



# Covid-19: increasing demand for dialysis sparks fears of supply shortage

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The BMJ

More than a quarter of patients with covid-19 on ventilators also need renal support in the form of dialysis, raising concerns that there could be significant supply problems as countries attempt to stock up on the required fluid and plastic consumables.

Nephrology consultant Graham Lipkin told *The BMJ*, “This is an under-recognised challenge. While the original focus has been on whether we have enough ventilators and intensive care beds, it has become apparent that there is a high incidence of acute kidney injury (AKI) requiring some form of renal replacement therapy (RRT) through dialysis. With the volume of people coming into intensive care, there are increasing challenges to capacity across the system.”

Lipkin, who is president of the Renal Association, has been working with NHS England to develop new clinical guidelines for the prevention and optimal management of AKI in hospital. The guidance aims to reduce the incidence of AKI and therefore the demand for dialysis.

According to the latest Intensive Care National Audit and Research Centre report on covid-19, 28.8% of patients in critical care receiving advanced respiratory support required renal support.<sup>1</sup>

Lipkin explained that covid-19 patients may develop AKI for several reasons. “When patients with covid-19 arrive at hospital, they are often dehydrated because of prolonged fever and because they have not been eating or drinking as normal,” he said. “There does appear to be a direct viral invasion of the kidney, affecting the renal tubules and podocytes. Severe covid-19 is associated with a ‘cytokine storm’ and, during all this inflammation, the kidneys fall victim.”

He said that early in the pandemic there was a “well founded direction to keep patients on the dry side to try to sustain lung function because patients were dying of viral pneumonia.” It is now recognised, however, that doing this increases the risk of AKI and is also unlikely to improve survival. As such, “keeping patients optimally hydrated reduces the risk of AKI without worsening chest function.”

## Supply concerns

Patients in intensive care usually receive dialysis by continuous veno-venous hemofiltration, which requires a machine and plastic disposables together with the dialyser and filtrate replacement fluid. “Given the increased demand in the UK,

across Europe, and particularly in the US, the disposables and the fluid are in short supply,” Lipkin warned.

“We started getting concerned about this around three weeks ago, when the true incidence of AKI started to become apparent. NHS England has worked with the renal community and put a high priority on resolving this, including setting up emergency renal operational delivery networks with leads working closely with critical care networks. NHS England is working with equipment manufacturers, but there is a significant risk of a mismatch between supply and demand, and that is a genuine concern.”

He said renal units are supporting intensive care units with dialysis and innovative solutions wherever possible, but they still have to maintain normal service for 26 000 patients on hemodialysis across the UK.

## New guidance

The first NHS England guide<sup>2</sup> outlines the RRT options in critical care during the coronavirus pandemic. It states that facilities should “assess their available capacity and match this to patients according to need. A conservative approach to using continuous RRT may preserve consumable stocks.”

The second guide<sup>3</sup> brings together advice for those looking after covid-19 inpatients outside intensive care settings.

It recommends that patients at increased risk for AKI have “serum creatinine, sodium, potassium, urea, and bicarbonate checked regularly, with results reviewed and acted on at least once every 48 hours, but in most cases daily.” They should also have their fluid balance monitored.

In those with AKI, clinicians should consider “withholding drugs that may worsen renal function.” These include contrast media, nonsteroidal anti-inflammatory drugs, angiotensin converting enzyme inhibitors, angiotensin receptor blockers, and diuretics in those who are volume depleted.

The guides says that common drugs that may need dose adjustment or cessation in those with worsening renal function include opiates, gabapentin and pregabalin, metformin, antibiotics (such as penicillin, vancomycin, teicoplanin), anticoagulants, and digoxin.

1 Intensive Care National Audit and Research Centre. ICNARC report on COVID-19 in critical care. 17 April 2020. [www.icnarc.org/Our-Audit/Audits/Cmp/Reports](http://www.icnarc.org/Our-Audit/Audits/Cmp/Reports).  
2 NHS England. Clinical guide for renal replacement therapy options in critical care during the coronavirus pandemic. Version 1. 14 April 2020. [www.england.nhs.uk/coronavirus/](http://www.england.nhs.uk/coronavirus/)

wp-content/uploads/sites/52/2020/04/C0298-speciality-guide-clinical-guide-for-renal-replacement-therapy-options-in-critical-care-v1.1.pdf.

- 3 NHS England. Clinical guide for acute kidney injury in hospitalised patients with COVID-19 outside the intensive care unit during the coronavirus pandemic. Version 1. 14 April 2020.

www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/04/C0299-acute-kidney-injury-in-hospitalised-patients-with-covid-19-outside-icu.pdf.

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