

## **King's Kidney Care**

King's College Hospital NHS Foundation Trust

Acute Peritoneal Dialysis on Intensive Care

Units protocol

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## Background

This protocol has been rapidly devised to support the provision of renal replacement therapy in the form of acute peritoneal dialysis (PD) in patients suffering with Covid-19 requiring ventilation on the intensive care units at King's College Hospital. This has become necessary due to the high number of affected patients developing acute kidney injury (approximately 50%) at KCH and the shortfall in both CVVHDF machines and the consumables required to run them.

## Patient assessment

Patients can be selected for acute PD if they meet the following criteria:

- No previous major abdominal surgery, particularly scars around the umbilicus
- Stable ventilation at the time of assessment with  $FiO_2 \leq 60\%$
- Cardiovascular stability (may be on inotropes but dose not escalating)
- Haemoglobin  $> 70$  g/L
- APTTR  $< 1.3$
- INR  $< 1.3$
- Platelets  $> 60 \times 10^9/L$

## Contra-indications:

- Abdominal obesity (BMI  $> 35$  but relative depending on body habitus)
- Abdominal distension due to constipation
- Known abdominal aortic aneurysm

## Patient preparation

If the patient does not have a urinary catheter in situ, an abdominal ultrasound is performed to ensure that the bladder is empty. All patients are given CitraFleet x 2 as a laxative 12-24 hours prior to the procedure to ensure adequate bowel emptying, each in 200ml of water (preferably at 12.00 and 16.00 the day before). Constipation is frequently an issue for patients on intensive care due to immobility and pharmacy (noradrenaline) and a decision is taken after abdominal examination, combined with plain abdominal X-Ray if necessary, to determine whether it is appropriate to proceed. Repeated dosing of CitraFleet x 2 is often required. All patients are given Vancomycin 1 g intravenously prior to the procedure unless they were already receiving a broad spectrum intravenous antibiotic.

Following commencement of PD, Senna 15mg bd and Docusate Sodium 200mg bd are prescribed to maintain regular bowel movements. If not sufficient, other laxatives can be used.

### Catheter insertion technique

After injection of local anaesthetic (2% lignocaine with adrenaline), a transverse incision is made in the midline below the umbilicus, a pocket made in the abdominal fat for the proximal catheter cuff and bent neck, a Seldinger guide wire is inserted through the linea alba into the peritoneal cavity via a 12 gauge needle. A peel away sheath and dilator is inserted over the wire, the dilator and wire removed and the catheter introduced. The catheter is then tunnelled laterally with the exit site lateral and inferior to the incision at a minimum of 3 cm beyond the distal Dacron cuff. If the patient may require proning for ventilation support, the catheter exit site can be placed even more laterally to improve ease of access to the catheter in the prone position and reduce any pressure on the exit site.

If planning to deliver PD in a prone patient, the intra-abdominal pressure should be monitored by transduction through a urinary catheter. PD should be stopped and the fluid drained out if the intra-abdominal pressure exceeds 20 cm H<sub>2</sub>O. At the time of writing this protocol we have not yet performed PD in a prone patient.

### Automated Peritoneal Dialysis (APD) prescription

APD is commenced immediately post catheter insertion. Patients should not sit-up more than 45° whilst dialysing and should always be drained out before mobilising to prevent leaks (not a consideration in ventilated patients).

The plan below is for guidance but may need to be adjusted according to the patient's fluid status, metabolic dysfunction and ventilation status. All patients should be reviewed by a nephrologist daily and the prescription altered as necessary.

<u>Session 1</u>	<u>Session 2</u>	<u>Session 3</u>
Therapy: Tidal 90%or CCPD / IPD ( NO TIDAL)	Therapy: CCPD/IPD	Therapy: CCPD/IPD
Time: 12 - 18hours	Time: 16 hours	<b>Or</b>
Total Vol: 20,000mls TO 30,000mls	Total Vol: 20,000mls- 30,000mls	Therapy: CCPD/IPD (dependent on drain pain)
Fill Vol: 1200- 1600mls( no leaks in ITU	Fill Vol: 1500- 2000mls	Time: 12 TO 16 hours
Last Fill: 0mls	Last Fill: 0mls	Total Vol: 15,000 to 25,000mls
Cycles: between 9 -14	Cycles: 9 to 20	Fill Vol: 1.5l to 2.5 l
Dwell Time: approx. 20- 39mins 9 Patient specific	Dwell Time: 20 mins to 1:15	Last Fill: 1000 to 1500mls
Select Dextrose strength		Dextrose: Different (Extraneal)

**Reference;** Johan V. Povlsen and Per Ivarsen. How to start the late referred ESRD patient urgently on chronic APD. *Nephrol Dial Transplant* (2006) 21 [Suppl 2]: ii56–ii59  
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