data from the 2018 Royal College of Physicians Renal Workforce and Job Planning Guidance⁷ shows that, taking the UK as a whole, this has been achieved and the ratio between consultant numbers and RRT patients had improved in the last five years. However, there is wide disparity between units (the units with the highest and lowest numbers of RRT patients per consultant show a more than a six-fold difference) and this is unlikely to be explained solely by the variations in local circumstances and practices described in the paragraphs above. It is therefore likely that those units which have much greater numbers of RRT patients per consultant than the national mean are inadequately staffed.

Future recommendations

Over the next 5-10 years the number of renal physicians required for a given population of RRT patients will be subject to several competing influences:

Effects which may increase requirement for renal physicians

- Although the rate of increase in RRT programmes has slowed in recent years (currently 3% per annum), the prevalence of type 2 diabetes (the commonest cause of ESKD) has doubled in the UK in the last 20 years. This may lead to a renewed increase in demand for renal services over the next 10 years.
- Chronic kidney disease is commoner in older age groups. Furthermore, lower mortality from cardiovascular events may lead to greater numbers of older patients surviving to ESKD, often with significant comorbidities. The time and resources needed to care for older, more dependent patients (and thus the required number of consultant PAs per RRT patient) will be greater, particularly in areas of the UK with an older population.
- In the past (notably at the time of the 2002 National Renal Workforce Planning Group⁶) renal units depended on junior doctors to provide much of the acute clinical service. A change to a primarily consultant-delivered service, which requires nephrologists to be available out-of-hours may require more consultant PAs (to provide safe on-call rotas etc.) for a given population of RRT patients

Effects which may decrease requirement for consultant numbers

- The deployment of non-consultant members of the MPT into extended roles varies widely between renal centres. There are growing numbers of physicians' assistants in some units. Where pharmacists prescribe and specialist nurses undertake autonomous practice, the requirement for consultant time (and thus PAs per RRT patient) may reduce. The extent to which these factors already affect current consultant numbers, or may affect them in future, cannot be defined from the available data.
- The degree to which innovative practice (e.g. use of information technology to empower patients, remote clinics or involvement of primary care teams in monitoring) is utilised varies widely between renal centres. These approaches are encouraged by NHS England and are likely to increase. In the future, best practice may be to work smarter rather than to work harder and this may reduce the number of consultants required to provide high-quality care to a given population of renal patients.

Summary

The requirement for renal physicians is determined by local variations in responsibilities and the level of non-consultant support, as described above. The currently accepted ratio of one WTE renal physician to 100 RRT patients remains a minimum standard. By sharing best practice through peer-review, it should become clear how renal physicians can best be deployed in future. The Getting It Right First Time (GIRFT) initiative⁸ has recently reported following review of renal services, and uptake of its recommendations focusing on quality of care may lead to optimisation of physician workforce in the context of the MPT. Examples of practices which influence renal physician numbers, but are only evident in some centres, include:

- a. Relating renal physician requirements to patient acuity scores
- b. Use of remote on-line monitoring or telemedicine in place of clinics
- c. Provision of a comprehensive in-reach service to referring hospitals
- d. Establishment of sub-specialty MDTs for complex disease areas

GIRFT should also identify units where the number of consultant renal physicians is demonstrably too small and investment by trusts is therefore required. The current apparent inequities in consultant numbers should thereby be reduced.

4.2 PAEDIATRICS

Introduction

The information provided herein has been obtained following detailed consultation with all clinical leads in paediatric nephrology and the executive of the British Association for Paediatric Nephrology (BAPN).

Service configuration and commissioning

There are 13 UK centres delivering specialised paediatric nephrology services. All paediatric nephrology centres are now located within a wider children's hospital. This represents a significant reconfiguration since the 2002 British Renal Society (BRS) workforce report.⁶ Paediatric intensive care, surgery and anaesthetics and paediatric nephrology were identified as having absolute dependency requiring co-location.⁹ While there are clear benefits of this approach, systems to mitigate the disadvantages of physical separation from adult nephrology, renal histopathology, interventional radiology, and transplant services are required.¹⁰ Appendix I illustrates the current complex and differing interactions between adult and children's services in transplant, interventional radiology and urology services.

All centres offer expert care of children and young people with complex kidney disease including those requiring renal replacement therapy with dialysis and kidney transplantation.¹¹ Kidney transplant surgery is carried out in 10 centres with integrated care arrangements between the three non-transplanting units and their partner transplant centres. The need for improved access to treatment was recognised by the BAPN and the Royal College of Paediatrics and Child Health (RCPCH) leading to the development of a Special Interest Training Module (SPIN training) which was launched in 2009.¹² This now provides recognised accreditation in paediatric nephrology for paediatricians working in secondary care. The success of this approach requires on-going professional development and collaborative working with tertiary paediatric nephrologists.

Transition to adult services

The importance of a supported transition for young people with long term conditions is increasingly recognised, with adult and paediatric nephrology multi-professional teams at the forefront of work to reduce the risk to patients arising from poor transfer of care.¹³ NICE guidance recommends the establishment of a structured, patient-centred transition process across adult and children's services and this approach has been shown to improve long-term outcomes and patient experience.^{14,15} Such provision needs to be available across the country.

Equitable and high quality care through clinical networks

Improving the standard of care of children with kidney disease through paediatric nephrology networks was an influential report co-produced by the RCPCH, BAPN and NHS Kidney Care in 2011.¹⁶ It advocates equitable access to high quality multi-professional care through the development of clinical networks. In Scotland and Wales paediatric nephrology is commissioned as part of a managed network. In England, service delivery through clinical networks is inferred in the E3a national service specification for paediatric renal medicine but not yet commissioned as such.¹⁷

The changing patient population

Since 2002 the UK population has increased in size and diversity.¹⁸ Over this period there is evidence of poorer health linked to increasing societal inequity and levels of obesity, declining mental health and stalling in improvements in life expectancy and neonatal death.¹⁹ Demands on paediatric services have risen with increasing patient complexity, co-morbidities, patient expectation, the impact of social media and associated increased public awareness due to high profile ethical and medico-legal cases.²⁰

Children under 16 are almost exclusively cared for in paediatric units, so it is possible to calculate population-level statistics. From 16 to 18 years of age, young people are cared for in either an adult or a paediatric unit according to their preferences and local service provision, so population-level statistics are not routinely calculated for this age group in the UK Renal Registry reports.¹¹ These data show that patients over the age of 16 account for approximately 20% of the caseload in paediatric centres.¹¹

Table 3 shows UK childhood established kidney failure population change data, Table 4 treatment modality and Table 5 prevalent kidney replacement therapy population by centre.

TABLE 3. UK CHILDHOOD ESTABLISHED KIDNEY FAILURE POPULATION CHANGE.

Prevalence (per million age-related population)	2002	2018	Percentage Change
0-4	17.8	22.3	+25%
4-8	32.1	52.2	+60%
8-12	59.0	77.2	+31%
12-16	95.5	112.3	+18%
< 16 yrs	52.4	65.4	+25%

TABLE 4. TREATMENT MODALITY.

Prevalent patients	2002	2018	Percentage Change
Transplant	76%	78%	+3%
Peritoneal Dialysis	15%	11%	-26%
Haemodialysis	9%	11%	+22%

TABLE 5. PREVALENT KIDNEY REPLACEMENT THERAPY POPULATION BY CENTRE IN 2018.

	Dialysis	Transplant	Total
Belfast	6	26	32
Birmingham	33	66	99
Bristol	14	41	55
Cardiff	10	23	33
Glasgow	13	44	57
London-Great Ormand Street Hospital	26	122	148
London-Evelina	15	65	80
Leeds	11	47	58
Liverpool	11	31	42
Manchester	16	63	79
Newcastle	11	25	36
Nottingham	14	63	77
Southampton	3	27	30
Total	183	643	826

Paediatric nephrologists

Paediatric nephrologists have expertise in the care of infants, children and young people with acute and chronic kidney disease including dialysis and transplantation. They manage a wide range of conditions including severe congenital anomalies of the renal tract, complicated nephrotic syndrome, glomerulonephritis, vasculitis, inherited and acquired tubulopathies, kidney stone disease, hypertension, inborn errors of metabolism and inherited nephropathies. They provide support throughout childhood from antenatal counselling to transition to adult services. In addition to clinical care consultants have responsibilities for quality improvement, service development, teaching and mentoring, and research.²¹

Training in paediatric nephrology

Paediatric training in the UK is a competency based programme (ST1 to ST8) run over eight years. Trainees interested in paediatric nephrology apply for 'Grid' subspecialty training at ST5 or ST6 training levels. The duration of UK nephrology grid training is currently two years and successful completion of curriculum-based capabilities leads to Certificate of Completion of Training (CCT) from the RCPCH with dual accreditation in both general paediatrics and paediatric nephrology.

The RCPCH paediatric training programme allows for opportunities such as OOPE/R/T (Out of Programme for Experience, Research or Training) which enables trainees to gain supplemental advanced clinical or research skills. This training can take place between Grid nephrology training years, or at an earlier point, maintaining a training post whilst gaining experience outside the programme. This flexibility enables trainees to shape and individualise their training whilst keeping their training number secure and continuing to achieve generic and speciality-specific mandatory competencies.

In response to the UK Shape of Training Report to improve training flexibility, and provide more doctors with general skills to meet the future needs of children and young people, the RCPCH is working towards changing the current training scheme by 2022.^{2,12} Thus, the current paediatric nephrology training pathway will change from the two-year scheme to a three-year programme. The provisions to take time out of training for clinical or academic experiences will remain and achieving CCT in the sub-speciality will still be capability based.

Special interest in nephrology (SPIN) paediatricians and general paediatricians with nephrology interest

General paediatric consultants who have undergone SPIN training and have developed paediatric nephrology skills are based in secondary care centres and lead the care of children with less complex kidney diseases and other general nephrology conditions. Their role in management of children in this healthcare setting addresses the requirements contained in the Facing the Future Standards document published by RCPCH (revised 2015); to ensure that services are planned and organised around the child, with care provided closer to home where appropriate.²² Their role includes:

- Co-ordinating local resources for children with wider health and social care needs;
- Managing non-complicated underlying renal diseases e.g. nephrotic syndrome, congenital kidney tract abnormalities, hypertension and glomerulonephritis;
- Liaising with local paediatric nephrologists in monitoring children with early stages of chronic disease;
- Undertaking a key role in transition of young people.

The importance of the role of the SPIN paediatrician in providing equitable access to care was recognised in the 'Improving the standard of care of children with kidney disease through paediatric nephrology networks report'¹⁶

SPIN training

SPIN training (12-18 months) for paediatric trainees and consultants working towards expertise in paediatric nephrology within secondary care requires the acquisition of specific competencies during a rotation in a District General Hospital and a specialist nephrology centre.¹²

Current workforce

In the 2002 renal workforce plan, 37.8 whole time equivalent paediatric nephrologists were recorded as being in post, with a proposed target of 72.0 WTE.⁶

A survey regarding the existing work force of all paediatric nephrology units was conducted in October 2018. The results are presented in Tables 6 and 7 below. Table 6 shows data relating to consultant paediatric nephrology posts and PAs by Devolved Nations, Table 7 England only.

A further survey of consultant paediatric nephrologists was carried out in November 2019. This survey provided data on the number of consultant paediatric nephrologists and consultants with an interest in paediatric nephrology by region, population data from the ONS, the number of patients receiving RRT reported to the UK Renal Registry (UKRR) and the number of patients under follow up reported by the units, were used for denominator data.^{11,23}

TABLE 6. CONSULTANT PAEDIATRIC NEPHROLOGY POSTS AND PROGRAMMED ACTIVITIES (PAs) BY DEVOLVED NATIONS.

Unit	Posts	PAs	Renal replacement therapy Population - UKRR 2018	Population Estimates (million) from 2018 ONS data	PAs per million population
Scotland	6	63	57	5.4	11.6
Wales	4	40	33	3.1	12.9
NI	4	37.4	32	1.9	19.6
England	63	609	704	55.9	10.9
Total	75	749.4	826	66.4	11.2

ONS, Office for National Statistics; PA, programmed activities

TABLE 7. CONSULTANT PAEDIATRIC NEPHROLOGY POSTS AND PAs BY UNIT IN ENGLAND.

Unit	People	Total PAs	Direct clinical care
Birmingham	7	63.6	54
Bristol	6	61	42.5
Evelina	9	80	64.5
Great Ormond Street Hospital	11	94	77
Leeds	5	54.75	46.75
Liverpool	4	40	37.5
Manchester	7	65	53
Newcastle	6	48	40.5
Nottingham	7	69.5	58.5
Southampton	3	33	28.5
Total	65	609	502.8

Since 2002 there has been an increase in the UK consultant paediatric nephrology workforce to a total of 750 PA equating to 75 WTE. The 2017 RCPCH workforce census shows an increase in the consultant paediatric workforce of 6.7% WTE between 2015 and 2017 but estimates that demand for paediatric consultants in the UK is around 21% higher than the documented 2017 workforce levels.²⁴ The RCPCH estimate for the need to increase the consultant workforce applies to paediatric nephrology due to:

- Increase in the number of children with established kidney failure of 25% between 2002 and 2018;
- Increasing patient complexity;
- Younger infants requiring dialysis and more intensive treatments;
- Small infants weighing under 1000g being considered for haemodialysis;
- Increasing parental expectation;
- Support for development of advanced nurse and other practitioner roles;
- Requirement to participate in quality improvement and guideline development;
- Requirement to participate in clinical research to foster improved patient outcomes;
- Extended grid training.

The changes to training of paediatricians arising from the UK Shape of Training Report are expected to result in increased reliance on specialist advice in the medium term, while the lengthening of GRID training will increase the requirements to provide trainee support and supervision.² Consultants continue to provide services out of hours and support where deficiencies arise in junior doctors' shifts. There will be benefits from training and development of advanced nurse practitioners and other allied roles, but currently their development is dependent upon consultant support and mentorship, hence increasing workload in the short term.

New ways of working including improvements in networking facilitated by further development of the SPIN role, virtual meeting platforms and development of advanced practitioner roles may mitigate some of the developing gap between workload and consultant workforce. Improved recognition of kidney disease in children (e.g. AKI, molecular genetic diagnosis or following chemotherapy in oncology), together with the development of novel therapeutic options and the ability to provide further advances in renal replacement therapy for infants and younger children, will require an increase in consultant posts.

Digital platforms create pressure for staff by reducing the demarcation from work time to non-work time, compounded by a growing expectation to be immediately accessible to colleagues at all times. Nephrology consultants do not work in shifts but their duties are defined by the patient load, which is noted to be increasing in number and complexity. Thus workforce balance is required to address this. Revised recommendations should be informed by a detailed understanding of catchment populations taking socioeconomic deprivation into account.

In total, 52 consultant general paediatricians and five staff grades and associated specialists self-identified as having a special interest in nephrology in 2017, out of 1791 (3%) UK general paediatricians, and 232 (2%) of staff grades and associated specialists (SAS) paediatricians. The UK has 189 in-patient paediatric units. Table 8 shows the number of paediatricians in the UK with an interest in Paediatric Nephrology from RCPCH Workforce Survey 2017.²⁴

TABLE 8. PAEDIATRICIANS WITH AN INTEREST IN PAEDIATRIC NEPHROLOGY.

Region	Consultant paediatricians	Staff grades and associate specialists	Total
East of England	10	1	11
South London, Kent Surrey and Sussex	3		3
North London	5		5
North East and Cumbria	3		3
North West	3		3
South West	7		7
Wessex	5		5
Midlands	7		7
Yorkshire and the Humber	4		4
Scotland	3	3	6
Wales	2	1	3
Total	52	5	57

Summary

The paediatric nephrology workforce has developed in the last two decades with increases in the medical workforce. The number of paediatricians in district hospitals identifying themselves in the RCPCH workforce survey as having a nephrology interest is encouraging.²⁴ However, the needs of our patient cohort have changed particularly with the increased prevalence of younger and more complex children with kidney diseases. In response, a flexible and resilient medical workforce which provides integrated care across organisational boundaries with support from paediatric nephrology networks is required.

Recommendations

- An increase of 20% in the consultant paediatric nephrology workforce, in line with the 2017 recommendations of the RCPCH²⁴, is needed to meet clinical demand, as well as to lead the development of paediatric nephrology networks with links nationally, regionally and to adult nephrology. Engagement in quality improvement, clinical research and education is critical.
- Implementation of recommendations from *Improving the standard of care of children with kidney disease through paediatric nephrology networks 2011 report*¹⁶ by increasing training and recruitment of SPIN paediatricians in district hospitals. SPIN paediatricians with good links to their local specialist centre play a pivotal role in providing equitable access to care as close to home as possible.
- Work with UK Renal Registry to measure catchment populations for each network.
- Arrangements should be in place for regular shared clinical meetings and professional development activities with adult nephrology, histopathology, interventional radiology, and transplant services.
- A structured transition process should be in place led by a named paediatric nephrologist and a named adult nephrologist identified from each nephrology unit and supported by MPT members from adult and children's services. In paediatric nephrology services a named key worker for transition is required to support the coordination of key medical and psychosocial issues in people with complex kidney disease.

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APPENDIX I - INTER-RELATIONSHIP BETWEEN ADULT AND CHILDREN'S SERVICES IN TRANSPLANT, INTERVENTIONAL RADIOLOGY AND UROLOGY SERVICES

Centre	Number of transplant surgeons undertaking paediatric work	Living Donor nephrectomy on site? Y / N	Paediatric IR on site? Y / N If yes: number of IR	AVF creation performed on site? Y / N If yes: approx. num / 5 years	PD catheter insertion operator	Chronic haemodialysis catheter insertion operator	Number of surgeons undertaking dialysis access in your unit PS (US)
Belfast	2	N	Y:2	Y:1	Paediatric surgeon	Paediatric surgeon or interventional radiologist	7
Birmingham	4	N	Y:2	Y:12	Paediatric surgeon	Anaesthetics	4
Bristol	4	N	N	Y:1	Paediatric surgeon	Paediatric surgeon	8(3)
Cardiff	(Bristol)		N	Bristol	Paediatric surgeon	Paediatric surgeon/anaesthetics	6(3)
Evelina	5	N	Y:5	Y:27	Transplant surgeon	Interventional radiologist	N/A
Glasgow	1	Y	Y:1	Y:0	Paediatric surgeon	Paediatric surgeon	12(4)
GOSH	4	N	Y:5	Y:35	Transplant surgeon	Interventional radiologist	N/A
Leeds	3	N	Y:2	Y: 2-3	Paediatric surgeon	Interventional radiologist	(3)
Liverpool	(Manchester)		N	Manchester	Paediatric surgeon	Paediatric surgeon	
Manchester	8	Y	Y:1	Y:10	Paediatric surgeon	Paediatric surgeon/anaesthetics/ interventional radiologist	Paediatric surgeon (12), anaesthetists (4) & interventional radiologist (1)
Newcastle	4	Y	Y:1	Y:0	Urology surgeon	Paediatric surgeon/anaesthetics	7(3)
Nottingham	4	N	Y:6	Y:5	Paediatric surgeon	Paediatric surgeon	10
Southampton	(Evelina)		N	Evelina London (smaller children) Portsmouth (older patients)	Paediatric surgeon	Paediatric surgeon	6(3)

AVF, Arteriovenous fistula; HD, Haemodialysis; IR, Interventional radiologist; PD, Peritoneal dialysis; PS, Paediatric surgeon; US, Urology surgeon



PSYCHOSOCIAL PRACTITIONERS: PSYCHOLOGISTS, COUNSELLORS, PSYCHOTHERAPISTS, SOCIAL WORKERS: ADULT AND PAEDIATRICS

This chapter is a joint collaboration by the three psychosocial professional groups: British Association of Social Workers (BASW) Renal Social Work Group; Renal Psychologists' Network and RPT (Renal Psychological Therapists Group)(Renal counsellors, psychotherapists and counselling psychologists).

5.1 ADULT SERVICES

Introduction

The combination of complex psychological and physical health needs of people living with kidney disease means they are a group with high psychological vulnerability. Rates of clinical depression have been found to range from 20-40% across CKD, dialysis and transplant groups^{1,2} and suicide rates in the renal population are significantly higher than the general population, with a recent study finding a 140% increase in suicide for patients receiving haemodialysis.³ In addition, psychological distress is reported in 30-60% in pre-dialysis, dialysis and transplant patients and is broader in definition than just clinical depression as it includes other psychological conditions such as anxiety disorders, phobias (including needle phobia), obsessive compulsive disorder, body image issues, eating disorders, post-traumatic stress disorder, adjustment disorder and neurological impairments.^{4,5} There is increasing evidence to show the impact of psychological problems on morbidity, mortality and healthcare utilisation.⁶ It is vital therefore, that specialist psychosocial provision is integrated within renal units in order to provide the appropriate level of support for the complexity and chronicity of psychological needs. Evidence demonstrates that care delivered by a multi-professional team that includes psychosocial specialist professionals leads to improved medical outcomes, timely commencement of dialysis with working vascular access and reduced mortality for people living with kidney disease.⁷ The Improving Access to Psychological Therapies report (IAPT)⁸ for long term conditions has identified that people receiving renal dialysis should have their psychological support and interventions delivered within the kidney care setting.

Workforce planning recommendations

Core specialist renal professionals available should include a psychologist (clinical, counselling or health), a counsellor or a psychotherapist, and a social worker. It is recommended that a youth worker (or similar) is employed as part of the multi-professional team to support transition and young peoples' needs.⁶ Further information is provided in the paediatric section of this chapter.

2018 psychosocial workforce plan

An extensive mapping exercise was carried out to examine the current levels of psychosocial support across renal units in the UK. Full details are available in the mapping exercise report.⁶

Psychological support

Evidence for proposed staffing levels is drawn from a number of sources, primarily research evidence and comparisons to other equivalent long-term conditions (Cystic Fibrosis and cancer care), which have established psychological support within the specialist multi-professional team.

Within Cystic Fibrosis (CF) Services, the recommended level for psychologists is 1.0 WTE per 150 CF patients. This is based upon a model that all CF patients require annual input from a psychologist.⁹ Within cancer care, a different, stratified model for psychological provision has developed based on four levels of care.

Level 1 general support is provided by all staff and Level 2 support is provided by specialist nurses, who have received additional training and supervision (provided by Level 3/4). Recommended levels of trained mental health/psychological support professionals (Level 3 counsellor/psychologist and level 4 psychologist/psychotherapist/psychiatrist) are based on research that 15% of cancer patients will need Level 3 support and 10% will need Level 4 intervention.¹⁰ This is equivalent to 1.0 WTE per 600 cancer patients.¹¹

The UK Renal Psychosocial Workforce Mapping Exercise⁶ highlights a model for psychological support staffing levels based on a stratified acuity model of 1.0 WTE (0.6 WTE at Level 3/0.4 WTE at Level 4) for every 600 RRT patients (dialysis and transplant patients). This was based only on renal replacement therapy patient numbers. It, therefore, does not include patients for whom specialist psychological input is also required in the following groups; low clearance, general nephrology and conservative management, acute kidney injury, live donor (including altruistic assessment) and support for families or carers. This should be considered when planning staffing levels for counsellors/psychotherapists/psychologists into renal units (see recommended minimum and gold standard levels below).

The recommended minimum level of psychological provision for a renal service is 1.0 WTE (0.6 WTE at Level 3/0.4 WTE at Level 4) for every 600 RRT and pre-dialysis patients. This would enable up to 25% of all CKD stage 4/5 patients to access support in any year.⁶ This level of staffing would not extend to wider services such as living donor assessment (see below).

The gold standard level of psychological provision for a renal service is 1.0 WTE (0.6 WTE at Level 3/0.4 WTE at Level 4) for every 375 RRT/pre-dialysis patients. This would enable up to 40% of all CKD stage 4/5 patients to access support in any year (consistent with research based rates of distress in CKD populations) and would enable the provision of a wider service to include general nephrology and conservative management, acute kidney injury, live donor (including altruistic assessment) and support for families or carers.

Social work support

Recommended levels of social work support staffing are considered separately to psychological support staffing. In line with the CF workforce recommendations for social workers, current practice recommends that all patients should be provided with routine input from a social worker.⁷

The recommended minimum levels for social work provision are a maximum yearly caseload of 150 patients per 1.0 WTE level 3/4 worker with a gold standard of 1.0 WTE per 140 RRT patients.⁶

Smaller units

In smaller units, where the population size would not warrant a specific psychosocial/psychological practitioner post, consideration should be given to the model that already exists in some areas of sharing of posts across chronic and long-term conditions.⁶

Levels of practice for all three psychosocial professional groups according to the NHS Skills for Health Career Framework are outlined in Table 4 (later in this section on page 49).

5.2 ADULT PSYCHOLOGISTS (CLINICAL, HEALTH AND COUNSELLING)

Introduction

Renal psychologists (clinical, counselling and health psychologists) are highly trained doctoral level professionals. They aim to reduce distress, promote optimal development, improve psychological well-being and improve health outcomes for patients. They apply psychological theory and models to the context of physical health, chronic illness and renal disease across the lifespan. This specialist knowledge base is used to design, implement and evaluate psychological services into kidney care.^{12,13} Renal psychology developed within both adult and paediatric renal teams from the early 1970s onwards.¹⁴

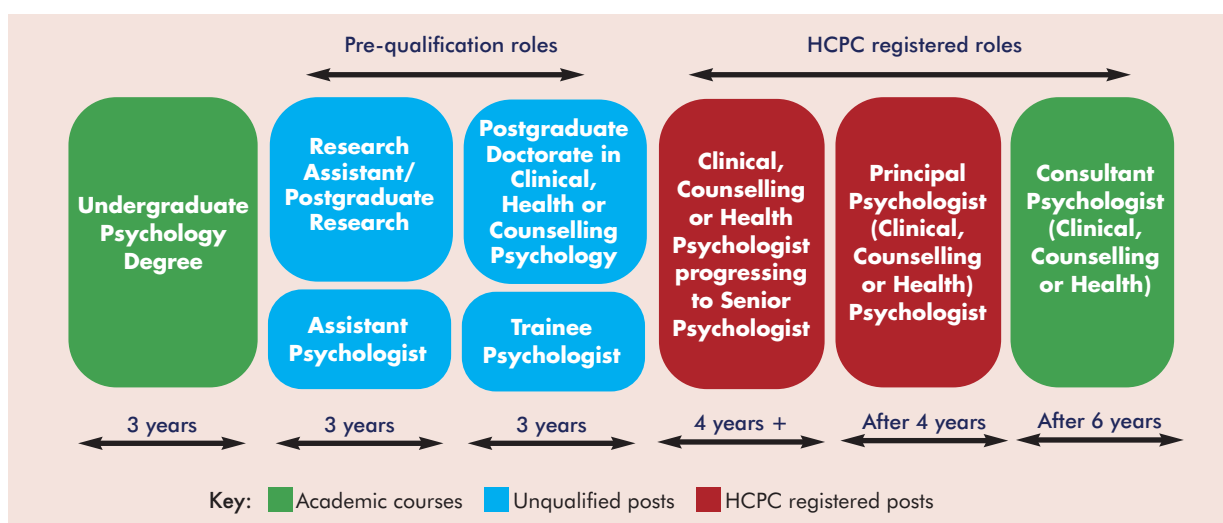
Renal psychologists are not just clinical therapists and, therefore, work at several different levels:

- Direct evidence based clinical work with patients and their families referred because of identified concerns, or those who are considered at risk of developing psychological difficulties;
- Consultation, joint work and education with other members of the renal multi-professional team involved in the patient's care to deliver psychological care;
- Undertaking a leadership role and participating at a strategic service, and policy level to promote psychologically informed care and health outcomes;¹²
- Conducting audit, research studies and evaluation to improve renal patient care and outcomes.^{12,13}

The New frontier for integrated care report by The Kings Fund indicates that clinical psychologists should be embedded within physical health multi-professional teams to provide psychological support.¹⁵ The need for renal psychology is identified in the service specifications for both adult and paediatric renal services.¹⁶⁻²⁰

The majority of psychologists currently working in renal units are clinical psychologists.⁶ However, some services have health or counselling psychologists employed within their units. In order to establish and lead a renal psychology service (where there are significant management, consultancy, research and service development responsibilities) a greater level of experience and post qualification training would be required, and this should be provided by a consultant psychologist.²¹ The career pathway (Figure 1) below outlines the different training and career progression involved for these three professions.

FIGURE 1. CLINICAL, HEALTH AND COUNSELLING PSYCHOLOGY CAREER PATHWAY



The recent renal workforce mapping exercise (2017) reported 51 psychologists in post (27.2 WTE), an increase from the number reported in the 2002 Workforce Planning document (7=2.5 WTE) across adult renal services. Alongside this increase in psychologists employed in renal units, patient numbers have also increased. There is still significant variation across renal units and the 2017 figures are significantly less than the 2010 projected need for 168 psychologists (60 WTE) and a minimum 102 WTE Level 3/4 psychological practitioners.⁶ Among those units who have psychologist input, staffing levels are lower than those recommended in the 2017 mapping exercise report with only 4 units meeting the 2002 renal psychology workforce requirement of 1.0 WTE per 600 RRT patients while five units have 1.0 WTE psychologist per <1,000 RRT patients.⁶

Components of the role of adult psychologist

Direct clinical work

Assessment

Renal psychologists offer specialist assessment considering biopsychosocial and treatment factors in the development and maintenance of presenting problems, working in inpatient and outpatient settings, with individuals and families. A range of assessment methods are used, including:

- Interviews and direct observation;
- Psychometric tests;
- Neuropsychological assessment (health/counselling psychologists require further training to undertake this);
- Risk assessment and risk management plans;
- Assessment of mental capacity: particularly in relation to an individual's capacity to consent to medical treatment and to decide to withdraw from treatment;
- Assessing need for referral of patients to mental health services and/or other relevant agencies.

Following assessment, renal psychologists develop a formulation, drawing on psychological theory and research, making sense of the interplay between psychological and physical well-being, providing several hypotheses and treatment options. Where appropriate, this can be shared with the multi-professional team to facilitate collaborative working, consistent team approaches and increased understanding.

Transplant assessment

- Specific assessments such as recipient suitability for transplantation (required pre-transplant for all children and young people and for adults where risk factors for poor outcomes have been identified as per NICE RRT Guideline);²²
- Formal mental health assessment for all non-directed altruistic donors as per British Transplant Society/Renal Association Guidelines;²³
- Assessments of live related donors where clinically indicated.

Intervention

Based on the assessment, renal psychologists provide individually-tailored, evidence-based interventions/management plans using a range of approaches²⁴⁻³⁰ including:

- Behavioural and cognitive behavioural techniques;
- Mindfulness;
- Compassion-Focused Therapy;
- Acceptance and Commitment Therapy;
- Motivational Interviewing;
- Family Therapy;
- Eye Movement Desensitisation and Reprocessing.

Examples of interventions include:

- Supporting adjustment to diagnosis, management of distress and maximising quality of life;
- Helping patients cope with the challenges of treatment, e.g. anxiety about hospitals and/or invasive procedures, symptom-management techniques, improving engagement and adherence with complex treatment regimes, medication, dialysis, diet and fluid restrictions;
- Psychological intervention for difficulties such as anxiety, depression, trauma or body image issues, linked to CKD or treatment;
- Preparation and support for patients through transitions, e.g. child to adolescence to adult services, hospital to home, transition from one dialysis modality to another, transition to transplant and from transplant to dialysis;³¹
- Assisting patients and health care professionals in decision-making about treatment, including planning of palliative care, where appropriate;
- Intervention and support to those with identified psychological needs related to the transplantation process;
- Psychological support for living donors;
- Planned proactive/protocol-driven work based on preventing or reducing possible long-term sequelae of chronic kidney disease; treatment plans (e.g. dialysis and transplantation), monitoring outcomes and effects;
- Group-based interventions.

Patient education

- Co-facilitate group patient education sessions or support other professionals in the development of the content;
- Assist with the development of written patient information.

Within their training, clinical psychologists specifically have experience and competencies of working across the lifespan, including people with learning disabilities and cognitive impairment. These skills can be applied in supporting the team where individuals in these groups require education.

Consultation and joint working

Renal psychologists can provide specialist psychological advice and guidance to renal unit multi-professional teams through:

- Consultation (e.g. at ward rounds, renal clinical and MPT meetings);
- Planned joint patient work with other MPT professionals;
- Clinical supervision (1:1 or group) to other renal team professionals;
- Providing staff support and reflective practice opportunities on an on-going basis and in response to specific, difficult situations. This work helps to manage and reduce staff stress and promotes effective communication and teamwork amongst colleagues.

Education and support for renal staff

Renal psychologists support the development of psychological skills and competencies within the renal unit staff team via:

- Teaching, training, consultation, education, reflective practice groups and supervision;
- Supporting front-line clinicians in their role (via supervision and overseeing direct work), to deliver routine psychological care using appropriate strategies for managing common psychological difficulties.

Audit, research, service evaluation, and service and policy development

As scientist practitioners, this area is a core role in practitioner psychologist job descriptions. The renal psychologist has specialist skills and experience in conducting psychological research. This is applied to understanding psychosocial issues in renal disease and improving psychological care in renal services through developing individual projects or advising on/participating in research carried out by the MPT.

The renal psychologist also brings specialist skills and experience in:

- Service evaluation;
- Audit and service development;
- Ensuring evidence-based and developmentally appropriate psychological approaches are embedded within policies, procedures and pathways in the renal unit (e.g. consent to treatment, transition from paediatric to adult services, managing distressing behaviour, procedural anxiety and education and preparation for dialysis and surgery including transplantation).

Supervision/continuing professional development

Renal psychologists have a responsibility to engage in continuing professional development (CPD) and supervision of their practice to maintain their Health and Care Professions Council (HCPC) registration. The amount of supervision will vary depending on the grade of a particular psychologist, however, this should be at a minimum of one hour per month for more senior staff, with increased frequency for those newly qualified.³²

5.3 PAEDIATRIC PSYCHOLOGIST

Components of the role of paediatric renal psychologist

Children and young people who are seen within specialist paediatric renal teams experience high levels of psychological distress and vulnerability. Children receiving dialysis have lower quality of life than their peers and are more likely to experience psychiatric conditions such as depression, anxiety and adjustment disorder.^{33,34} Paediatric clinical psychologists aim to reduce psychological distress, promote optimal development and improve health outcomes including psychological well-being, by the systematic application of knowledge derived from psychological theory and data.^{15,34}

Paediatric renal psychologists working within specialist paediatric renal teams help children, young people and their carers to:

- Develop the necessary skills and abilities to cope with their emotional needs and daily lives;
- Maximise their psychological and physical well-being whilst adapting to the impact of kidney disease;
- Develop and use their capacity to make informed choices about treatment options;
- Maximise developmentally appropriate independence and autonomy;
- Have a sense of self-understanding, self-respect and self-worth;
- Be able to enjoy good social and personal relationships and share valued social and environmental facilities.³⁵

Paediatric renal psychologists also

- Treat the emotional and psychological impact of kidney disease;
- Support concordance with treatment plans;
- Ameliorate distress in relation to medical assessment and management.

The paediatric renal psychologist's role is also to support treatment decisions by ensuring that children and young people's care plans take account of the broader psychosocial context and individual factors such as resilience and emotional/psychological needs. It is vital that renal paediatric psychologists are embedded within the renal team so that children and families can receive co-ordinated interdisciplinary care. The key roles and components of the paediatric renal psychology service are similar to adult renal psychology, which are outlined in detail on page 41-42.

Career pathway

Paediatric renal psychologists must be registered with and regulated by the HCCP as a 'practitioner psychologist' which may include clinical, health or counselling psychologist.³⁶ Currently, only clinical psychologists work within paediatric renal settings, predominantly because counselling and health psychologist training does not have to include a paediatric placement. Paediatric renal psychologists have an extended training (a minimum of 6 years) to doctoral level, prior to registration.

Paediatric renal psychologist's undergraduate psychology degree provides theoretical knowledge in psychological models and research methodologies based on an understanding of normal child development. As part of clinical psychology doctorate training, they will have gained clinical experience of working in a variety of interdisciplinary settings with a range of different patient groups and presenting problems, including working with children/young people, adults, older adults and people with learning disabilities.

Given that paediatric renal psychologists work with children and young people as well as their siblings and carers they learn to apply evidence-based practice across the lifespan, to be proficient in complex assessment, using a variety of psychological techniques at an individual, group and systemic level. Along with research methodology paediatric renal psychologists possess the necessary skills to work with complex psychological difficulties, including co-morbid physical and mental health problems, drawing on a range of evidence-based therapeutic treatment approaches. They provide supervision, and work in teams conducting research, audit and service evaluations, supporting service and organisational development.

Continuing professional development

Paediatric renal psychologists have a responsibility to engage in CPD and supervision of their practice to maintain their professional HCPC registration.³⁶ They are responsible for keeping themselves up to date with knowledge of medical and physical aspects of renal disease as well as those relating to mental health. All renal psychological practitioners should be a member of either the Renal Psychologists Network Group or the RPT (Renal Psychological Therapists) group.^{37,38} CPD is maintained through regular attendance at study days and meetings such as national and international renal, transplant or psychology conferences to maintain knowledge and awareness of scientific developments.

Clinical supervision is required to maintain clinical governance and quality and safety of patient care. The amount of supervision varies depending on the grade of the psychologist post. A minimum one hour per month for more senior staff is required, with increased frequency for those at newly qualified bands.³²

Proposed staffing levels

A comparison between the British Renal Society 2002 renal workforce plan²¹ and a recent mapping exercise of the UK Renal Psychosocial Workforce revealed that marked variation in the provision of psychological resources to paediatric renal units remains.⁶ The number and WTE of psychosocial staff working in UK paediatric units in 2017 are outlined in Table 1.⁶

TABLE 1. NUMBER AND WTE OF PSYCHOSOCIAL STAFF WORKING IN UK PAEDIATRIC UNITS IN 2017.⁶

Profession	Number of staff	Whole Time Equivalent (WTE)
Psychologist	14	5.7
Social worker	10	7.4
Play therapist	2	2
Counsellor/psychotherapist	1	0.5
Music therapist	1	0.2
Youth worker	1	0.25
Play worker (unqualified)	2	2

The UK renal psychosocial workforce mapping exercise identified that psychological services are primarily provided by clinical psychologists in paediatric services.⁶ In addition, social workers, play specialists, youth workers/young adult workers, teachers and nurses also contribute to the psychosocial support and management of children and their carers. However, it is evident that there remains a significant variation in service provision nationally, which has led to a crisis intervention model of care in many units, rather than the proactive, integrated involvement of clinical psychologists as part of the MPT.

Within paediatrics, the suggested workforce recommendations is 1.0 WTE psychologist per 150 paediatric renal patients seen by a specialist paediatric renal service, based upon data from the UK renal psychosocial workforce mapping exercise, and recommendations from CF services.^{6,9}

5.4 ADULT COUNSELLORS AND PSYCHOTHERAPISTS

Introduction

Data from the UK psychosocial mapping exercise indicates that a total of 29 recorded counsellors & psychotherapists are working in 17 of the 84 renal units across the UK – this is representative of 16% of the total renal psychosocial practitioners working in the NHS.⁶

Table 2 outlines the components of the counsellors and psychotherapist roles. For inpatient referrals we suggest practitioners aim to see all inpatient referrals for specialist psychological input within 1 week. Clients with AKI are a separate group that benefit from early intervention.³⁵ We recommend outpatient referrals are seen within 2-8 weeks for either assessment and/or initiation of therapy, as a gold standard.

Although training routes are different for clinical psychologists and psychotherapists, the levels of knowledge required are equivalent, therefore psychotherapist jobs may be matched to clinical psychology profiles on an equivalent basis when banding job descriptions as documented on NHS employers.³⁹ As psychological practitioner roles (levels 3 & 4) are similar, counsellors and psychotherapists would align themselves with psychologists working in the NHS regarding proposed staffing levels – minimum and gold standard.

TABLE 2. COMPONENTS OF THE COUNSELLOR/PSYCHOTHERAPIST ROLE.

Direct clinical work
<p>Assessment</p> <ul style="list-style-type: none"> • Use knowledge and skills to provide specialist assessments for patients, parents and carers/relatives • Clinical responsibility following assessment is to ensure that clients are referred to appropriate services when risks are identified e.g. mental health services, liaison psychiatry, safeguarding teams, social services or GP <p>Transplant assessment</p> <ul style="list-style-type: none"> • Provide specialist psychological assessments of donors, altruistic donors and recipients prior to surgery^{22,23} • Report-writing regarding appropriateness of donation to the MPT • Contracting for counselling as required post assessment <p>Bariatric surgery assessment</p> <ul style="list-style-type: none"> • All renal bariatric surgery candidates prior to planned surgery planning • Assessment report fed-back to the Bariatric MPT⁴¹ • Engaging and contracting for counselling may also be initiated following assessment <p>Intervention</p> <ul style="list-style-type: none"> • Short, medium or long-term counselling or psychotherapy using a range of evidenced based interventions/approaches tailored to the individual^{24,28,30} • Delivery of information/psycho-education; advocating and signposting to individuals, couples, families, carers and groups. • Use of Psychometric outcome measures • Preparation of young people transitioning from child health to adult services, as well as supporting existing young people with CKD and AKI within the adult service³¹ • Providing appropriate therapeutic interventions to support the potential donor or recipient, including post-surgery recipient adjusting to life with a transplant • Inpatient referrals • Outpatient referrals
Patient Education
<ul style="list-style-type: none"> • Provision of age-appropriate information for children or young people regarding CKD • Deliver pre-dialysis/transplantation educational seminars, individual or group psycho-education • Provide advice and support that is sensitive to the psychological needs of the patient, young person or family • Facilitate/co-facilitate support groups for renal patients and their families
Consultation and joint work
<ul style="list-style-type: none"> • Service development, ensuring equitable service offered across entire renal patient pathway, informed by patient experience • Contribute to MPT meetings/ward rounds • Liaise with social services, schools/colleges/community agencies for psychological/social input
Education and support for renal staff
<ul style="list-style-type: none"> • Participation and delivery of training on psychological impact of CKD • Support staff to manage anxiety and pain for patients receiving dialysis • Emotional containment – clients and staff • Provide clinical crisis support – debriefing sessions • Supervision for other healthcare professionals • Reflective practice groups, education, training and consultancy
Audit, research, service evaluation, and service and policy development
<ul style="list-style-type: none"> • Provide yearly audit updates and undertaking patient experience surveys • Contribute to research in all areas of renal health, developing individual projects or participating in research carried out by the MPT
Supervision
<ul style="list-style-type: none"> • Recommended minimum criteria: 1.5 hours/month for individual and double for group supervision. – ratio of 1:6 individual supervision hours to overall client hours^{42,43} • Practitioners supervising students or colleagues, within the team, require additional supervision time • An essential element of the job description funded by the trust/employer and delivered in work time

5.5 ADULT SOCIAL WORKERS

Introduction

Renal social workers across the United Kingdom work to 'promote social change and development, social cohesion and the empowerment and liberation of people. Principles of social justice, human rights, collective responsibility and respect for diversities are central to social work. Underpinned by theories of social work, social sciences, humanities and indigenous knowledge, social work engages people and structures to address life challenges and enhance wellbeing'.⁴⁰ Renal social workers work holistically to improve the wellbeing of people living with kidney disease; alongside their families and carers, from diagnosis to the end of life, in collaboration with other members of the multi-professional team. Throughout the patient journey they are the primary point of contact for practical and social care issues.⁴⁴ In addition, they aim to improve patients' experience of the wider systems through research, development and advocacy.

The commissioning and funding arrangements for renal social work services across the UK vary significantly, with posts being funded through: acute hospital services, local authorities or jointly funded between trusts and social services, or in some cases, charities.⁶ The components of adult renal social work roles are outlined in Table 3. These vary depending on whether the worker has statutory duties, specifically under the Care Act 2014 and the Mental Capacity Act 2005 (England and Wales) or the Adults with Incapacity (Scotland) Act 2000.

Career pathway guide

Social worker is a protected title, and each social worker is registered with a governing body; the Scottish Social Services Council; the Northern Ireland Social Care Council, Social Care Wales, or Social Work England.

To qualify as a social worker, a BA, BSc, MA or MSc in Social Work is required.⁴⁹ As standard practice, a social worker with a minimum of 2 years, post-qualifying experience is needed due to the complexity of kidney care. The equivalent level on the Skills for Care Career Framework is 6-7.

Proposed staffing levels

If recommendations for psychosocial provision for CF services are applied, no renal units currently meet the gold standard social work recommendations of 1.0 WTE social worker per 150 renal patients.⁹ The minimum standard for social work provision amongst CF patients is 1.0 WTE social worker per 140 patients. Within renal services in 2017, there were 58 social workers in adult units with a total WTE of 44.6 social workers in post at the time of the review.⁶

5.6 PAEDIATRIC SOCIAL WORK

Introduction

Paediatric renal social workers respond to the psychosocial aspects of care relating to children with kidney problems, their carers' and family members.⁵⁰ Their role is to provide practical and emotional support to children (0-18 years of age) and their families to ensure they are able to effectively engage with, and consequently benefit from treatment for their kidney disease. Each paediatric renal unit is unique, requiring the social worker to be flexible and adaptable in their approach, individualising support to whomever they are working with. The paediatric renal social worker is a skilled and experienced practitioner who can offer tailored advice and support using an early intervention model to reduce the risk of situations progressing to crisis point.⁵¹

The bio-psychosocial model outlined by Beder (2006)⁵², is a theoretical model which demonstrates that the paediatric renal social worker works with the patient themselves, their family (including parents, carers and siblings) and their social and environmental contexts to address any factors which are negatively affecting their wellbeing. Paediatric renal social workers work holistically and may provide support that does not directly focus on the child, but helps improve their situation.

Components of paediatric social work

Paediatric renal social workers undertake comprehensive psychosocial assessments of need with children and their parents, carers and siblings, which contribute to person-centred care planning.⁵⁰

TABLE 3. COMPONENTS OF THE ADULT RENAL SOCIAL WORK ROLE.

General overview
<ul style="list-style-type: none"> To be an expert resource, providing specialist advice, information and support to adults with renal conditions, carers and health professionals, in relation to their psychosocial support needs Make effective use of learning opportunities and evaluate and reflect on own knowledge/practice Contribute to the learning and development culture within the renal unit Build good relationships with renal patients and their carers, offering support that is holistic, proactive, and tailored to individual need Promote equality, diversity and rights Interpret the rights and responsibilities of people in a way that is consistent with the governing body's Professional Standards and British Association of Social Workers' Code of Ethics^{45,46} Act in a way that acknowledges people's rights to make their own decisions and recognises their responsibilities, understanding the resultant dilemmas and developing appropriate solutions Support anti-discriminatory practice and proactively identify and take action to address discrimination and oppression in self and others
Tasks
<ul style="list-style-type: none"> Assessment of need Carer support Welfare rights and debt support Applications to grant bodies on behalf of patients and families Advocacy Facilitating patient groups and forums End of life support and advance care planning Bereavement and pre-bereavement support Transitions work for young people moving to adult services Material help The use of counselling skills to engage and support patients and families from all backgrounds Support with housing issues Employment issues Completing Continuing Health Care paperwork in partnership with nursing colleagues and families Family support Promoting inclusion Hospital discharge Mental Capacity Assessment Carer assessment Safeguarding Engaging with those who are hard to reach through a traditional medical model, e.g. focusing on the social reasons for non-adherence⁴⁷ Referrals to community specialist teams Referrals for aids and adaptations Immigration matters Travel support
Research and audit
<ul style="list-style-type: none"> Commitment for renal social workers to initiate and participate in multi-professional research/audit projects Participate in local, national and international dissemination of research
Education
<ul style="list-style-type: none"> Develop tools to support patients of all backgrounds – cultural, social, and educational – to understand their condition Contribute to the multi-professional approach to pre-dialysis education Formulate and implement bespoke in-house educational sessions to address identified needs Support the learning needs of colleagues Contribute towards the development and updating of information for renal patients, their families and carers regarding services and support networks Attend relevant study days and educational programmes Attend and participate in clinical and audit meetings Support social work students undertaking placements in the renal service
Service development
<ul style="list-style-type: none"> Work creatively within the MPT, using local and national evidence to promote enhanced ways of working In partnership with the MPT, review service needs through audit, research, observation and peer review Make recommendations on change and support the implementation and evaluation of new working practices using evidence-based practice
Continuing professional development
<ul style="list-style-type: none"> All social workers must adhere to the standards of conduct, performance and ethics of their governing body in order to maintain their registration, including engaging in appropriate CPD Renal social workers can be members of the British Association of Social Workers' Renal Special Interest Group⁴⁸ Social workers should commit to engaging in monthly clinical supervision

The support provided will vary, in response to individual need. Support can include:

- Attending ward rounds, psychosocial meetings, multi-disciplinary meetings, assisting with complex discharge planning;
- Seeing patients, in outpatient clinics, dialysis units, in the community;
- Participating in shared decision making in preparation for dialysis or transplantation;
- Supporting siblings and family members;
- Liaising with the local authority in respect of safeguarding issues, contributing to chronologies, child protection plans and attendance of child protection conferences, core groups and strategy meetings;
- Conflict resolution/mediation between medical team and families;
- Safeguarding: dealing with initial disclosures; making referrals; participating in strategy meetings; Child Protection Conferences; core group meetings and care team meetings; liaising with hospital safeguarding teams; advocacy for the child and family;
- Dealing with specialist needs e.g. Learning disabilities of child and/or parents; communication needs e.g. non-English speaking; limited reading abilities; mental health issues; substance misuse;
- Support with immigration issues, letters for employment, benefits, housing;
- Accessing care packages, either from children's social care or children's continuing care;
- Early help plans, and acting as lead professionals;
- Transition support;
- End-of-Life Care and bereavement support;
- Facilitating groups and coffee mornings, e.g. dialysis families weekly support groups;
- Helping with benefits and charity applications;
- Support MPT members as they provide psychosocial support;

Career pathway guide

Social workers in Britain have generic training which enables them to work with both adults and children, and they can then choose to specialise after qualifying. Paediatric renal social workers must have a recognised social work qualification and be registered with the appropriate regulatory body for the part of the UK in which they practise (regulation of social work is devolved to the regional governments within the UK).⁵³ Paediatric renal social work is a specialist post, and the standard practice would be to recruit a social worker with a minimum of 2 years post-qualifying experience. As with adult renal social workers, there are several ways in which paediatric renal social workers may be funded and employed. The job description will define the banding if employed under agenda for change.⁵⁴ Paediatric renal social workers must engage in continuing professional development in order to maintain their registration. They are strongly encouraged to become members of the BASW Renal Social Work Group, and maintain regular contact with the other paediatric renal social workers for peer supervision.

Proposed staffing Levels

A work-force mapping exercise in 2018 revealed 10 paediatric renal social workers in the UK, of which 7.4 were WTE.⁶ This is a reduction from 10.4 WTE documented in 2002.²¹ There is very little research focusing on paediatric renal social workers, therefore evidence from other equivalent long term health conditions (CF) have been used for bench-marking. The Cystic Fibrosis Trust⁹ recommendations are 1.0 WTE per 150 patients.

It is important that the paediatric renal social worker is embedded within the renal MPT to allow them to provide the necessary specialist support and advice. To achieve this, it is necessary for them to have sufficient time each week to both support families and to establish good working relationships with the other members of the MPT. This balance should be considered when factoring minimum staffing levels: a role with less than 0.5 WTE would make it difficult to achieve this balance.

Access to specialist paediatric renal social work is becoming more important as the thresholds for support from children's social care are becoming more focused on crisis management and responding to significant child protection concerns. Most children living with kidney disease and their families are not be eligible for support from community-based social workers.

TABLE 4. SKILLS FOR HEALTH CAREER FRAMEWORK FOR ADULT AND PAEDIATRIC PSYCHOSOCIAL PRACTITIONERS: PSYCHOLOGISTS, COUNSELLORS, PSYCHOTHERAPISTS, SOCIAL WORKERS.⁵⁵

Level	Explanation	Psychologist	Counsellor/psychotherapist	Social worker
8	<ul style="list-style-type: none"> Require highly specialised knowledge, some of which is at the forefront of knowledge in a field of work Leaders with considerable responsibility, and the ability to research and analyse complex processes Have responsibility for service improvement or development May have considerable clinical and/or management responsibilities, be accountable for service delivery or have a leading education or commissioning role 	<p>Consultant clinical/health/counselling psychologist Provision of professional leadership and management of renal psychological services including:</p> <ul style="list-style-type: none"> Leading on strategy, policy and service development Managing resources & budgets Recruiting and managing renal psychology services staff <p>These roles also retain significant components of providing direct clinical work, consultation, supervision, teaching/training and research (as detailed in Levels 6 and 7 below)</p>	<p>Consultant renal psychotherapist/counsellor manager Renal specific skills include:</p> <ul style="list-style-type: none"> Leading a specialist renal therapies team including line management & providing supervision Budget management Knowledge of all aspects of the renal patient pathway and an understanding of renal diseases Ability to differentiate between physical and psychological symptoms Overall risk management responsibility Leading renal psychology/therapy research and carrying out complex service audits Leading service development, improvement & education locally and nationally Involvement in Renal Policy development and commissioning 	
7	<ul style="list-style-type: none"> Have a critical awareness of knowledge issues in the field and at the interface between different fields They are innovative and have a responsibility for developing and changing practice and/or services in a complex and unpredictable environment 	<p>Principal clinical/health/counselling psychologist Skills include:</p> <ul style="list-style-type: none"> Increased role in the leadership, organisation and management of the renal psychology service Increased managerial role and responsibility for others within the psychological service <p>Senior/highly specialist renal clinical psychologist Skills include:</p> <ul style="list-style-type: none"> Leading service development Managing assistant and graduate psychologists Advanced clinical supervision skills enabling provision of clinical supervision to other qualified clinical psychologists and psychology service staff at senior/highly specialist level and below 	<p>Specialist or renal counselling manager Skills include:</p> <ul style="list-style-type: none"> Leading a specialist renal therapeutic team, including line management and supervision Overseeing the running of support groups, young people or transition clinics and end of life care Education and training – in-house and locally Renal service development and policy making (in-house) Renal research, audit, client questionnaires Risk management, including signposting 	<p>Team leader</p> <ul style="list-style-type: none"> Responsibility for supervising renal social workers Attendance at management meetings
6	<ul style="list-style-type: none"> Require a critical understanding of detailed theoretical and practical knowledge Specialists and/or have management and leadership responsibilities Demonstrate initiative and are creative in finding solutions to problems Some responsibility for team performance and service development and they consistently undertake self-development 	<p>Equivalent of clinical/health/counselling psychologist Skills include:</p> <ul style="list-style-type: none"> Providing evidence-based assessment, formulation and psychological intervention to individuals and group interventions Specialist psychological assessment for transplant and live donation Risk assessment /management plans for individuals particularly in relation to deliberate self-harm Highly developed skills in providing specialist advice, consultation, teaching/training and supervision to wider renal team Post-doctoral level research, audit and service evaluation skills Contributing to service development 	<p>Specialist renal counsellor Skills include:</p> <ul style="list-style-type: none"> Acquiring specialist knowledge of renal patient pathway Working towards accreditation Supervision of trainee counsellors Running support groups; transition and end of life care clinics Involved in renal research, audit and service evaluation 	<p>Renal social worker</p> <ul style="list-style-type: none"> Acquiring specialist knowledge of issues affecting those with long-term conditions Carrying out complex assessments and statutory social work tasks e.g. safe-guarding, mental capacity assessments Carrying out research/audit presentations at local/national fora Engaging with MPT in delivering patient education Chairing relevant meetings Supervising student social workers
5	<ul style="list-style-type: none"> Have a comprehensive, specialised, factual and theoretical knowledge within a field of work and an awareness of the boundaries of that knowledge Can use knowledge to solve problems creatively, make judgments which require analysis and interpretation, and actively contribute to service and self- development. May have responsibility for supervision of staff or training 			
4	<ul style="list-style-type: none"> Require factual and theoretical knowledge in broad contexts within a field of work. Work is guided by standard operating procedures, protocols or systems of work, but the worker makes judgements, plans activities, contributes to service development and demonstrates self-development May have responsibility for supervision of some staff 	<p>Assistant psychologist</p> <ul style="list-style-type: none"> Assists a qualified renal psychologist to support individual and group interventions Assists research and audit activities 		<p>Renal social work assistant Assisting with:</p> <ul style="list-style-type: none"> Support to patients Running of patient and carer groups Gathering of information for audit/research Taking on a caseload of less complex work under the supervision of the renal social worker

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6

TECHNOLOGISTS

Haemodialysis is an advanced technology requiring high specification dialysis and water treatment equipment. Renal technologists provide equipment management (maintenance, calibration and repair) and Quality Management and Controls Assurance services. The multi-professional role of the technologist includes:

- Education and operational support for people living with kidney disease and the staff who support them;
- Specialist advice on the design, installation and commissioning of new dialysis facilities;
- Administrative and/or IT support.

The range and extent of these services may ultimately be dependent upon which department the technologist is employed by – i.e. Renal Unit, Medical Physics and Clinical Engineering, electrical and biomedical engineering (EBME) or Estates Departments.

Regardless of the employing department the technologist is working for, there will most certainly be a standard or common core of renal-related activities and services that the technologist will be expected to provide.

The Association of Renal Technologists (ART) recommends that all renal clinical technologists are registered with The Register of Clinical Technologists. The Professional Standards Authority (PSA) recommends only the use of practitioners (technologists) who are registered on accredited registers such as The Register of Clinical Technologists.¹

6.1 ROLE OF THE RENAL TECHNOLOGIST

Technical support from suitably trained technologists is of critical importance in the provision of regular dialysis treatment. An important aspect of the role is carried out in the clinical area. Technologists provide advice and support during dialysis to nursing staff and people receiving dialysis at home.

The technical role of both the renal technologist and renal technical manager will be broadly similar, but the technical manager may only commit approximately 50-70% of their time to technical duties. The remainder of their time will be committed to managerial duties ranging from: day to day management of staff; recruitment; asset management and equipment replacement programmes; local renal unit clinical governance and possibly wider governance within their Trust/organisation; and, staff training and development.

As an overview of the role, the renal technologist is responsible for:

- Monitoring dialysis water quality, ensuring governance, quality control and maintenance issues are carried out and reported on;
- Management of risks and contingency plans for plant failures;
- Development and review of equipment, operational policy and practice;
- Asset management, particularly requirements for medical equipment from trial evaluation, procurement, installation, lifetime maintenance and end of life disposal;
- Understanding and adhering to legislation, standards and guidance relevant to a renal technical department;
- Maintaining professional standards required whilst performing their job roles.

Staffing levels

Adequate staffing levels need to be considered based on a range of local factors including but not limited to:

- Number of people receiving home haemodialysis;
- Total number of people receiving haemodialysis;
- Number of dialysis stations operating in main and satellite units;
- Level of service provision being delivered e.g. in-house maintenance and maintenance provided under service contract from external providers.

The contribution of renal technologists to other aspects of service delivery and development also needs to be considered.

Based on the analysis data collected and the potential variations in technical services ART recommend the following:

- Where an on-call service is required a minimum of three whole time equivalent renal technologists are required;
- For every thirty (30) haemodialysis machines a minimum of one whole time equivalent renal technologist is recommended.

However, it should be noted that other local factors will influence the whole-time equivalents required. The ratio detailed above (1:30) includes technical managers, where 30-50% of their time is likely to be committed to managerial duties. This therefore impacts on the ratio potentially taking it higher, with consideration given to a ratio being 1:35 being acceptable.

The ratio of 1:35 is therefore given as a recommendation where renal technical teams support only the renal service and provide no support to other areas such as clinical engineering or endoscope washer-disinfector as examples. The ratio is also for whole time equivalents. The number of spare machines and backup/redundancy of central water treatment plants will potentially impact on the workforce requirements and indeed if an on-call service is required or not.

ART therefore recommend that where the number falls below three for services providing on-call or where the number of haemodialysis machines results in a ratio of 1:35+ that units consider adding this to their risk register with rationale and supporting control measures for moving away from the workforce recommendations.

Education and training

To support renal technologist's admission to the Register of Clinical Technologists accredited register, ART have developed the ART Training Scheme which meets the requirement for registration.

The scheme is a two year post graduate programme of in-post learning, designed to give a comprehensive understanding of the technology and underlying physics involved in Renal Replacement Therapy. It is open to all technologists who have gained General National Vocational Qualification (GNVQ) level 4 academic qualifications in an engineering or scientific subject as a minimum. The advent of modern apprenticeships may further define and shape the entry routes into this profession.

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THERAPIES: PHYSIOTHERAPY, OCCUPATIONAL THERAPY AND CLINICAL EXERCISE PHYSIOLOGY

Introduction

The number of people living with kidney disease is expected to rise over the next few years and add continuing pressure to an already stretched healthcare service.¹ The symptoms of stages 1-5 Chronic Kidney Disease (CKD) can lead to significant functional deterioration and reduced quality of life, contributing to recurrent and extended hospital admissions.^{2,3} Studies have shown a close correlation between End-Stage Kidney Disease and cognitive impairment, which affects an estimated 16-38% of these patients.⁴ People living with kidney disease have complex and changing physical activity levels, physical function and exercise requirements depending on the degree of renal impairment, co-morbidity, modality of treatment and medications. Helping people living with kidney disease to maintain independence to function optimally, often requires assessment and support from renal specialist physiotherapists, occupational therapists, clinical exercise physiologists and therapy assistants. The increasingly complex care requirements of people living with kidney disease are often compounded by malnutrition and prolonged hospitalisation. Recurrent episodes of illness and hospitalisation related to infection, surgery and cardiovascular disease are causes of muscle wasting, reduced physical functioning and deconditioning which require continuing rehabilitation support. In addition, the impact of unplanned dialysis requires intensive rehabilitation.

The British Association of Sport and Exercise Sciences (BASES) expert statement on exercise therapy for people living with kidney disease outlines the need for renal rehabilitation services across the trajectory of kidney disease.⁵ It recommends that “renal rehabilitation services should aim to increase physiological reserve capacity, improve muscular strength and reduce physical function limits (or prevent further deterioration for as long as possible), to reduce number and severity of CKD specific symptoms”.⁵ Exercise rehabilitation interventions in CKD have been shown to improve physical fitness and physical function.^{6,7}

The professions involved in the delivery of a Renal Therapy Service include renal physiotherapists, occupational therapists, clinical holistic exercise physiologists, alongside therapy support staff. The roles of these professions are described below, and the components of a renal therapy service are summarised in Table 1 on page 56.

7.1 PHYSIOTHERAPY

Physical inactivity has been identified as an independent risk factor for accelerated deterioration of kidney function, physical dysfunction, poor cardiovascular respiratory and metabolic health, and lower levels of quality of life in people living with in all stages of kidney disease.⁵ Renal physiotherapists are ideally placed within the NHS setting to assist patients with mobility, balance, physical activity and exercise interventions. Individualised exercise and physical activity advice, from specialist physiotherapists working as part of the renal MPT is essential for person-centred care and recovery. In an inpatient setting, the renal physiotherapist role involves assessment of mobility and rehabilitation needs to facilitate a safe and effective discharge. This includes a comprehensive physical assessment to determine mobility, function and balance and potential to benefit from further rehabilitation, followed by an individualised treatment plan to ensure optimal recovery, return to baseline level of function where possible, and safe and effective discharge to an appropriate setting, with follow-on care as required.

In the outpatient setting, renal physiotherapists should be involved in renal rehabilitation services, renal specific weight management clinics, assessment clinics and kidney transplant clinics. Physiotherapist involvement is also key to the implementation and delivery of intradialytic exercise programmes for people who are receiving haemodialysis. Intradialytic exercise is an ‘umbrella’ term which comprises any type of exercise programme delivered during haemodialysis treatment.⁸ In practice it is typically delivered by means of a bespoke static exercise bike, but can also incorporate resistance training, or a combination of aerobic and resistance training. Recent systematic reviews suggest that aerobic and resistance programmes, delivered in isolation, can improve field tests of exercise capacity,^{8,9} but combined training may impart a greater range of benefits, including increased exercise capacity, quality of life and reductions in levels of depression.⁷ Based on current available evidence, the Renal Association Haemodialysis Guidance recommends that intradialytic exercise should be available in all units, to enhance physical functioning.¹⁰

7.2 OCCUPATIONAL THERAPY

Occupational therapists are specialists in enabling people to achieve or maintain optimum functional levels for daily activities (occupations) by modifying the physical and social environment to overcome impairments.¹¹ Through the provision of self-management strategies and employing enabling approaches occupational therapists can help people to take control of their own health and wellbeing across all stages of their disease.¹²

NICE guidelines recommend regular occupational therapy sessions to improve and maintain the overall health and well-being of people.¹³ It has been identified that increasing physical and functional activities can lead to increased life expectancy, reduce the risk of depression and dementia, reduce falls risk, maintain independence and engagement in social activities for the general population.¹⁴

Occupational therapy intervention and rehabilitation for people living with CKD is tailored towards minimising the implications of multiple and constantly changing symptoms on occupational performance and wellbeing; consequently, it is pivotal for their management to anticipate functional problems and proactively manage the needs of the individual. People living with kidney disease can experience very rapid changes in their illness, in their treatment planning requirements and care settings. Proactive and timely access, continual monitoring and re-assessment by occupational therapy is essential throughout the patient pathway ensuring a flexible and timely response to these fluctuating needs. Consideration of the needs of informal and formal carers are also implicit to occupational therapy care planning.

Occupational therapists support people to remain at home and aim to reduce admissions and are therefore ideally placed to contribute significantly to improving the health and well-being of those with long term conditions such as CKD which in turn impacts on health and social care costs. The Royal College of Occupational Therapists have reported that by having occupational therapists on acute medical wards, length of stay can be cut from 9.5 days to one day.^{11,15}

Investment in occupational therapy is directly linked with improving patient experience, quality of life and efficiency of working. The Royal College of Physicians in their stroke guidelines 2016¹⁶ and the Faculty of Intensive Care Medicine 2015¹⁷ both recommend patients receive at least 45 minutes of occupational therapy input five days a week for adequate rehabilitation.

7.3 CLINICAL EXERCISE PHYSIOLOGISTS

The role of the clinical exercise physiologist is to advance the application of clinical exercise physiology to improve the health, fitness and quality of life for people who are at risk of developing, or who have already developed a chronic disease.^{5,18} Clinical exercise physiologists are appropriately trained and qualified exercise professionals who may be included in the clinical renal MPT, to assist with the development and delivery of effective exercise training interventions/services and to support the sustainability of physical activity behaviour change^{19,20} across the range of in-centre, outpatient, community and home-based settings.⁵ Long term engagement in physical activity is important for patients with CKD to enhance their quality of life and physical function whilst reducing cardiovascular disease risk factors and other comorbidities which may then decrease the risk of secondary diseases, such as cardiovascular disease and heart failure.²¹

Trained clinical exercise physiologists working as part of the MPT can prescribe, deliver and monitor physical activity programmes to provide referral pathways for physical activity as part of NHS services, in the community or external services. Multimodal exercise should be provided to maintain or improve functional capacity, aerobic capacity, body composition and quality of life through personalised exercise programmes or group exercise to enhance social interaction. These exercise approaches are recommended by the BASES expert statement on exercise therapy for people with CKD.⁵

Renal rehabilitation services should include clinical exercise physiologists alongside physiotherapists to support the development and evaluation of individualised, effective and sustainable physical activity and exercise plans. The role of these individuals and their activities, will be central to the transition from acute rehabilitation services towards community-based pre-dialysis (stages 2-4) and post-transplantation services (akin to Phase IV cardiac rehabilitation) involving, where appropriate, self-managed physical activity plans to support sustained participation.⁵

Referral networks should be formed between healthcare professionals, such as physiotherapists, and appropriately trained clinical exercise physiologists to develop integrated referral pathways to exercise in the community in order to enhance access to long term safe and effective exercise services. Clinical exercise physiologists holding additional qualifications such as the BASES Certified Exercise Practitioner status, British Association for Cardiovascular Prevention and Rehabilitation (BACPR) cardiac phase IV exercise specialist certification,¹⁸ or the American College of Sports Medicine clinical exercise physiologist certification, are able to manage the transition and implement community exercise services that are responsive to the changing needs of all people with CKD.

TABLE 1. COMPONENTS OF THE RENAL THERAPY SERVICE.

Role of specialist renal physiotherapist
<ul style="list-style-type: none"> • Assessment of mobility, physical function, balance, exercise capacity, muscle strength and the impact of renal-related symptoms • Developing, prescribing and monitoring treatment plans for physical activity, exercise or holistic rehabilitation based on individual need • Work with renal dietitians in MPT-led weight management clinics • Staff education on physical activity and exercise training for people living with chronic kidney disease • Development of educational materials and provision of education on physical activity and exercise training for patients with chronic kidney disease • Audit and research <p>Inpatient specific roles:</p> <ul style="list-style-type: none"> • Comprehensive individualised assessment and treatment to enhance mobility and function, and facilitate safe and effective discharge planning • Referral to inpatient rehabilitation centres if applicable • Identify participants suitable for renal rehabilitation outpatient services and other community-based rehabilitation or support services <p>Outpatient specific roles:</p> <ul style="list-style-type: none"> • Renal rehabilitation including physical function and exercise capacity assessment • Exercise prescription through renal rehabilitation classes or home programmes • Patient engagement with exercise therapy and physical activity interventions through use of behaviour change techniques such as motivational interviewing • Working closely with dietitian colleagues for renal specific weight management MPT-led clinics (to include assessment, prescription of physical activity and progression of treatment plan) • Physiotherapy assessment, prescription of exercise and physical activity interventions for people receiving care in post-transplant • Assessment, exercise prescription and progression of exercise training plan for intradialytic exercise
Role of the renal physiotherapy assistant
<ul style="list-style-type: none"> • Assist in assessment of people living with kidney disease • Implementation of physiotherapy intervention plans for balance, mobility and exercise rehabilitation • Assist in data collection and audit • Assist with intradialytic exercise programme delivery
Role of the specialist renal occupational therapist
<ul style="list-style-type: none"> • Assessment and interventions for people experiencing difficulties performing meaningful occupations e.g. personal care, meal preparation, vocational roles • Recommendations for adaptations to home environment • Provision of manual handling or adaptive equipment • Seating and postural assessments • Supporting optimal end of life care • Cognitive assessments and stimulation • Onwards referrals for rehabilitation and supportive care • Audits and research <p>Outpatient specific interventions:</p> <ul style="list-style-type: none"> • Assessment for transport needs • Vocational rehabilitation • Application of fatigue and sleep management strategies • Energy conservation education and techniques • Anxiety management – coping strategies • Relaxation sessions • Baseline cognitive and functional assessments • Support tolerance of dialysis treatment e.g. positioning, relaxation/distraction • Supporting home dialysis through environmental assessments and task analysis • Promotion of meaningful occupations (losing ~12 hours per week on dialysis) • Upper limb rehabilitation • Facilitation of education and group therapy sessions
Role of the clinical exercise physiologist
<ul style="list-style-type: none"> • Assessment and interpretation of physiological impairment, functional limitations, and functional status • Assessment and interpretation of physical activity behaviours • Physical activity behaviour change counselling • Production of educational materials on exercise; planning, development, implementation and monitoring of safe and sustainable physical activity and exercise plans, based on individualised assessment and needs in a community setting • Facilitating safe and effective evidence-based community exercise prescription and advice • Agreeing and implementing supervised or unsupervised renal rehabilitation classes or home-based physical activity programmes

7.4 THERAPY STAFFING LEVELS

Physiotherapy

A 2014 exercise counselling survey conducted on behalf of the British Renal Society (BRS) Rehabilitation Network highlighted a shortage of knowledgeable exercise professionals such as physiotherapists, lack of funding and lack of time for rehabilitation as the main barriers to implementing physical activity and exercise counselling within UK renal units.²² There is a need for an increase in physiotherapy service and capacity to address this. The BRS Rehabilitation Network has reviewed the physiotherapy workforce requirements and produced the current recommendations based on requirements for physiotherapy staff in both the inpatient, and outpatient, renal settings. The skill levels described are outlined in detail within Table 4 at the end of this chapter (page 59).

Inpatient physiotherapy service

We suggest each 25-bed inpatient ward should have at least 1.0 WTE specialist renal physiotherapist at minimum skill level six (see skills for health Table 4 at the end of this chapter) and 1.0 WTE physiotherapy assistant at a minimum skills level 3. This will ensure timely and comprehensive assessments and inpatient rehabilitation, resulting in efficient discharge planning and positively influencing both length of stay and patient outcomes. Staffing levels may vary depending on the number of beds, patient complexity and acuity (for example, high dependency beds which may require a further increase in staffing levels).

Outpatient physiotherapy services

Physiotherapy-led renal rehabilitation classes

These outpatient classes are suitable for people across the CKD trajectory and are offered in either a hospital, or community setting. The classes offer individualised exercise assessment, prescription and progression of exercise training plans. Renal rehabilitation is modeled on pulmonary and cardiac rehabilitation, where exercise is combined with disease-specific education. The UK Pulmonary Rehabilitation guidelines recommend one staff member per eight patients in an exercise class, and one staff member per six patients for education sessions. It is suggested that staffing levels also allow for annual leave, training, sickness and maternity leave.²³ Cardiac rehabilitation guidelines suggest two specialist physiotherapy staff members (AfC band 6-7) per 500 patients.^{24,25} Based on these guidelines, and evidence from existing NHS-commissioned renal rehabilitation services²⁶ the BRS Rehabilitation Network recommends one specialist renal physiotherapist (skill level 6-7), and one physiotherapy assistant/non-qualified member (skill level 3-4) of staff per class of 12 patients.

Physiotherapy renal transplant clinics

Physiotherapy-led renal transplant clinics are provided as part of the care delivered by the wider renal transplant team. In this setting, specialist renal physiotherapists (skill levels 7-8) assess and prescribe post-surgical exercise, physical activity and lifestyle interventions for people who have received a kidney transplant, and review these on an annual basis. The Cystic Fibrosis UK standards for clinical care recommend patients are reviewed by specialist physiotherapists in an outpatient clinic on annual basis.²⁷ Therefore, the BRS Rehabilitation Network recommends that a specialist renal physiotherapist (skill level 7-8) is present during all renal transplant clinics.

Renal weight management clinics

These clinics are delivered jointly by a renal specialist dietitian and a renal specialist renal physiotherapist (skill level 7-8) in an outpatient setting. Patients are seen on an individual basis monthly for six months, and three-monthly after this.^{3,28,29} For successful weight loss treatment that initiates changes to both food and physical activity behaviours, specific skill sets are required for renal therapies staff.

Intradialytic exercise

Intradialytic exercise programmes are delivered during haemodialysis treatment. Various formats may be implemented, including aerobic only training (typically delivered by means of a bespoke static exercise bike), strength training, or a combination of both.^{8,9} Programmes may also include exercise counselling and behaviour change support to increase physical activity outside of the haemodialysis unit.¹⁰ Given the range of programmes available, a variety of staffing models may be utilised, with more input potentially required for combination training programmes. All types of programme should be supervised by an appropriately trained individual.¹⁰ The level and type of support required will also be dependent upon the size of the unit and the level of patient dependency.

The optimum length of programme is currently unknown, but available guidance suggests that programmes of at least 4 months duration, which progressively increase exercise volume from at least 30 minutes, and are available at least three times per week, will confer benefit.¹⁰ Where intradialytic exercise is delivered by physiotherapists, the programme should be overseen, and new patients assessed, by a specialist physiotherapist (skill level 6-7), with support from a therapy assistant (level 3-4) to provide the intervention and progress the programme as directed by the qualified therapist.

Based on existing NHS-commissioned renal physiotherapy services, the BRS Rehabilitation Network suggest a minimum provision of 1.0 WTE skill level 7-8 and 1.0 WTE level 6 physiotherapists and 1.0 WTE skill level 4 therapy assistant, to allow for delivery of:

- Four renal rehabilitation classes per week;
- Six new renal rehabilitation patient assessments per week;
- Provision for oversight and implementation of two sessions (Monday to Friday) of intradialytic (based on programme which comprises aerobic training delivered by means of a static exercise bike) (up to 120 patient contacts). This estimate is based on two 12 bedded dialysis units;
- 1x 0.5 day renal weight management clinic per week;
- 3x 0.5 day renal transplant clinics.

Occupational therapy

In 2018, A survey was conducted to assess the renal occupational therapy services across the UK units. Out of the 86 hub units in the UK; 19 had access to renal-specific occupational therapy, 47 had access to generic occupational therapy, 8 had no access to occupational therapy and 12 hub units were uncontactable.³⁰ Staffing levels from the survey are presented in Table 2 below.

TABLE 2. RENAL OCCUPATIONAL THERAPY WORK FORCE IN THE UK.³⁰

Grade of OT	WTE	Percent
Band 7 – Senior specialist OT	4.5	16.73
Band 6 – Senior OT	12	44.61
Band 5 – OT	6	22.3
Band 4 – OTA	1	3.72
Band 3 – OTA	3	11.15
Band 2 – OTA	0.4	1.49

OT, Occupational Therapist; OTA, Occupational Therapy Assistant

For an inpatient setting, we suggest that every unit should have access to specialist renal occupational therapists to ensure people living with kidney disease receive interventions tailored to their specific needs. We suggest minimum staffing of 1.0 WTE registered occupational therapist minimum level 6-7 per 27 bed wards and 0.5 WTE minimum level 4. This will ensure adequate staffing to allow the provision of effective rehabilitation. The skill levels described are outlined in detail within Table 3 at the end of this chapter (page 59).

For outpatient services, we suggest minimum staffing of 1.0 WTE registered occupational therapist minimum level 6 and 0.5 WTE minimum level 3 occupational therapist assistant. Numbers will vary depending on size of unit and additional services offered. This staffing level will allow occupational therapists to support with symptom management and provide interventions on the dialysis unit and in outpatient clinics.

Clinical exercise physiologists

Lack of funding and staff time may be the main barriers to implementing physical activity and exercise counselling in UK renal units and clinical exercise physiologists can support physiotherapy services to address this. Trained clinical exercise physiologists can design, agree, review and monitor physical activity programmes as part of community-delivered exercise programmes. The BRS Rehabilitation Network recommends renal physiotherapists and occupational therapists liaise with local trained clinical exercise physiologists to develop and maintain coherent exercise referral pathways. This will ensure that all patients have access to individualised and monitored exercise prescriptions relating to their care.

TABLE 3. SKILLS FOR HEALTH CAREER FRAMEWORK FOR PHYSIOTHERAPY AND OCCUPATIONAL THERAPY³¹

Level	Explanation	Physiotherapy	Occupational therapy
8	<ul style="list-style-type: none"> Require highly specialised knowledge, some of which is at the forefront of knowledge in a field of work Leaders with considerable responsibility, and the ability to research and analyse complex processes Have responsibility for service improvement or development May have considerable clinical and/or management responsibilities, be accountable for service delivery or have a leading education or commissioning role 	<p>Equivalent to consultant physiotherapist Renal-specific skills in this area include leading:</p> <ul style="list-style-type: none"> Specialist renal therapy team Research in renal rehabilitation Service development and improvement and education at a local and national level Directing and contributing to policy and commissioning in relation to renal therapy interventions. 	<p>Clinical specialist - consultant occupational therapist</p> <ul style="list-style-type: none"> Advanced use of screening and assessment tools, goal-setting and psychological interventions to facilitate occupational engagement and meaningful activity Uses complex clinical reasoning and dual training across physical and mental health to facilitate highly specialist, innovative interventions Harnesses knowledge to drive service development Leads on renal-specific training and development Active in professional networks and national service development Actively engages in quality improvement (QI) and research
7	<ul style="list-style-type: none"> Have a critical awareness of knowledge issues in the field and at the interface between different fields They are innovative and have a responsibility for developing and changing practice and/or services in a complex and unpredictable environment 	<p>Advanced practitioner/highly specialised renal physiotherapist Renal-specific skills in this area include:</p> <ul style="list-style-type: none"> Highly specialised assessment and management and treatment of patients across the CKD trajectory including specialised outpatient therapy clinics e.g. weight and symptom management Highly specialised skills in behaviour change techniques Significant contribution to research, service delivery and management Leading a team of specialist renal therapists 	<p>Senior specialist occupational therapist</p> <ul style="list-style-type: none"> Advanced use of screening and assessment tools, goal-setting and psychological interventions to facilitate occupational engagement and meaningful activity Uses highly specialist clinical reasoning and dual training to facilitate highly specialist interventions Uses theoretical and practical knowledge to implement service development and QI Actively involved in training and development Takes clinical and operational responsibility for the specialist work of their team Involved in professional networks and national service development
6	<ul style="list-style-type: none"> Require a critical understanding of detailed theoretical and practical knowledge Specialists and/or have management and leadership responsibilities Demonstrate initiative and are creative in finding solutions to problems Some responsibility for team performance and service development and they consistently undertake self-development 	<p>Specialist/senior renal physiotherapist</p> <ul style="list-style-type: none"> Specialist renal assessment and treatment skills including rehabilitation, individualised exercise prescription, mobility progression, symptom management, cognitive strategies and behaviour change techniques Prioritise work efficiently taking into account clinical and service priorities Advise, guide and teach assistant, junior staff, assessment and management of patients Significant contribution to research and service development 	<p>Specialist occupational therapist</p> <ul style="list-style-type: none"> Competent using clinical reasoning and dual training across physical and mental health to facilitate delivery of specialist interventions Engagement in service development and QI projects with support Awareness of professional networks and context of national policies Use of screening and assessment tools, goal-setting and psychological interventions to facilitate occupational engagement and meaningful activity
5	<ul style="list-style-type: none"> Have a comprehensive, specialised, factual and theoretical knowledge within a field of work and an awareness of the boundaries of that knowledge Can use knowledge to solve problems creatively, make judgments which require analysis and interpretation, and actively contribute to service and self-development. May have responsibility for supervision of staff or training 	<p>Basic grade/junior physiotherapist</p> <ul style="list-style-type: none"> Knowledge and skills to complete renal assessments and treatment May require assistance from senior staff for more complex patient management Assist in research and service development projects Advise, guide and teach assistant, junior staff, assessment and management of patients 	<p>Occupational therapist</p> <ul style="list-style-type: none"> Uses standard screening and assessment tools and goal-setting to facilitate occupational engagement and meaningful activity Uses basic clinical reasoning and dual training across to facilitate delivery of interventions with support Support seniors with service development and QI Manages a designated workload within scope of practice with support Contributes to discussion about professional practice
4	<ul style="list-style-type: none"> Require factual and theoretical knowledge in broad contexts within a field of work. Work is guided by standard operating procedures, protocols or systems of work, but the worker makes judgements, plans activities, contributes to service development and demonstrates self-development May have responsibility for supervision of some staff 	<p>Therapy technical instructor (experienced)</p> <ul style="list-style-type: none"> Knowledge and skills to complete renal assessments and treatment in straightforward circumstances Requires assistance from senior OT/PT for more complex patient management Advise, guide and teach assistants and students Assisting in research and service development 	
3	<ul style="list-style-type: none"> Require knowledge of facts, principles, processes and general concepts in a field of work May carry out a wider range of duties than the person working at level 2, and will have more responsibility, with guidance and supervision available when needed Contribute to service development and are responsible for self-development 	<p>Therapy technical instructor</p> <ul style="list-style-type: none"> Able to complete basic renal rehabilitation assessments Administration Assisting with patients requiring the assistance of two therapists for rehabilitation (inpatient services) Providing exercises and therapy interventions (including relaxation and meaningful activities) from PT and OT plans 	
2	<ul style="list-style-type: none"> Require basic factual knowledge of a field of work Carry out clinical, and administrative duties according to established protocols 	<p>Therapy assistant</p> <ul style="list-style-type: none"> Able to complete basic renal rehabilitation assessment with supervision Liaison and booking more complex patients with a PT/OT Providing interventions from PT/OT plans Assisting with patients requiring the assistance of two therapists for rehabilitation 	

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RESEARCH AND FUTURE RECOMMENDATIONS

RESEARCH

Multi-professional research is of paramount importance to enhancing and improving all aspects of patient care and is a key commitment within the NHS long term plan.¹ Correspondingly, involvement in research should be considered as a key component within the roles of all healthcare professionals working in kidney care.

Basic research to identify new therapeutic targets, collaborative clinical trials of new therapeutic agents and interventions, clinical application of new molecular genetic techniques and use of information technologies in patient care are all needed to advance care of adults and children with kidney conditions. In addition, epidemiological and qualitative research to understand the impact of disease on patients and families, and research to guide optimal service delivery are all essential. UK nephrology centres have an excellent track record for collaborative working to deliver multi-centre clinical research. We direct readers to the UK Kidney Research Consortium² where the UK renal research strategy can be accessed.

FUTURE RECOMMENDATIONS

These workforce planning recommendations are to be reviewed and revised as appropriate on a two-yearly cycle. It is recognised that the implementation of the NHS Long Term Plan will have an impact upon workforce planning, and any future recommendations will need to reflect this.¹ The use of technology is likely to drive innovation and changes in practice, which support the workforce, enhancing the productivity, efficacy and efficiency of high-quality kidney care. Recommendations from The Kidney Quality Improvement Partnership (KQIP) projects³ will undoubtedly inform and shape service provision, ways of working, and ultimately the future workforce.

Involving people living with kidney disease and those supporting them in future workforce planning and service design also continues to remain key.

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