

Renal services

CSCF v3.2

Module overview

Please note: This module must be read in conjunction with the Fundamentals of the Framework (including glossary and acronym list).

Renal services are a specialised area of medicine involving diagnosis, management and treatment of complications for patients with kidney impairment and/or disease. The onset of kidney disease can be sudden (acute) or develop over months or years (chronic), and may or may not progress to kidney failure.

End-stage kidney disease (ESKD) results when the kidney function is insufficient to excrete waste, concentrate urine, regulate electrolytes and produce hormones to the extent death will occur unless a renal replacement therapy (RRT) is instituted. The continuum of care for patients with chronic kidney disease (CKD) encompasses managing early and potentially treatable disease through to the management of ESKD, including renal-related surgery and RRT in the form of dialysis or transplantation services.

Care and management throughout the continuum of illness—from prevention, screening, diagnosis and pre-dialysis care through to treatment, supportive care and palliative care—is complex and requires specialised care. This care is delivered in a range of settings by a number of health professionals and through varying treatment modalities, including surgery, dialysis and supportive care. Renal care requires close collaboration between primary care providers, renal teams and other specialist services. The range of settings for the delivery of renal services includes the patient's home, hospital, stand-alone facilities and/or community healthcare settings.

Existing comorbidity combined with age and other patient characteristics can be used as a guide to classify ESKD risk. The mix of patients categorised by ESKD risk is likely to have implications for facilities in terms of staffing and service delivery. The Caring for Australasians with Renal Impairment (CARI) guidelines¹ are recognised as best practice standards in provision of renal services and should be followed by renal service providers, wherever possible.

Renal services within the scope of the CSCF and their location within the CSCF are outlined in Table 1. The CSCF's focus is on treatment services for patients with diagnosed renal impairment and/or disease provided by public or private health facilities, and includes renal dialysis services, renal-related surgery services and superspecialty renal transplantation services.

Table 1: Context for descriptions of renal services within the CSCF

Renal services	CSCF module
Renal dialysis services	Renal Services
Renal-related surgery services	Renal Services / Surgical Services
Superspecialty (including renal transplantation and children's renal) services	Renal Services
Palliative care	Palliative Care Services

Where nephrology services (general and interventional) and/or palliative care services are provided as part of renal service provision, reference to relevant CSCF modules is required.

The detection and management of early CKD by primary care providers and non-nephrology registered medical specialists are outside the scope of the CSCF.

Children younger than 14 years are not treated in Levels 1 to 4 services. Children younger than 14 years with renal impairment / disease need to be treated by staff with particular skills and expertise.² That is, children's nephrology services (encompassing general or complex children's nephrology, children's dialysis and children's renal transplantation) can only be provided under the care of an appropriate superspecialty paediatric service. All children's nephrology services are currently based in Brisbane, but are also offered via various outreach services. All referrals to children's nephrology services in Brisbane are made after consultation with the local paediatrician.

Children have specific needs in health services—please refer to the relevant children's services modules.

Service networks

In addition to the requirements outlined in the Fundamentals of the Framework, specific service network requirements include:

- provision of Level 1 and 2 services to patients and their families via support from a Level 3 (or above) service. Consultative services may be provided by a Level 3 (or above) service, either on-site or off-site at a lower level service
- consideration by staff, at different service levels, of the complexity and risks associated with the delivery of renal medicine and the need for specialised support
- assessment of patient risk—according to ESKD risk categories—can also provide a guide as to the appropriate level of service required, although other factors (e.g. a carer to assist with self-care, or a clinical opinion) may obviate this.

Levels of patient complexity appropriate for each service may be described as follows:

Service	Complexity
Levels 1, 2, and 3 services	Low complexity
Level 4 service	Moderate complexity
Level 5 and 6 services	High complexity

Service requirements

In addition to the requirements outlined in the Fundamentals of the Framework, specific service requirements include:

- provide relevant clinical indicator data to satisfy accreditation and other statutory reporting obligations.

Renal services

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Service description	<ul style="list-style-type: none"> • supports independent renal dialysis undertaken in ambulatory setting. • self-care dialysis treatment (either peritoneal dialysis or haemodialysis) for ESKD (adult and/or children) may be undertaken in patient's home or designated dialysis area in the community, or within grounds of healthcare facility. • health professionals (including 	<ul style="list-style-type: none"> • supports dialysis treatment for low-complexity patients who can be dialysed without assistance from registered medical practitioner, but require assistance of registered nurse to perform dialysis procedure. • family member or carer may also assist the patient. • provides and supervises maintenance dialysis in minimal care settings, but does not include dialysis 	<ul style="list-style-type: none"> • provides care to patients on maintenance dialysis. • may not offer full spectrum of dialysis modalities, such as home renal replacement therapies; however, Appendix 1 outlines requirements for services when provided. • dialysis provided in designated dialysis area for patients with ESKD who require assistance of registered nurse. 	<ul style="list-style-type: none"> • provides Level 3 services plus definitive renal medicine care for patients with acute renal failure and ESKD (excluding peri-, operative and post-operative management of kidney transplantation patients). • offers renal investigation and treatment services for renal patients with complex multisystem failure. • multidisciplinary team of medical, nursing and allied health staff manages patients undergoing all 	<ul style="list-style-type: none"> • provides definitive renal medicine care for patients with acute renal failure and/or ESKD (excluding peri-, operative and post-operative management of kidney transplantation patients). • recognised as highest level referral centre for patients with renal impairment / disease / failure who do not require transplantation. • provides full range of access surgery and management including: 	<ul style="list-style-type: none"> • provided at large hospital (usually metropolitan hospital) and is highest level referral centre for patients with acute renal failure / CKD / ESKD and designated as statewide and/or superspecialty service. • provides renal transplantation services including organ donation procurement programs; live donor and deceased donor transplantation services; peri-, operative and post-operative

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
	<p>medical and nursing staff) not present during procedure of maintenance dialysis in home-care or self-care settings.</p> <ul style="list-style-type: none"> family member or support person / carer may assist patient in dialysis treatment. patient and support person/s trained to manage problems related to their dialysis with access to training staff via telephone. hospital or general practitioner 	<p>treatment for patients with acute renal failure, and will not have overnight unplanned admission facilities.</p> <ul style="list-style-type: none"> no direct renal medical services provided. registered medical specialist with credentials in nephrology (nephrologist) should review patients on dialysis every 2 months or more frequently if indicated (this clinical review will include home therapies staff and other members of multidisciplinary 	<ul style="list-style-type: none"> does not include dialysis treatment for patients with acute renal failure; however, it may provide long-term care of post-transplant patients, where appropriate. 	<p>types of dialysis and renal access surgery.</p> <ul style="list-style-type: none"> access 24 hours to registered medical specialist with credentials in nephrology. access to registered medical specialist with credentials to perform renal-related surgery for peritoneal dialysis and primary fistula creation. vascular access surgery for more complex fistula creation and revisions desirable. access to nurse who coordinates care of patients' vascular access. 	<ul style="list-style-type: none"> multistaged vascular access surgery central venous (cuffed and uncuffed) access catheter placement peritoneal dialysis catheter placement emergency access surgery and interventional radiology or nephrology services 24 hour/s access to allied health services and post-transplant management. multidisciplinary team of medical, nursing and allied health staff manages patients undergoing all 	<p>management; and long-term follow-up.</p> <ul style="list-style-type: none"> children's Level 6 renal service provides all renal services for children younger than 14 years, including general children's nephrology, dialysis, renal transplantation services, and children's emergency retrieval and transfer service. children's renal transplantation services encompass live donor and deceased donor transplantation services, peri-, operative and post-operative management,

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
	<p>may not be readily accessible for remote patients so important arrangements made to deal with complications (including medical evacuation) should they arise.</p> <ul style="list-style-type: none"> day-to-day consultation may occur via telephone or in consultation with local health worker. features of Level 1 renal service summarised in Appendix 1. 	<p>team as appropriate).</p> <ul style="list-style-type: none"> features of Level 2 renal service summarised in Appendix 1. 		<ul style="list-style-type: none"> may be part of service network with higher level services ensuring access to information about latest evidence-based care and treatments. features of Level 4 renal service summarised in Appendix 1. 	<p>types of dialysis and renal-related surgery.</p> <ul style="list-style-type: none"> treatment occurs in different hospital-based settings and extends to specialised units where patients require higher level of care. part of service network with higher level services ensuring access to information related to latest evidence-based care and treatments. does not routinely treat children younger than 14 years; however may offer educative / consultative 	<p>and long-term follow-up.</p> <ul style="list-style-type: none"> provides education and training programs in independent (home / self-care) dialysis for children. may be links with Level 5 or 6 adult renal services. provides and accepts referrals from interstate and overseas, where applicable. active liaison with lower level intensive care services for referral and transfer of patients. provides full range of access

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
					<p>service for paediatric renal patients.</p> <ul style="list-style-type: none"> • features of Level 5 renal service summarised in Appendix 1. 	<p>surgery including:</p> <ul style="list-style-type: none"> • multi-staged vascular access surgery • central venous (cuffed and uncuffed) access catheter placement • peritoneal dialysis catheter placement • emergency access to surgery, interventional radiology or nephrology services, and access—24 hours—to allied health services and transplant management. • multidisciplinary team of medical, nursing and allied health staff manages patients

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
						<p>undergoing all types of dialysis and renal surgery, including transplantation.</p> <ul style="list-style-type: none"> part of service network with lower level services ensuring exchange of information about latest evidence-based care and treatments. features of Level 6 renal service summarised in Appendix 1.
Service requirements	<p>As per module overview, plus:</p> <ul style="list-style-type: none"> renal patients and local health service professionals must be supported with technical 	<p>As per Level 1 service.</p>	<p>As per Level 2, plus:</p> <ul style="list-style-type: none"> access to emergency service in close proximity to patient's home, or retrieval plan for emergencies such as fistula 	<p>As per Level 3, plus:</p> <ul style="list-style-type: none"> must maintain links with renal transplantation centre. may manage home therapies service 	<p>As per Level 4, plus:</p> <ul style="list-style-type: none"> usually manages home therapies service (providing education, and professional and technical support) to 	<p>As per Level 5, plus:</p> <ul style="list-style-type: none"> manages home therapies service (providing education, and professional and technical support) to

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
	<p>assistance and education by Level 3 or higher service (which may not be in their own locality), including range of medical, nursing and allied health professionals.</p> <ul style="list-style-type: none"> documented processes with public or suitably licensed private health facility/s for patient referral and transfer to/from higher level of service to ensure safe service provision. referral to Level 3 (or higher) service for all patients experiencing serious 		<p>problems or peritonitis in patients receiving peritoneal dialysis.</p> <ul style="list-style-type: none"> provision or links to service providing adult patient education / training in independent (home / self-care) dialysis. only undertakes vascular access surgery if service has reliable access to registered medical specialist credentialed to perform renal-related surgery (excluding transplantation) and radiology services. 	<p>(providing education, and professional and technical support) to allow independent or dependent in-centre haemodialysis or peritoneal dialysis locally or in other locations.</p> <ul style="list-style-type: none"> may manage and/or support lower level renal services and may provide long-term care of post-transplant patients, where appropriate. 	<p>allow independent or dependent in-centre haemodialysis or peritoneal dialysis locally or in other locations.</p> <ul style="list-style-type: none"> access to apheresis 	<p>allow independent or dependent in-centre haemodialysis or peritoneal dialysis locally or in other locations.</p>

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
	<p>comorbidities impacting on dialysing capacity or with vascular access problems.</p> <ul style="list-style-type: none"> all patients receiving maintenance dialysis must be clinically reviewed regularly by registered medical specialist with credentials in nephrology and by advanced home therapies staff from higher level service. continuity of patient care achieved through communication and collaboration between health services in local 		<ul style="list-style-type: none"> may provide peritoneal dialysis for admitted patients only if on-site nursing staff trained to perform peritoneal dialysis and if supervision by registered medical specialist with credentials in nephrology accessible. admitted patients with minor coincidental problems (e.g. broken leg) may be managed provided they do not require care from registered medical specialist with credentials in nephrology. 			

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
	<p>community (including local hospital) and Level 3 (or higher) renal service through documented processes.</p> <ul style="list-style-type: none"> interval care undertaken by medical officers or nephrology nurse practitioners under supervision of registered medical specialist with credentials in nephrology. 					
Workforce requirements	<p>A Level 1 service requires:</p> <p>Medical</p> <ul style="list-style-type: none"> routine medical reviews provided by higher level specialist. 	<p>As per Level 1 service plus:</p> <p>Nursing</p> <ul style="list-style-type: none"> access to suitably qualified and experienced registered 	<p>As per Level 2 service plus:</p> <p>Medical</p> <ul style="list-style-type: none"> access—24 hours—to registered medical specialist with 	<p>As per Level 3 service plus:</p> <p>Medical</p> <ul style="list-style-type: none"> on-site registered medical practitioner. 	<p>As per Level 4 service plus:</p> <p>Allied health</p> <ul style="list-style-type: none"> access to specialised clinical social workers—or health practitioners 	<p>As per Level 5 service plus:</p> <p>Medical</p> <ul style="list-style-type: none"> access to registered medical specialist with credentials to perform renal-

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
	<p>Nursing</p> <ul style="list-style-type: none"> renal care coordination via treating service; however, patient may interact with nurses in local community (e.g. domiciliary services, practice nurses [however titled] or diabetes educators and/or Aboriginal and Torres Strait Islander health workers where relevant.) <p>Allied health</p> <ul style="list-style-type: none"> access to social worker who has established community resources and networks to assist and 	<p>nurses to assist dialysis patient.</p> <ul style="list-style-type: none"> some renal care coordinated locally, but likely to have support from treating service. <p>Allied health</p> <ul style="list-style-type: none"> access to social worker with Level 3 (or higher) service experience and home visiting role, as required, with designated renal caseload, including pre-dialysis, CKD or ambulatory care patients, and with documented processes with community support services. designated clinical 	<p>credentials in nephrology.</p> <p>Nursing</p> <ul style="list-style-type: none"> direct care by registered nurses trained to perform haemodialysis. if peritoneal dialysis patients treated within service, nursing staff must be trained to undertake these procedures. renal care coordination done locally, where appropriate. <p>Allied health</p> <ul style="list-style-type: none"> access to clinical social worker experienced in managing renal patient caseload such 	<ul style="list-style-type: none"> access to interventional nephrologist or radiologist to perform dialysis access-related procedures. access to registered medical specialist with credentials to perform renal-related surgery (excluding transplantation). <p>Allied health</p> <ul style="list-style-type: none"> access to clinical social worker or health practitioner with competencies in case management and counselling, and with specialised renal knowledge to manage designated caseload, 	<p>with competence in case management and counselling—with designated caseloads providing services to admitted patients, ambulatory care patients, haemodialysis and home therapies units, as well as preliminary renal patient preparation for transplant work-up.</p> <ul style="list-style-type: none"> access to dietician or team of dieticians—one of whom should be lead—with designated renal caseload providing 	<p>related surgery (including transplantation).</p> <ul style="list-style-type: none"> procedures performed by registered medical specialist with credentials in children's renal surgery. access—24 hours—to registered medical specialist with credentials in children's renal medicine. access—24 hours—to registered medical specialist with credentials in children's surgery. access—24 hours—to registered medical

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
	<p>support patients and their families in their own homes.</p> <ul style="list-style-type: none"> access to dietician resourced to manage renal patients—dietician could be from Level 3 or higher service, but, whether servicing patients receiving dialysis or patients with CKD, should have sufficient renal experience, as well as access to relevant serum biochemistry and maintenance dialysis team. 	<p>pharmacist—may be pharmacist in community with links to pharmacist at higher level.</p> <ul style="list-style-type: none"> access to medication liaison and dispensary service to ensure continuity of medication management. 	<p>as admitted, ambulatory care and dialysis patients—this caseload also includes home training, and social worker should have access to specialised knowledge and established networks.</p> <ul style="list-style-type: none"> access to dietician resourced to manage admitted, ambulatory care and dialysis patients; their role also includes home training, and should have established networks with ability to access specialised 	<p>including admitted or ambulatory patient care, haemodialysis and home therapies.</p> <ul style="list-style-type: none"> access to established resources and networks to support patients and their families. access to dietician with designated renal responsibility and established networks with ability to access specialised renal dietetic knowledge for management of inpatients, ambulatory care renal patients, and haemodialysis 	<p>services to admitted renal patients, ambulatory care renal patients, and haemodialysis and peritoneal dialysis units.</p> <ul style="list-style-type: none"> access to designated clinical renal pharmacists providing clinical service to renal admitted patients, renal ambulatory care patients, and haemodialysis and peritoneal dialysis units. 	<p>specialist with credentials in children’s anaesthesia.</p> <p>Nursing</p> <ul style="list-style-type: none"> renal care coordination for local and statewide services. <p>Allied health</p> <ul style="list-style-type: none"> requires specialised clinical social workers—one of whom is lead—with renal caseload providing specialised services to admitted renal patients, ambulatory care renal patients, haemodialysis and home therapy units, and pre/post-operative renal

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
	<p>Other</p> <ul style="list-style-type: none"> access to technical expertise (e.g. technician skilled in dialysis machinery maintenance, calibration and repair). 		<p>renal dietetic knowledge.</p> <ul style="list-style-type: none"> access to general clinical pharmacist or pharmacist with dedicated renal responsibility to provide service for inpatients; pharmacist should have established networks with ability to access specialist clinical knowledge of renal pharmacy for ambulatory renal patients and for peritoneal dialysis and haemodialysis. provision of, or access to, medication liaison and dispensary service to 	<p>and peritoneal dialysis units.</p> <ul style="list-style-type: none"> access to clinical pharmacist with dedicated renal responsibility and established networks with ability to access specialist renal clinical pharmacy knowledge for inpatients, ambulatory care renal patients, and haemodialysis and peritoneal dialysis units. <p>Other</p> <ul style="list-style-type: none"> access to technical expertise (e.g. technician skilled in dialysis machinery maintenance, 		<p>transplant patients.</p> <ul style="list-style-type: none"> access to appropriate allied health specialists dedicated to children's renal services.

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
			ensure continuum of medication management. <ul style="list-style-type: none"> access to other relevant allied health professionals experienced to manage renal patients. 	calibration and repair).		
Specific risk considerations	Nil	Nil	Nil	Nil	Nil	Nil

Support services requirements for renal services

	Level 1		Level 2		Level 3		Level 4		Level 5		Level 6	
	On-site	Accessible	On-site	Accessible	On-site	Accessible	On-site	Accessible	On-site	Accessible	On-site	Accessible
Anaesthetic							4		5		6	
Cardiac (cardiac medicine)								4		4		5
Children's anaesthetic												6

	Level 1		Level 2		Level 3		Level 4		Level 5		Level 6	
Intensive care							4		5		6	
Children's intensive care								4		4	6	
Medical							4		5		5	
Medication		1		2	3		4		5		5	
Medical imaging						2	3		4		5	
Nuclear medicine								4	4		5	
Pathology				2		2		4	5		6	
Palliative care						3		4		5		5
Perioperative (relevant section/s)							4		5		6	
Surgical						3	4		5		6	

Table note: On-site means staff, services and/or resources located within the health facility or adjacent campus including third party providers. Accessible means ability to utilise a service (either located on-site or off-site) or skills of a suitably qualified person (who may be either on-site or off-site)—without difficulty or delay—via various communication mediums including but not limited to face-to-face, telehealth, telepharmacy, and/or outreach.

Legislation, regulations and legislative standards

Refer to the Fundamentals of the Framework for details.

Non-mandatory standards, guidelines, benchmarks, policies and frameworks

(not exhaustive & hyperlinks current at date of release of CSCF v3.2)

In addition to what is outlined in the Fundamentals of the Framework, the following are relevant to renal services:

- American Dietetic Association. Medical nutrition therapy evidence-based guides for practice: Chronic kidney disease (non-dialysis) medical nutrition therapy protocol. Chicago: American Dietetic Association; 2002.
- Australia and New Zealand Renal Guidelines Taskforce. Evidence based practice guidelines for nutritional management of chronic kidney disease. Nutrition and Dietetics 2005; 63(supp 2):s35–s45.
- Australian Kidney Foundation, Australia New Zealand Society of Nephrology. The CARI Guidelines (Caring for Australians with Renal Impairment); 2003. www.cari.org.au
- Australian Kidney Foundation, Australian Health Ministers' Advisory Council, National Aboriginal Community Controlled Health Organisation. National service guidelines for the management of dialysis and kidney transplantation in remote Australia. Conference: ATNS; 2006. www.atns.net.au/agreement.asp?EntityID=4394
- British Renal Society. The Renal Team: A multi-professional renal workforce plan for adults and children with renal disease. London: British Renal Society; 2002. www.britishrenal.org
- Burrows-Hudson S, Prowant B (eds). American Nephrology Nurses' Association: Nephrology nursing standards for practice and guidelines for care. New Jersey: Anthony J Jannetti Inc; 2002.
- Campbell S. Fluid Assessment: A competency assessment package for advanced nephrology nursing practice. Renal Society of Australasia Journal 2006; 2(3):41–50. www.renalsociety.org/RSAJ/journal/nov06/campbell.pdf
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- Kidney Health Australia. Chronic kidney disease management in general practice. KHA; nd. www.kidney.org.au/

- National Kidney Foundation. Kidney Disease Outcome Quality Initiative. NKF KDOQI Advisory Board. NKF KDOQI Clinical practice guidelines for chronic kidney disease: evaluation, classification and stratification. American Journal of Kidney Diseases 2002; 39(supp 2):s1–s246.
- National Kidney Foundation. Kidney Disease Outcome Quality Initiative. NKF KDOQI Clinical practice guidelines for bone metabolism and disease in chronic kidney disease. American Journal of Kidney Disease 2003; 42(4):s7–s169.
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- National Kidney Foundation. Kidney Disease Outcome Quality Initiative. NKF KDOQI Clinical practice guidelines for managing dyslipidemias in chronic kidney disease. American Journal of Kidney Diseases 2003; 41(supp 3):s1–s79.
- National Kidney Foundation. Kidney Disease Outcome Quality Initiative. NKF KDOQI Clinical practice guidelines for nutrition in chronic renal failure. American Journal of Kidney Diseases 2000; 35(supp 2):s1–s140.
- National Kidney Foundation. Kidney Disease Outcome Quality Initiative. NKF KDOQI Clinical practice guidelines for peritoneal dialysis adequacy: update 2000. American Journal of Kidney Diseases 2001; 37(supp 1):s65–s136.
- Queensland Government. Selected Specialist Services Direction Statement 2001- 2010. Queensland Health; 2001 (includes solid organ transplant services, renal transplantation and organ donation services).
- Queensland Government. Sub-specialty and Super Specialty Paediatric Services Report. Queensland Health; 2002 (for paediatric renal transplantation).
- Wiggins KL. Guidelines for nutritional care of renal patients 3rd ed. Chicago: American Dietetic Association; 2002.

Reference list

1. Australian Kidney Foundation, Australia New Zealand Society of Nephrology. The CARI Guidelines (Caring for Australians with Renal Impairment); 2003. www.cari.org.au
2. Department of Health, UK. National service framework for renal services: Part one - dialysis and transplantation. London: Department of Health; 2004.

Appendix 1

Summary of service features by service level

Level 1 renal service

Haemodialysis	Peritoneal dialysis			
Home-based / self-care Follow-up support may include home visits, telephone contact and technical support for machines and water treatment	Home-based / self-care	Vascular access	Ambulatory care	Management of comorbidities in renal patients
No health professional present	No health professional present	Not available	Not available	Not available

Level 2 renal service

Haemodialysis		Peritoneal dialysis	Vascular access	Ambulatory care	Management of comorbidities in renal patients
In-centre	Home-based /self-care				
Day-to-day supervision of maintenance dialysis in minimal care settings	Follow-up support may include home visits and on-call telephone contact and technical support for machines and water treatment	Home-based / self-care	Not available	Not available	Not available

Level 3 renal service

Haemodialysis		Peritoneal dialysis		Vascular access	Ambulatory care	Management of comorbidities in renal patients
In-centre	Home-based /self-care (if provided)	Admitted patient (if provided)	Home-base/self-care (if provided)			
Independent and dependent haemo-dialysis	Patients provided with follow-up support	Only if on-site nursing staff are trained to perform peritoneal dialysis, and if nephrologist supervision is available	Peritoneal dialysis training is provided only if specialist renal nurses available (may come on ad hoc basis from another unit to train a patient in peritoneal dialysis or to review patient closer to their home)	Only if reliable access is available to registered medical specialists credentialed to perform renal-related surgery and radiology services	Very low complexity ambulatory care available in clinics for local patients on dialysis and some patients with CKD	Meeting needs of low complexity patients (e.g. changing Permcaths , or dealing with minor co-incident problems, such as broken leg, uncomplicated pneumonia)
Patient acuity influenced by level of medical cover available					Patients on dialysis may be reviewed by visiting nephrologist	

Level 4 renal service

Haemodialysis		Peritoneal dialysis		Vascular access	Ambulatory care	Management of comorbidities in renal patients
In-centre	Home-based /self-care (if provided)	Admitted patients (if provided)	Home-base/self-care (if provided)			
Haemodialysis for acute and chronic dialysis	Home haemodialysis and training unit	Peritoneal dialysis of moderate complexity	Home peritoneal dialysis patients trained to dialyse independently	Tunnelled and non-tunnelled line insertion	Clinics to review dialysis, long-term transplant, and CKD patients	Moderate complexity (e.g. minor surgery or monitoring after minor acute coronary syndrome) dependent on local resources including skills of nursing staff
	Patients trained to dialyse independently			Insertion of peritoneal dialysis catheters and haemodialysis access	Complexity of ambulatory care review influenced by local availability of diagnostics and other specialists	

Level 5 renal service

Haemodialysis		Peritoneal dialysis		Vascular access (on-site)	Ambulatory care	Management of comorbidities in renal patients
In-centre	Home-based /self-care (if provided)	Admitted patients (if provided)	Home-base/self-care (if provided)			
Haemodialysis for acute and chronic dialysis	Home haemodialysis and training unit	Peritoneal dialysis for all complexities	Home peritoneal dialysis patients trained to dialyse independently	Tunnelled and non-tunnelled line insertion. Insertion of peritoneal dialysis catheters, haemo-dialysis access, and vascular access procedures	Clinics to review dialysis, long-term transplant, and CKD patients of all complexities	All complexities
	Patients trained to dialyse independently					

Level 6 renal service

Haemodialysis		Peritoneal dialysis		Vascular access (on-site)	Ambulatory care	Management of comorbidities in renal patients
Non home-based care	Home-based /self-care	Admitted patients	Home-base/self-care			
Pre- and post-transplant dialysis and intra-operative dialysis	Home haemodialysis and training unit	Peritoneal dialysis all complexities	Home peritoneal dialysis patients trained to dialyse independently	Tunnelled and non-tunnelled line insertion	Ambulatory care review by nephrologist for all complexities	All complexities
Apheresis				Dedicated access surgery list	Full range of diagnostic, intervention and other superspecialty services	