

## A. Service Specification Annex

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| <b>Service specification annex</b> | Adult Critical Care Services Specification<br>Annex to ACC specification – Interdependent services –<br>Renal replacement therapy |
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### 1. Scope

This service specification annex describes the framework for the requirements for renal replacement therapy (RRT) as an interdependent service for adult critical care services. It has been produced following experience of treating patients with COVID-19 in ACC. It is therefore appended to the ACC service specification and sets out infrastructure, staffing and operational arrangements to best meet the needs of patients at the different tiers of ACC.

#### 1.1 Prescribed Specialised Service

This service specification annex covers the provision of renal replacement therapy within an adult critical care unit.

It contains 7 areas:

1. 3 Tier model of critical care units and their renal capability
2. Infrastructure
3. Workforce and training
4. Initiation and prescription including type and dose
5. Commissioning and network links
6. Operational standards for individual units
7. Data, audit – data returns to ICNARC, regional and national datasets

#### 1.2 Description

Adult Critical Care underpins all secondary and specialist adult services. Critical Care incorporates both intensive and high dependency care (ICU/HDU) stand alone or combined. Specifically, this annex to the adult critical care service specification is for adults who have a specialised commissioned pathway which incorporates the need for or availability of renal replacement therapy within Adult Critical Care (level 2 and 3 see 2009 Intensive Care Society: Levels of Care for definition) as a component of their pathway of care.

#### 1.3 How the Service is Differentiated from Services Falling within the Responsibilities of Other Commissioners

Adult critical care services are commissioned by both NHS England and Clinical Commissioning Groups.

The Identification Rules for Prescribed Specialised Services state that any adult critical care period that is linked with a specialist spell is considered specialised and is commissioned by NHS England.

### 2. Care Pathway and Clinical Dependencies

#### 2.1 Care Pathway

Please note that access to specific treatments will be guided by any applicable NHS England national clinical commissioning policy.

### **Three Tier model for critical care units:**

#### **Tier 1:** Fully integrated renal support model:

- Reverse osmosis capability within intensive care on a permanent basis to provide RRT up to 30% of critical care patients even in the event of a single continuous renal replacement therapy (CRRT) platform failure;
- Flexible intermittent haemodialysis (IHD/SLED) / Prolonged intermittent renal replacement therapy (PIRRT) / CRRT during routine practice as well as under surge conditions. Peritoneal Dialysis expertise available in surge conditions if required;
- Fully established and maintained staff training and expertise embedded in ICU
- Integrated with regional renal unit and on call renal physicians (in most cases co-located with an inpatient renal unit, however other models are possible provided there is regular clinical and governance input from both ICU physicians and renal physicians).

#### **Tier 2:** Flexible renal support model

- Portable or permanent reverse osmosis systems available and appropriate mains water supply direct to some or all critical care unit bed spaces;
- Ability to use IHD/SLED / PIRRT / PD during surge;
- Staff with expertise available on site to support ICU staff in delivering alternative modalities;
- Integrated with regional renal team and 24/7 renal advice available remotely (in most cases there will be on site renal inpatient provision, but alternative models are possible).

#### **Tier 3:** No on site renal service

- Single system of CRRT available in ICU;
- Access to timely and safe transfer to tier 1 or tier 2 centre in the event of RRT demand exceeding supply;
- Unit will be prioritised by network for CRRT consumables.

### **Infrastructure requirements**

- Working with renal clinical leads regional teams agree where renal replacement therapy tiers are designated;
- Designated tier 1 units should establish clean water and waste supplies and the ability to deliver IHD routinely in intensive care;
- **Existing** tier 1 intensive care units may need to continue to function with a mains water supply and portable single patient ROs. Some of this capability should be permanently located on ICU with the ability to escalate during surges of activity;
- **New build** intensive care units should have capability for IHD: in tier 2 units this may be a clean water supply with the ability to connect and clean within 72h to establish portable RO units; in tier 1 units this should be a fully plumbed water supply from a dedicated RO plant (may be shared with the inpatient renal unit or a separate plant).

## **2.2 Interdependence with other Services**

Interdependence is as detailed within the critical care service specification.

- **Workforce and training**

**Medical workforce**

- Tier 1 units: Integrated renal service with nephrologist available 24/7, ICU physicians routinely trained in prescription and use of intermittent therapies, regular governance meetings with renal team. There should be a renal physician appointed to be the lead liaison with critical care and there should be a critical care physician appointed as renal lead. Joint ward rounds will be necessary initially to establish best practice.
- Tier 2 units: nephrologist available 24/7, ICU physicians not necessarily using intermittent therapies routinely, but clear protocols and training packages in place for use when required e.g. in surge or supply limitation.
- Tier 3 units: access to regional renal team advice.

**Nursing workforce**

- Tier 1 units: routine joint working with staff working across renal and intensive care units (mutual support and/or rotating posts and hybrid posts). ICU nurses (likely to be at least 25%) trained and competent in the routine use of intermittent therapies. Robust local plan for maintaining renal nursing capacity whilst providing expertise to ICU.
- Tier 2 units: local renal nursing staff able to assist and set up equipment, local plan for maintenance of routine IHD services if staff required to assist in ICU. Clear protocols and training packages in place. Sufficient routine use of IHD to maintain expertise and a skill set in ICU nursing staff champions able to cascade in surge.
- Tier 3 units: no requirement for onsite renal dialysis nursing expertise.

**Technical support**

- Tier 1: renal technicians with job planned routine time on ICU to maintain and service dialysis equipment and water supplies.
- Tier 2: renal technicians with job planned time to ensure maintenance of ICU water supply and protocols for rapid reconnection in event of surge.
- Tier 3: no requirement for onsite renal technical support (ICU technician support required for CRRT therapies).

**Follow up and psychology**

- Tier 1 and 2 centres should provide ongoing follow up to patients with end stage renal failure and recovering from AKI in order to rehabilitate to the patients' maximum potential.
- Follow up should include access to specialist critical care MDT and renal physician, nurses and specialist psychology input when required.

**Initiation prescription modality and dose**

- All critical care units and renal units should work closely together to ensure that the trust/regional units follow current best evidence for initiation, modality and dose of RRT at all times.
- At times of surge and / or supply limitation, in order to preserve regional and national consumable supplies, it is imperative that best evidence is followed:

- The requirement for ongoing CRRT is reviewed on at least a twice daily basis in every patient;
- Best practice is followed to carefully balance the supply of circuits and filters with the supply of fluids;
- Patients are screened for suitability for a trial of intermittent therapy;
- All networks/regions must have a sitrep that enables all units to understand the key supply limitations, and availability of different treatment modalities and supplies across the network and region.

### **3. Population Covered and Population Needs**

#### **3.1 Population Covered by This Specification**

The service outlined in this specification is for patients ordinarily resident in England or otherwise the commissioning responsibility of the NHS England (as defined in 'Who Pays? Establishing the Responsible Commissioner' and other Department of Health guidance relating to patients entitled to NHS care or exempt from charges).

Specifically, this service is for adults who have or are anticipated to require Adult Critical Care as a component of their pathway of care. Adult is defined as 18 years or older and critical care is defined by the level of care a patient requires as described in "Levels of Care". This specification relates to patients requiring levels 2 and 3 critical care. Patients aged 16 to 18 years are also included in this specification but there may be occasions when a paediatric critical care service is more appropriate for such patients. Such pathways may have both scheduled and emergency requirements. This specification annex specifically covers access and standards for RRT in critical care.

#### **3.2 Expected Significant Future Demographic Changes**

The population in England is expected to increase by 5.9% between mid-2016 and mid-2026, an average annual increase of ~1%. The number of older people is expected to double. Both will have an impact on demand for specialised critical care as this is likely to lead to increases in specialised interventions such as arterial thrombectomy and cardiac procedures and the impact of high consequence infectious diseases (HCID).

### **4. Outcomes and Applicable Quality Standards**

#### **4.1 Aim of the Service**

Commissioners, networks and providers need to work together to ensure that at a regional level adequate services are commissioned to provide access to renal support within the critical care environment, both through existing renal services but also in the context of critical illness.

- Tier 3 units must have designated tier 1 and 2 units to support them;
- Access to tier 1 and 2 units may cross commissioning boundaries;
- Equitable access to Tier 1 and 2 units may require a formalised transfer service;
- Commissioners (through Critical Care and Renal networks) must ensure that adequate escalation pathways exist to provide equitable access to RRT during critical illness in the event of a single modality failure (i.e. all patients should have direct or indirect access to more than one modality of RRT);
- Commissioning and network teams must have a clear governance structure that explicitly describes escalation levels at which patients will be managed using modalities deemed to be alternatives to optimal treatment in order to protect supplies for patients and units where no alternative is possible.

- 4.2 Critical care network leads should have scheduled regular meetings with renal network leads and develop a clear joint understanding and pathways for the delivery of RRT within their regions.
- 4.3 All critical care and renal networks should have an RRT plan agreed across all units in the network which must:
- List the capabilities of each unit with respect to RRT;
  - Current CRRT platforms;
  - IHD platforms and capability on each site;
  - Maximum number of patients supported on 24h CRRT;
  - Maximum number of patients supported combining CRRT and IHD methods;
  - Have an escalation plan and triggers defined for demand exceeding supply (either due to increased demand beyond capabilities of the unit or due to consumable supply problems);
  - Have a credible transfer system and plan to enable all patients equitable access to RRT across the network;
  - The network and providers should have a robust workforce plan for Business as Usual and also potential surge situations to ensure continuity of renal support.
- 4.4 There must be access to plurality of supply across the network
- Ability to deliver CRRT using different platforms;
  - Ability to deliver IHD / PIRRT / PD either routinely or as part of a surge plan.

There should be a network plan to provide RRT to up to 30% of Level 3 patients at any one time including declared surge capability (ideally each unit should be capable of this level of provision, but it is recognised that this may not be appropriate for some specialised units where RRT is rarely required).

Commissioned providers are required to participate in annual quality assurance and collect and submit data to support the assessment of compliance with the service specification as set out in Schedule 4A-C.

**4.5 Data requirements** All units must submit full ICNARC datasets;

- All trusts must have robust processes for stock control of RRT consumables and be able to submit stock and usage data to regional/national sitrep data on a daily basis if required in a surge or supply limitation situation;
- Regional teams through ODNs and commissioning partnerships should have oversight of demand and supply at times of surge or supply limitation in order to coordinate mutual aid for supplies and the safe movement of patients to provide access to RRT as required;
- Sitrep information must be available in a form accessible to and disseminated to individual units;
- Current level of escalation must be clearly stated and disseminated to all units;
- Units and regions should collect data for patient numbers and patient days where intensive care admission has been required for the provision of RRT in patients

with end stage renal failure where there is no other organ failure requiring patient admission.

## **5. Applicable Service Standards**

### **5.1 Operational standards for individual units:**

Operational standards must ensure that:

- Critical care units must have the necessary facilities and expertise to provide acute RRT for patients with AKI on a 24/7 basis.
- Patients receiving acute RRT must be cared for by a multi-professional team that is trained and experienced in delivering and monitoring RRT.
- Providers must ensure sufficient capacity to provide acute RRT for patients with progressive or severe AKI before the onset of life-threatening complications associated with renal dysfunction, and to provide RRT emergently when required to treat life threatening complications, unless a decision has been made not to escalate therapy.
- Critical care clinicians and nephrologists should work collaboratively with all inpatient clinical teams and primary care to ensure optimal management of patients at risk of AKI, early admission to ICU may prevent AKI progression and need for RRT.
- Patients with end-stage renal failure who are not in a renal unit/dialysis centre and require urgent RRT may require critical care admission solely to provide RRT. In such cases, there should be close liaison with the regional renal service regarding transfer to the most appropriate renal unit in order to optimise patient management and the use of critical care resources.
- Patients with end-stage renal failure who require organ support for intercurrent illness should be referred and discussed with the regional renal service within 24 hours of admission to intensive care.
- Individual units and acute trusts must work within their regional critical care and renal networks to ensure the network requirements above (4.1-4.3) can be met

### **5.2 Applicable National Standards to be met by Commissioned Providers**

- NICE. Acute kidney injury: Prevention, detection and management of acute kidney injury up to the point of renal replacement therapy  
<http://guidance.nice.org.uk/CG169/Guidance/pdf/English>
- Guidelines for the Provision of Intensive Care Services V2 (GPICS 2)  
<https://www.ficm.ac.uk/standards-research-revalidation/guidelines-provision-intensive-care-services-v2>
- Guideline on water treatment systems, dialysis water and dialysis fluid quality for haemodialysis and related therapies.  
[https://www.renaltech.net/uploads/1/3/6/4/136400/guideline\\_on\\_water\\_treatment\\_systems\\_dialysis\\_water\\_and\\_related\\_therapies\\_jan\\_2016.pdf](https://www.renaltech.net/uploads/1/3/6/4/136400/guideline_on_water_treatment_systems_dialysis_water_and_related_therapies_jan_2016.pdf)

### **5.3 Other points of reference**

- Kidney Quality Improvement Partnership  
<https://www.thinkkidneys.nhs.uk/kquip/>

- Renal Association – Intensive Care Society Joint AKI and RRT Guidelines 2020

## 6. Abbreviation and Acronyms Explained

### Definitions:

Throughout this annex reference to Intermittent haemodialysis (IHD) also includes modalities such as sustained low efficiency dialysis (SLED). Reference to surge includes all situations where demand exceeds supply for intensive care based continuous renal replacement therapy either due to increased demand or due to an acute supply issue with one or more components of one or more manufacturers' CRRT platform.

### Abbreviations:

ACC - Adult critical care  
AKI - Acute kidney injury  
CKD - Chronic kidney disease  
CRRT - Continuous renal replacement therapy  
FICM - Faculty of Intensive Care Medicine  
HCID - High consequence infectious diseases  
HDU - High dependency unit  
ICNARC - Intensive care national audit & research centre (and associated reports)  
ICS - Intensive Care Society  
ICU - Intensive care unit  
IHD - Intermittent haemodialysis  
MDT - multi-disciplinary team  
ODNs - Operational delivery networks  
PD - Peritoneal dialysis  
PIRRT - Prolonged intermittent renal replacement therapy  
RO - Reverse osmosis  
RRT - renal replacement therapy  
SLED - Sustained low efficiency dialysis