NICE National Institute for Health and Care Excellence

NICE guideline

COVID-19 rapid guideline: acute kidney injury in hospital

NICE guideline
Published: 6 May 2020
www.nice.org.uk/guidance/ng175

Your responsibility

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Contents

Overview

The purpose of this guideline is to help healthcare professionals prevent, detect and manage acute kidney injury in adults in hospital with known or suspected COVID-19. This is important to improve outcomes and reduce the need for renal replacement therapy.

This guideline focuses on what you need to stop or start doing during the pandemic. Follow the usual professional guidelines, standards and laws (including those on equalities, safeguarding, communication and mental capacity), as described in making decisions using NICE guidelines.

This guideline is for:

- health and care practitioners
- health and care staff involved in planning and delivering services
- commissioners.

The recommendations bring together:

- evidence from published literature on COVID-19 and acute kidney injury
- existing national and international guidance and policies (including NHS England's specialty guides: clinical guide on acute kidney injury in hospitalised patients with COVID-19 outside the intensive care unit during the coronavirus pandemic and clinical guide on renal replacement therapy options in critical care during the coronavirus pandemic)
- advice from specialists working in the NHS from across the UK. These include people with expertise and experience of treating patients with acute kidney injury during the current COVID-19 pandemic.

NICE has developed these recommendations in direct response to the rapidly evolving situation and so could not follow the standard process for guidance development. The guideline has been developed using the interim process and methods for developing rapid guidelines on COVID-19, and includes a systematic literature search. The evidence tables for this search will be published alongside the guideline. The recommendations are based on evidence and expert opinion and have been verified as far as possible. We will review and update the recommendations as the knowledge base and expert experience develops.

1 Communicating with patients

1.1 Communicate with patients, their families and carers, and support their mental wellbeing to help alleviate any anxiety they may have about COVID-19. Signpost to charities (such as Kidney Care UK, National Kidney Federation and local kidney patient organisations) and support groups (including NHS Volunteer Responders) and UK government guidance on the mental health and wellbeing aspects of COVID-19.

2 Minimising risk for patients and healthcare workers

2.1 All healthcare workers involved in receiving, assessing and caring for patients who have known or suspected COVID-19 should follow UK government guidance on infection prevention and control. This contains information on using personal protective equipment (PPE), including visual and quick guides for putting on and taking off PPE.

2.2 If COVID-19 is later diagnosed in a patient not isolated from admission or presentation, follow UK government guidance on management of exposed healthcare workers and patients in hospital settings.

3 Treatment and care planning

3.1 Discuss the risks, benefits and likely outcomes of treatment options with patients with COVID-19, and their families and carers. This will help them make informed decisions about their treatment goals and wishes, including treatment escalation plans where appropriate. Use decision support tools (when available) and document discussions and decisions clearly.

3.2 Find out if patients have advance care plans or advance decisions to refuse treatment, including 'do not attempt cardiopulmonary resuscitation' decisions, and take account of these in planning care.

3.3 For support with decision making, see ethical guidance from the British Medical Association, the Royal College of Physicians and the General Medical Council.

3.4 Monitor patients for the development or progression of chronic kidney disease for at least 2 to 3 years after acute kidney injury, in line with the NICE guideline on chronic kidney disease in adults: assessment and management. There is guidance on care after hospital discharge in Think Kidneys guidance on transition and post-discharge care.

4 Assessing for AKI in patients with suspected or confirmed COVID-19

4.1 Be aware that, in patients with COVID-19, acute kidney injury (AKI):

- may be common, but prevalence is uncertain and depends on clinical setting (the Intensive Care National Audit and Research Centre's report on COVID-19 in critical care from 1 May 2020 reported that about 31% of patients on ventilators and 4% not on ventilators needed renal replacement therapy for AKI)
- is associated with an increased risk of dying
- can develop at any time before or during hospital admission
- causes may include volume depletion (hypovolaemia), haemodynamic changes, viral infection leading directly to kidney tubular injury, thrombotic vascular processes, glomerular pathology or rhabdomyolysis
- may be associated with haematuria, proteinuria and abnormal serum electrolyte levels (both increased and decreased serum sodium and potassium).

4.2 Be aware that in patients with COVID-19:

- maintaining optimal fluid status (euvolaemia) is critical in reducing the incidence of AKI, but this can be hard to achieve
- treatments being used to manage COVID-19 may increase the risk of AKI, for example diuretics if they have caused volume depletion
- fever and increased respiratory rate increase insensible fluid loss
- dehydration (often needing correction with intravenous fluids) is common on hospital admission and may also develop later
- there is an increased risk of coagulopathy (see Thrombosis UK's Practical guidance for the prevention of thrombosis and management of coagulopathy and disseminated intravascular coagulation of patients infected with COVID-19).

4.3 On hospital admission or transfer, assess for AKI in all patients. Record:

- medical history and comorbidities, including factors that further increase the risk of AKI (such as chronic kidney disease, heart failure, liver disease, diabetes, history of AKI, age 65 years or over)
- fluid status by clinical examination (for example, peripheral perfusion, capillary refill, pulse rate, blood pressure, postural hypotension, jugular venous pressure, or pulmonary or peripheral oedema)
- fluid status by fluid balance (fluid intake, urine output and weight)
- full blood count
- serum urea, creatinine and electrolytes (sodium, potassium, bicarbonate).

NICE has produced a guideline on acute kidney injury: prevention, detection and management.

4.4 Review the use of medicines that can cause or worsen AKI and stop these unless essential.

4.5 Ask a pharmacist for advice about optimising the choice and dosage of medicines, including anticoagulants for treatment or prophylaxis. See Think Kidneys guidelines for medicines optimisation in patients with acute kidney injury.

4.6 Continue to assess for AKI. Record and monitor fluid status by clinical examination and fluid balance daily. Measure serum urea, creatinine and electrolytes (sodium, potassium, bicarbonate) at least every 48 hours or more often if clinically indicated.

4.7 Use an early warning score for patients whose clinical condition is deteriorating or who have suspected sepsis:

- NEWS2 has been endorsed by NHS England.
- When using NEWS2 be aware of the Royal College of Physicians warning that any increase in oxygen requirements should be escalated for clinical review and increased observations.

4.8 Determine the preferred method of monitoring fluid status locally during the COVID-19 pandemic.

5 Detecting and investigating AKI in patients with suspected or confirmed COVID-19

5.1 Detect acute kidney injury (AKI) using NHS England's AKI algorithm or any of the following criteria:

- an increase in serum creatinine of 26 micromol/litre or more in 48 hours
- an increase of 50% or more in serum creatinine known or presumed to have occurred in the past 7 days
- a fall in urine output to less than 0.5 ml/kg/hour for more than 6 hours.

5.2 Do urinalysis for blood, protein and glucose to help identify the cause of AKI. Record the results and take action if these are abnormal (including referral if needed; see section 8). Determine the preferred method of urinalysis locally during the COVID-19 pandemic.

5.3 Do imaging if urinary tract obstruction is suspected.

6 Managing fluid status in patients with suspected or confirmed COVID-19

6.1 Aim to achieve and maintain optimal fluid status (euvolaemia) in all patients.

6.2 If there is volume depletion (hypovolaemia), and fluid needs cannot be met orally or enterally, give patients intravenous fluids as part of a protocol to restore and maintain optimal fluid status (see the algorithms in the NICE guideline on intravenous fluid therapy in adults in hospital).

6.3 Ensure patients have an intravenous fluid management plan that is reviewed daily.

6.4 Base choice of fluids on biochemistry results and fluid status (see the composition of commonly used crystalloids in the NICE guideline on intravenous fluid therapy in adults in hospital).

6.5 Do not routinely offer loop diuretics to treat acute kidney injury (AKI), but consider them for treating fluid overload.

7 Managing hyperkalaemia in patients with suspected or confirmed COVID-19

7.1 Be aware of the risk of hyperkalaemia and manage according to local protocols.

7.2 The potassium binders patiromer and sodium zirconium cyclosilicate can be used as options alongside standard care for the emergency management of acute life-threatening hyperkalaemia (see NICE's technology appraisal guidance on patiromer and sodium zirconium cyclosilicate for treating hyperkalaemia).

8 Referral in patients with suspected or confirmed COVID-19

8.1 Refer patients with acute kidney injury (AKI) for further specialist advice if:

- there is diagnostic uncertainty about the cause of AKI, which may need further tests or imaging
- they have abnormal urinalysis results, which may be a sign of COVID-19-induced kidney damage or other intrinsic renal disease
- fluid management needs are complex
- AKI is worsening despite initial management or has not resolved after 48 hours
- they have usual indications for renal replacement therapy, particularly if there is no urine output, such as:
  - life-threatening hyperkalaemia
  - refractory fluid overload
  - severe metabolic acidosis.

8.2 If patients are being considered for critical care admission see the NICE COVID-19 rapid guideline: critical care in adults.

9 Renal replacement therapy in patients with suspected or confirmed COVID-19

9.1 See NHS England's clinical guide on renal replacement therapy options in critical care during the coronavirus pandemic for options for patients with usual indications for renal replacement therapy (RRT) based on local availability, equipment, supplies, staffing and local expertise.

9.2 See The Renal Association's set of COVID-19 resources, which includes protocols for RRT.

9.3 Be aware of the anecdotal reports of RRT circuit clotting because of the increased risk of coagulopathy in patients with COVID-19.

9.4 No evidence was found on anticoagulants for RRT in patients with COVID-19. See NHS England's clinical guide on renal replacement therapy options in critical care during the coronavirus pandemic for anticoagulant options for these patients.

ISBN: 978-1-4731-3780-6