Note: Prism Flex helpline number is 01480 414 243.

This number must be called 24/7 if there are any problems with the machine on a patient.

The prisma flex helpline will be able to assist you with the fault there and then; if the problem cannot be resolved then they will be able to place a call request for an engineer.

This is essential, as the company will refuse to send somebody after the event has happened.
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USING THIS GUIDELINE

The aim of this guideline is to provide guidance and information to those practitioners involved with haemofiltration / haemodiafiltration.

It does not negate the need for formal instruction and assessment of competencies.

It is designed to be used in conjunction with both on-screen instructions of the PRISMAFLEX Machine and the Operators Manual, supplied by Gambro.

Information relating to drug dosages, infusions and fluid requirements are SUGGESTIVE. It remains the responsibility of the medical team to prescribe all fluids, drugs and infusions.
The quality of vascular access is the most important part of the circuit!

Always check patients clotting and platelets, correcting any abnormalities prior to starting haemofiltration if required.

<table>
<thead>
<tr>
<th>Weight</th>
<th>Catheter size</th>
<th>Product Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 5 Kgs</td>
<td>6.0 Fr</td>
<td>GDK-607,5P GDK-610P GDK-612,5P</td>
</tr>
<tr>
<td></td>
<td>Length 75mm 100mm 125mm</td>
<td></td>
</tr>
<tr>
<td>5- 15Kgs</td>
<td>6.5 Fr</td>
<td>GDK-610P GDK-612,5</td>
</tr>
<tr>
<td></td>
<td>Length 100mm 125mm</td>
<td></td>
</tr>
<tr>
<td>15-30Kgs</td>
<td>8 Fr</td>
<td>GDK-810P GDK-812,5P GDK-815P</td>
</tr>
<tr>
<td></td>
<td>Length 100mm 125mm 150mm</td>
<td></td>
</tr>
<tr>
<td>31Kgs &gt;</td>
<td>11 Fr</td>
<td>5678150 5678200</td>
</tr>
<tr>
<td></td>
<td>Lengths 150mm 200mm</td>
<td></td>
</tr>
</tbody>
</table>

**Location** - Various different size catheters are located in the general store room.

Please do not waste stock as each catheter cost **£50** and circuits cost **£100** per pack.
ACCESS MANAGEMENT

- The length of the catheter is dependent on size of child and position of vessels.
- In the very small child (<5kg) it may be necessary to site 2 single lumen catheters in two different vessels.
- The lumens should be heparinised with **Heparin 1000 units/ml**. The Heparin, 1000 units /ml, must be prescribed on the patient’s drug chart and signed for. Volumes are according to lumen size and are printed on the catheter packs and the lines themselves.
- The lumens of the vascath are coloured red and blue and are referred to as the access (red), proximal lumen, and the return (blue), distal lumen. This is to differentiate between the flow of the blood into the circuits from the access (red) and the blood flow back to the patient (return (blue)).
- On accessing the vascath, the access lumen should provide minimal resistance when withdrawing and flushing.

**Handyhint:** The catheter can be such that the access lumen is placed against the endothelium of the blood vessel which n small patients, is hardly wider than the catheter it self. In this case, the access lumen may offer some resistance. So, if after flushing the lumens and manipulating the vascath, the return lumen offers less resistance than the access one, it is acceptable to use the return lumen as ther access outflow: inverting the lumens which has no deleterious effect on the efficiency of the system.

- Remember to withdraw the heparin from the lumens before flushing or assessing patency of the catheter.
- If the catheter has to be rewired for a new catheter, the wire has to go through the blue lumen (distal opening).
How to access the vascath:

Equipment: 6 x 10ml leur lock syringes
Clean plastic tray
2 alcowipes
2 red bungs
2 x10ml ampoules of 0.9% saline

1. Using the aseptic non-touch technique set up a tray with the equipment listed above.
2. Take the access lumen with an alcowipe, remove bung, connect an empty 10ml syringe, unclamp line and withdraw 2-5mls, reclamping under positive pressure. Discard blood.
3. Take the second empty 10ml syringe, connect to the access lumen, unclamp line, withdraw and flush back, assessing the resistance of the line. Reclamp under positive pressure.
4. Take a third 10ml syringe filled with 10mls of 0.9% saline, connect to the access lumen, unclamp the line and flush using pulsing pressure. Reclamp and connect to access line of the circuit.

1. Using the aseptic non-touch technique set up a tray with the equipment listed above.
2. Take the return lumen in an alcowipe, remove bung, connect an empty 10ml syringe, unclamp line and withdraw 2-5mls. Re-clamp under positive pressure, discard blood.
3. Take a second empty 10ml syringe, connect to the return lumen, unclamp line, withdraw and flush, assessing resistance of line. Reclamp under positive pressure.
4. Take a third 10ml syringe filled with 10mls of 0.9% saline, connect to the return lumen, unclamp the line and flush using pulsing pressure. Reclamp and connect to the return line of the circuit.
CHOOSING THE APPROPRIATE CIRCUIT

<table>
<thead>
<tr>
<th>Weight</th>
<th>Filter &amp; circuit (acrylonitrile membrane)</th>
<th>Total blood Volume ± 10 %</th>
<th>Filter blood flow rate specification.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-11 kgs</td>
<td>New</td>
<td>55mls*</td>
<td>Max 80ml/min</td>
</tr>
<tr>
<td>11-30kgs</td>
<td>ST60</td>
<td>93mls</td>
<td>50-180ml/min</td>
</tr>
<tr>
<td>30</td>
<td>ST100 or M100</td>
<td>152mls</td>
<td>75-400ml/min</td>
</tr>
<tr>
<td>&gt;30kgs</td>
<td>ST150</td>
<td>189mls</td>
<td>100-450ml/min</td>
</tr>
</tbody>
</table>

* If the replacement and/or dialysate flows exceed 300ml/hr use ST60

Handy Hint: It is preferable to aim for the highest Blood Flow Rate possible for the filter as this increases the filter life and efficiency.

- As a guide to acceptable extra corporeal volumes, the amount of blood outside the child’s body should not exceed 10% of their circulating volume (80ml/Kg).

Handy hint: Circulating blood volume is generally accepted as 80mls/Kgs.

Calculation for 10% of Child’s Circulating Volume =weight x 80 x 10%

EG – 15kg child. Maximal extracorporeal circulating vol= 15kg x 80 x 10% = 120mls. Therefore the total volume of blood in the circuit should not exceed 120mls.

There may be situations when the extra corporeal volume exceeds the 10% rule (small baby). In these situations, it may be necessary to give a fluid bolus of HAS and/or use Blood priming.

- Fluid boluses on connection may also be needed if the patient is haemodynamically unstable even if the 10% rule is not exceeded.

- If a blood prime is required (see further), the M100 filter MUST NOT be used (bradykinin risk) – see page 16.
CHOICE OF THERAPY

Prior to commencing renal replacement therapy, you must first establish which therapy is required: Haemofiltration (CVVH) or Haemodiafiltration (CVVHDF) are the two main therapies used (see glossary for definitions, p37).
If the situation is undecided, the machine must first be primed for CVVHDF and this allows a switch, if necessary, between CVVH and CVVHDF at any point during therapy by turning on/off the dialysate fluid.

If there is any doubt as to the choice of therapy, select and prime as for CVVHDF. The decision to move to CVVHF is simple and only requires changing the volume of dialysate to zero.

EQUIPMENT

1. Prismaflex machine (!!!)
2. Dressing Trolley
3. Select appropriate circuit according to patient weight (see page 7)
4. 0.9% sodium chloride bag (1000mls) x 3
5. 0.9% sodium chloride bag (500mls) x 1 (hang on side of machine)
6. Spike (unopened and taped on side of machine next to 500ml 0.9% Saline bag)
7. 5000 units of heparin, 1000 units in 1ml (to add to 1litre of 0.9% saline for priming)
8. 20ml syringe and appropriate amount of heparin/0.9% saline for infusion (10units/kg/ml)
9. 2 or 3 Hemasol BO 5 litre bags. Hemasol contains very little lactate. There are no lactate free bags in the Trust.
10. Sodium chloride and potassium chloride additives as necessary.
11. Equipment as previously stated for accessing vascath (page 5)

It should not take longer than 20minutes to set up and prime the Haemofiltration machine. Once the PRIME TEST passed; the machine should NOT be allowed to sit for more than 15mins as the ethylene oxide might have leached out of the filter potentially compromising patient coagulation (see further).

PATIENT’S WEIGHT MUST BE ENTERED INTO THE MACHINE FOR SAFETY REASONS!!!!
LOADING TUBING SET

1. Switch the machine on

2. Allow the self test to finish

3. Choose patient screen and select **New Patient or Same Patient** as appropriate

4. Select Patient ID and input Hospital number.
   Select patient weight, input patient weight and select **continue**
5. Select therapy CVVH Or CVV HDF. If unsure select CVV HDF – you can change to CVVH from CVV HDF but not vice versa.

6. Touch each bullet point to highlight each step. Follow Diagram and Screen instructions.

7. Snap cartridge into carrier. Route pods. Lines loosely into colour coded tubing guides.
8. Attach all three Pressures pods

9. Place deaeration chamber in its Holder; attach monitor line to the return Pressure port.
10. Insert return line into air detector and return line clamp. Close door of air detector.

11. Open **Effluent** scale; hang **Effluent** collection bag; Close scale.

12. Press LOAD
13. Barcode scanner will identify and confirm the set loaded. Press CONTINUE and prepare to connect to patient.

14. Loading of set complete.....Well Done!!
PRIMING THE CIRCUIT

Once PRIME TEST passed, use the machine within 15mins as ethylene oxide will leech out into the circuit. If the machine is left unused for longer, see point 12.

Switch ‘ON’ Prismaflex - Ensure that nothing is attached to Prismaflex.
Ensure that the heater lines are not fouling the scales.

1. Prepare
   - Priming solution = x1 1litre bag 0.9% saline with 5,000units heparin 1000 units in 1ml added to a 1litre bag 0.9% saline
   - Filtration bags = x2 Hemosol BO bags & x1 1litre 0.9% saline for CVVH OR x3 Hemosol BO bags for CVVHDF with appropriate electrolytes added as required
   - Heparin syringe for infusion (10units/kg/ml of 1000 units in 1ml Heparin in 20ml syringe)

2. Follow on screen instructions to connect bags.

3. Press INSTALL SYRINGE button, DO NOT SELECT NO SYRINGE! If anticoagulant is not needed use a saline filled syringe.

4. Follow on screen instructions to install syringe.

5. Press CONFIRM button once instillation of syringe is completed – if NO confirm button: it isn’t in correctly!!

6. Unclamp anticoagulation line.

7. Check all connections in the line circuit and ensure all clamps released.

8. Press PRIME button.

9. Adjust level in DEARATION CHAMBER.

10. When the PRIME cycle is complete and if the patient is ready to commence therapy, connect 1litre bag of 0.9% saline, press REPRIME. This will flush out the heparinised fluid prior to connecting to the patient.

11. Blood priming: see page 15. Do not use M100 filter with blood priming.

12. If the Prismaflex has been primed more than 20 minutes, allow the blood pump to run for 5 minutes at 100 ml/min with a new bag of 0.9% saline- This is to wash out any ethylene oxide that may have leechted out of the filter.

13. Attach heater wires to access and return lines to avoid vascath displacement once therapy commenced.

14. FINAL check of circuit for air bubbles/ leaks/ cracks remembering to adjust level in the DE-AERATION CHAMBER once again.

15. If all is correct, press PRIME TEST. THIS IS THE POINT OF NO RETURN!!
CONSIDERATIONS PRE COMMENCEMENT

- Correct any electrolytic abnormalities, especially calcium, magnesium, potassium and bicarbonate if possible.

- Obtain baseline APTR and ACT. DO NOT use the arterial line of the patient. Be aware of the coagulation status in order to decide upon need for heparin bolus and/or infusion.

- If blood priming, remember that it contains citrate that reduces calcium.

- If possible, correct anaemia and thrombocytopenia prior to filtration rather than during filtration so as to reduce risks of losing the filter.

- Discuss appropriateness for pre oxygenation, especially if using a blood prime.

- Discuss need for inotropes and dose increase. It is sometimes necessary to increase the doses by 25-50% if the BP is labile.

- If the child has significant fluid requirements, consider a 10ml/kg bolus of 5% / 4.5% HAS pre commencement.

- Have 5% / 4.5% HAS available in case of a need to fluid resuscitate.

- The lactate present in the hemosol will not cause trouble and there are no lactate free fluids in the Trust.

DO NOT feel obliged to initiate therapy if not confident or competent. **Call for help or supervision**
CONNECTING TO THE PATIENT:

1. Aspirate Heparin from the vascath using 10ml syringes, reclamp.

2. Take a 10 ml syringe of 0.9% saline, flush and withdraw to test resistance of vascath lumens, clamp lumens.

3. Check the 10ml syringes for any clots before connecting the patient.

4. Connect access and return lines to patient and unclamp vascaths and both lines. Press START button.

5. Set blood pump speed at a minimum of 10mls/min and go up as quickly and as safely as tolerated by the patient until you reach the desired blood pump speed (see p18).

6. Give a bolus of heparin into the access port immediately BEFORE the patient's blood reaches the filter.

7. Be prepared to clamp the RETURN line if you see air in it.

PRIMING WITH 5% / 4.5% ALBUMIN (5% / 4.5% HAS) or BLOOD

A colloid product can be used to re-prime a circuit after the initial heparin saline prime. This method has been used successfully when treating unstable patients. Colloid products cannot be used to do the initial prime as it will fail on the Prime Test. After the Prime test the option to re-prime allows you to choose an alternative solution, such as 5% / 4.5% HAS or blood.

BLOOD PRIME:

WHEN:
Blood prime is used if the circuits volume is over 10% of the patient’s body weight.
-When using the ST60 circuit, it would be for patient’s under 10 Kg.
-With the neonatal circuit, it will be for those under 5kg.

FILTERS:
Blood priming is safe with ST membranes.
The old AN69 (M) filters have been associated with bradykinin release in some circumstances. This causes anaphylactic shock. It is reversible by stopping the blood pump and removing the system.
If M filters must be used with blood priming, the risk of an anaphylactic shock can be reduced by bolusing sodium bicarbonate (2mmol/Kg) into the circuit BEFORE the patient’s blood reaches the filter.

PREPARING BLOOD FOR PRIMING:
Packed cells must be diluted to a physiological hematocrit: mix packed cells with 0.9% saline
• This requires you know the hematocrit (HCT) of the packed cells: HCT is the concentration of red blood cells in 100mls of blood. Take a sample. The gas
machine will give the true HCT of the blood in the pack. Usually it is around 70% (70 cells in 100mls of blood).

- Packed cells used to prime the circuit must be diluted down so that the new hematocrit is 40% (physiological) = 40 cells in 100mls of blood:

  The volume of saline you need to add to every 100mls of blood bag is:
  \[100 \times \frac{\text{measured HCT} - 40}{40}\]

  Example:
  If the HCT of the packed cells is 70. For every 100ml of packed cells, you need to add
  \[100 \times \frac{70 - 40}{40} = 75\text{ml}\]
  If you have a 200ml bag of blood, you will need to add twice the above amount of saline to bring the hematocrit down to 40% from the original HCT.
  If you have a 50 ml bag of packed cells, you will need to add half the calculated amount of saline.

  Priming and connecting to patient:
  Set blood flow rate at 40ml/min on the flow rate screen and ensure no other flow rates are set.
  Press continue
  Connect and Patient screen appears: When priming with blood DO NOT follow the instructions.
  Connect as follows:
  Clamp effluent line and return line and Clamp Y connector
  Disconnect access line from Y connector and connect to blood giving set with a 3 way tap.
  Unclamp access line
  Disconnect return line from effluent bag and connect to Y set
  Unclamp return line and Y set connector above return line
  Connect effluent line to effluent bag and Unclamp bag and line
  Unclamp blood giving set
  Start blood pump at 40mls/min (press start on patient Connection screen)
  Heparin bolus in red port PRE filter 10units/Kg
  When circuit is filled, stop pump
  Clamp access return, Y connector and Remove blood giving set
  Attach access and return line to patient and Unclamp access and return lines
  Do not clamp PBP (white) clamp
  Press resume to restart pump or press continue than resume
  Observe patient for anaphylaxis
  Increase pump speed after the priming blood has mixed with the patient’s blood
  Start treatment
  Set replacement fluids post and pre filter.

  PRIMING WITH 5% / 4.5% HAS:
  When the circuit’s volume is 10-20% patient’s weight and the patient is haemodynamically unstable.

  After the Prime test you are given the option to re-prime. This is when you can prime with 5% / 4.5% HAS as you did with heparinised saline initially.
BLOOD FLOW SPEED

- A guide to blood flow speeds is to use the 10% rule, as for extra corporeal volumes.
  E.g. 10% of the circulating volume (80ml/Kg) of a 15Kg child
  = 10% of (80 x 15)
  = 120mls
  Therefore the blood speed to aim for is **120mls/minute**

- To improve haemofiltration efficiency, higher blood flow rates may be needed.

- The blood flow rates needs to be built up slowly but steadily. If the blood flows too slowly, there is a risk of clotting the circuit.

- If the blood pressure is drops as the blood flow rate increases, it may be necessary to increase the inotropes further and/or give a 10ml/kg bolus of 5% / 4.5% HAS in order to get the circuit and flows established.

- Both the arterial and venous pressures need to be observed as blood speeds are being established. They will indicate the patency of the access catheter.

<table>
<thead>
<tr>
<th>WEIGHT.</th>
<th>SUGGESTED BLOOD FLOW RATES.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 – 10 Kgs.</td>
<td>40 – 80 mls/minute.</td>
</tr>
<tr>
<td>11 – 15Kgs.</td>
<td>80 – 120mls/minute.</td>
</tr>
<tr>
<td>16 – 20Kgs.</td>
<td>120- 150mls/minute.</td>
</tr>
<tr>
<td>21 – 25Kgs.</td>
<td>150mls/minute.</td>
</tr>
<tr>
<td>26 – 30Kgs.</td>
<td>200-250mls/minute.</td>
</tr>
<tr>
<td>&gt; 31 Kgs.</td>
<td>250- 300mls/minute.</td>
</tr>
</tbody>
</table>

- Once flows are established and the child is haemodynamically stable and both venous and arterial pressures have settled, treatment and fluid exchanges can begin.
FLOW RATES OF REPLACEMENT FLUIDS:
Pre- Blood Pump and Replacement;

1. Press Replacement button, use arrows to set prescribed replacement rate.
2. Press Dialysis button, use the arrows to set prescribed dialysis rate.
3. Press Pre – Blood Pump button, use arrows to set replacement rate.
4. Press Patient fluid removal button, set prescribed removal rate using the arrows.
5. Press syringe pump button.
6. Press continuous rate button, use the arrows to set anticoagulant rate.
7. Press Confirm button.
8. Press Enter button.
9. Press Continue button.

PATIENT FLUID REMOVAL RATES

The child’s prescribed balance needs to be assessed regularly and according to the haemodynamic status.

Replacement fluid (RF) is fixed according to the body weight (see p23)
The machine calculates the Ultrafiltrate fluid rate according to the prescribed Patient’s fluid balance

For information,
Patient fluid balance = pt in + Replacement fluid – pt out - Ultrafiltrate
Machine balance = Replacement fluid – Ultrafiltrate

The desired fluid balance of the patient may be prescribed as an hourly balance, such as ‘minus 20mls/hr’ or as a target loss of x amount per day. In the later, this figure needs to be divided by 24 in order to enter an hourly-prescribed loss.

In order to achieve the patients prescribed balance, it needs to be entered after the machine hour (Follow clock on machine not on wall).

Any fluid given to the patient as volume requirements, needs to be reflected in the prescribed hourly balance to avoid the fluid being removed again.

E.g. a 12kg child with a previous prescribed hourly balance of - 20mls/hr
- Is given 10mls/kg colloid for volume = 120mls
- Next hours prescribed balance will be +120mls

The fact that the patient required a 10ml/kg colloid bolus means that subsequent prescribed fluid balances might need to change and the patient’s needs reassessed according to the patient’s cardiovascular stability.

There may be differences between the volumes of replacement fluid(RF) dialled in the machine and those actually delivered. So it is fundamental that it is the actual RF volume, measured at the end of each hour, that is used for the subsequent hour calculations of fluid balances.
REPLACEMENT FLUID

The Hemosol BO bags are a bicarbonate buffer. Lactic acid is added to the product to stabilise the bicarbonate and lower the pH to a physiological value after mixing. The lactic acid appears as an active substance, because the lactate that comes from the lactic acid is then metabolized into bicarbonate. The amount of lactate is minimal and causes no harm, even in liver dysfunction.

There is some evidence, both published and anecdotal, that high flow haemofiltration is beneficial in the removal of certain inflammatory markers that contribute to the complement cascade. This is thought to be due to adsorption onto the filter of the cytokins but also some removal in the ultrafiltrate. Patients have demonstrated increased stability with a reduction in fluid bolus and inotrope requirements even though the prescribed fluid balance was 0 ml/hr (Bock, K.R 2005).

The amount of replacement fluid used is dependant on the aim of treatment. Replacement volumes can be based on body weight, generally between 30, 50 or 80 ml/kg/hr.

The table below gives guidelines to the volume of replacement fluid used in certain situations. It takes into consideration the paediatric and adult maximum volumes on the Prismaflex.

<table>
<thead>
<tr>
<th>WEIGHT</th>
<th>NORMAL FLOW</th>
<th>HIGH FLOW</th>
<th>HIGH FLOW</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30mls/kg/hr</td>
<td>50mls/kg/hr</td>
<td>80mls/kg/hr</td>
</tr>
<tr>
<td>5 kgs.</td>
<td>150mls/hr</td>
<td>250mls/hr</td>
<td>400mls/hr</td>
</tr>
<tr>
<td>10kgs.</td>
<td>300mls/hr</td>
<td>500mls/hr</td>
<td>800mls/hr</td>
</tr>
<tr>
<td>15kgs.</td>
<td>450mls/hr</td>
<td>750mls/hr</td>
<td>1200mls/hr</td>
</tr>
<tr>
<td>20kgs.</td>
<td>600mls/hr</td>
<td>1000mls/hr</td>
<td>1600mls/hr</td>
</tr>
<tr>
<td>25kgs.</td>
<td>750mls/hr</td>
<td>1250mls/hr</td>
<td>2000mls/hr</td>
</tr>
<tr>
<td>30kgs.</td>
<td>900mls/hr</td>
<td>1500mls/hr</td>
<td>2400mls/hr</td>
</tr>
<tr>
<td>&gt; 30kgs.</td>
<td>1050mls/hr'</td>
<td>1750mls/hr</td>
<td>2500mls/hr</td>
</tr>
</tbody>
</table>

As the filter ‘ages’, and more of the membrane becomes impermeable, the rate of substitution with the replacement fluid may need to be reduced to prevent high TMPs (so long as electrolyte clearance remains effective).
DIALYSIS FLUID/ CVVHDF

Though the Prismaflex should always be set up at first on to CVVHDF (see above), it is CVVHF that is generally used.

CVVHDF (haemodiafiltration) is particularly useful in those children with dangerously high levels of potassium, those patients who have developed Tumour Lysis Syndrome, hyperammonaemia, or drug toxicity.

In CVVHDF, the dialysis fluid is added to create a constant gradient of concentration within the Ultrafiltrate compartment of the filter so as to improve the clearance of those substrates that do not pass through the filter easily when only CVVHF is used. The dialysis fluid does not go into the patient but comes out with the ultrafiltrate.

The fluid used should be the same as the replacement fluid.
The volume of dialysis fluid in CVVHDF is normally half that of the replacement.

From CVVHDF to CVVHF: The dialysis pathway can be entered as zero and the therapy will change to CVVHF.

The table below is a guide to volumes of replacement and dialysis, which will keep the filtrate volumes below machine limits when negative balances are entered.

<table>
<thead>
<tr>
<th>WEIGHT</th>
<th>REPLACEMENT VOLUME. 80mls/kg/hr</th>
<th>DIALYSIS VOLUME. 40mls/kg/hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 – 10 kgs.</td>
<td>400 – 800 mls/hr</td>
<td>200 – 400 mls/hr</td>
</tr>
<tr>
<td>11 – 15 kgs.</td>
<td>800 – 1200 mls/hr</td>
<td>400 – 600 mls/hr</td>
</tr>
<tr>
<td>16 – 25 kgs.</td>
<td>1200 mls/hr</td>
<td>600 mls/hr</td>
</tr>
<tr>
<td>26 – 30 kgs.</td>
<td>2000-2400 mls/hr</td>
<td>1000-1200 mls/hr</td>
</tr>
<tr>
<td>&gt; 30 kgs.</td>
<td>2500 mls/hr</td>
<td>1000 mls/hr</td>
</tr>
</tbody>
</table>

ULTRAFILTRATE

- The volume of Ultrafiltrate is automatically calculated by the Prismaflex once the patient’s desired fluid balance, volumes of replacement and dialysis fluids have been entered.
- If the total volume of ultrafiltrate is >2000 mls/hr in paediatric mode or >4000 mls/hr in adult mode, the replacement and/or dialysis volumes need to be adjusted down to allow the total volume of ultrafiltrate to fall within limits.
ANTI-COAGULATION

HEPARIN is the anticoagulant of choice.

**CHECK PATIENT’S CLOTTING BEFORE GIVING A HEPARIN BOLUS!!!!**

Always have an APTR and an ACT prior to connection to the patient. These must be measured from a NON heparinised access (not the arterial line, for example). Once the system is running, sampling for anticoagulation needs to be from the **first red port on the access line, just before the heparin infusion line reaches the circuit**. This is to prevent risk of heparin contamination which can occur when using arterial line or return line (blue).

Heparin half-life is approx. 2 hrs and should be considered when resampling after infusion changes.

- Initial priming of circuit is with 5000 units per litre 0.9% sodium chloride.
- Infusion concentration of heparin is **10 units/kg in 50mls** and infused via the integral line, pre filter.
- Most patients will require a **10 units/kg bolus** as blood starts to fill the extra corporeal circuit. The bolus must be given BEFORE the patient’s blood reaches the membrane.
- The bolus of heparin can be given manually or via the Prismaflex: It can be given manually as the access catheter is flushed to begin treatment when the increase of the blood flow speed and the commencement of treatment is predicted to be slow. If the child is stable and the desired blood flow is achieved quickly, the bolus can be given via PRISMAFLEX. To do this, treatment has to have started in order to access the “syringe box” on the screen.
- Standard initial infusion rates are **10 units/kg/hr** and may in some children need to be as high as 30 – 40 units/kg/hr. As the filter ages, the dose of heparin needed to achieve the required APTR or ACT increases.

In general, the infusion needs to be titrated to achieve a moderate increase in patient’s APTR and ACT.

  - APTR of 2.0 - 2.5
  - ACT of 180 – 200 secs (PRE filter).

If the child has a severe coagulopathy, active bleeding or deranged liver function, consider and discuss:
- Not giving the initial 10units/kg bolus of heparin. AND / OR
- Heparin free haemofiltration. AND / OR
- Desired APTR of 1.5 – 2.0.
- Desired ACT of 150 – 180 seconds.

![NEVER USE ARTERIAL LINE FOR SAMPLING]

CLOTTING OF THE CIRCUIT

**Bubble trap:** If experiencing difficulties with continual clotting in the bubble-trap, consider a separate heparin infusion into bubble-trap.

2 – 5 units/kg/hr

1 units/kg/ml dilution in 50mls.

**Reducing risks of clotting:**

You need to be proactive in monitoring and manipulating both the circuit and heparin infusion. Assessment of TMP, Filter pressure, and increased ‘pulsatile’ lines will assist in interpretation of what part of the circuit is clotting.

As the circuit ‘ages’, it will require more heparin to maintain anticoagulation.
Similarly a new circuit will require less heparin and the infusion may need to be reduced after a circuit change, to avoid over-coagulation.

**OTHER ANTICOAGULANTS**

There will be some situations where effective anticoagulation of the circuit is difficult and the filter clots repetitively. Other forms of anticoagulation to consider are citrate and epoprostenol (prostacycline).

**Citrate**

There are an increasing number of centres around the world that have replaced heparin for citrate. This has not become routine practice in the UK as yet.
**Epoprostenol (prostacyclin)**

Epoprostenol is an anti-platelet agent that can be used with heparin to help with the anticoagulation in situations where the filter clots repetitively within 24 hours despite appropriate use of heparin.

A continuous infusion of Epoprostenol can be added to the patient starting at 2 nanograms/kg/min, increasing gradually, if required, to a maximum of 8 nanograms/kg/min. Epoprostenol will also act as a vasodilator and has the potential to reduce the patient’s blood pressure. At doses up to, and including, 8 nanograms/kg/min, this is unlikely. However, the dose should only be titrated if the patient’s BP is stable.

Epoprostenol has a very short half-life (around 2 minutes). Therefore, if the patient’s BP does not tolerate the increased dose, stopping the infusion should allow the BP to return to normal limits extremely quickly.

Epoprostenol should only be used after careful discussion with the attending consultant.

*Please note: Epoprostenol is available as two branded products, Flolan® and Veletri®, and a generic equivalent. Only Flolan® or the generic product should be used for patients requiring anticoagulation whilst receiving RRT. The Veletri® product should not be used.*

**Instructions for use:**

Epoprostenol is available as 0.5mg and 1.5mg vials. Only the 0.5mg vials will be used on PICU for anti-coagulation. Please contact the ward pharmacist if you feel a 1.5mg vial would be more suitable for your patient.

Epoprostenol will need to be reconstituted, and *usually*, further diluted before use. The vial should only be reconstituted using the solvent provided with the product (glycine buffer solution). Any other solution may affect the pH and therefore, stability of the product, when in use. Reconstitute as follows:

1. Withdraw 10mL of the glycine solvent and use to reconstitute the 0.5mg vial of epoprostenol.
2. Shake the vial gently, ensuring that all the powder has dissolved.
3. Withdraw the entire contents of the vial (10mL) and re-injection into the remaining 40mL of the glycine buffer. **This will now produce a solution containing 0.5mg/50mL (i.e. 10micrograms/mL).**
4. This “concentrated solution” is now ready for further dilution. In some circumstances, the “concentrated solution” may be used without further dilution. If the patient is greater than 40Kg do not further dilute.
5. The product should be filtered, using the filter provided with the product, prior to administration or further dilution.
6. Epoprostenol should be administered as a standard infusion, so that the dose correlates to a specific flow rate. See below for how to prepare the infusion for administration.
Method of Administration:

The final concentration of the solution once reconstituted is 10micrograms/mL (i.e. "concentrated solution" in the previous step). Dilute 1.2mL/kg (12micrograms/kg) of the "concentrated solution" in 0.9% sodium chloride to a final volume of 50mL. This will create a standard concentration and will give the following doses and flow rates:

<table>
<thead>
<tr>
<th>Flow rate</th>
<th>Corresponding dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5mL/hour</td>
<td>2nanograms/kg/min</td>
</tr>
<tr>
<td>1mL/hour</td>
<td>4nanograms/kg/min</td>
</tr>
<tr>
<td>1.5mL/hour</td>
<td>6nanograms/kg/min</td>
</tr>
<tr>
<td>2mL/hour</td>
<td>8nanograms/kg/min</td>
</tr>
</tbody>
</table>

For patients above 40Kg use the "concentrated solution" – see point 4 above.

Once reconstituted and further diluted, epoprostenol infusion solutions will retain 90% of their initial potency for approximately 12 hours at 25°C. Therefore, the syringe should be changed every 12 hours.
FLUID AND ELECTROLYTES

HEMOSOL BO
- The standard replacement or dialysis fluid.
-Physiologically normal BUT with no potassium, no phosphate.
-Contains lactate for buffering system (acid-base balance).

IV FLUIDS, NG FEEDS AND Parenteral Nutrition (PN).
- PN and NG / NJ feeds need to be optimised while on CVVH / CVVHD. IV maintenance is not normally necessary on CVVH / CVVHD unless specifically indicated.
- A fluid restriction is not necessary because haemofiltration allows total control over the patient’s fluid balance.
- Full nutritional requirements should be met whilst on CVVH / CVVHD to minimise catabolism.

POTASSIUM.
- Not contained in the replacement fluid.
- It will need to be added to the replacement (RF) or dialysis fluid eventually as the serum levels fall: Add 1-5 mmol KCL/l of RF to replacement / dialysis fluid. If further potassium is required it should be in the form of IV corrections or NG / PO supplements.

SODIUM. – see also page 25
- Not generally required if using HEMOSOL BO but can be added if serum sodium falls.

MAGNESIUM.
- Monitor levels and maintain within normal range.
- Hypomagnesaemia can lead to refractory hypokalaemia and hypocalcaemia making corrections difficult.

PHOSPHATES.
- There are no phosphates in the replacement fluids.
- Initially in acute renal insufficiency, phosphate levels will be high but these will eventually fall due to minimal organic intake and continual filtration.
- IV corrections may be sufficient to maintain normal ranges, otherwise a continuous infusion may be necessary.

BICARBONATE.
- Bicarbonate is essential for maintaining the acid base balance. A patient’s own bicarbonate is produced to buffer the H+ ions that the body produces during catabolism. That causes metabolic acidosis: if H+ ions are produced in huge amounts (severe sepsis, for example), the patient becomes depleted in its own bicarbonate.
\[
\text{HCO}_3^- + \text{H}^+ \leftrightarrow \text{H}_2\text{O} + \text{CO}_2
\]

- The lactate in the replacement fluid serves as a buffer. It helps convert the H+ ions due to catabolism so that the patient doesn't need to use up its own bicarbonate. This is done in the liver: lactate and H+ ions become lactic acid and water. The lactic acid eventually is filtered out.

\[
\text{Lactate} + \text{H}^+ \leftrightarrow \text{lactic acid} + \text{bicarbonate}
\]

- Bicarbonate precipitates in the presence of calcium and therefore cannot be added to the lactate free solution. It must be given as a separate infusion.

**HEATER**

To ensure that the heater works and keeps the child's blood warm it must be used at the point of connection / start of treatment. The warmer must not only be used when the child has excessively cooled.
HEPARINISATION. See also page 22

10unit/kg HEPARIN BOLUS AS PATIENT ‘GOES ON’

COMMENCE HEPARIN INFUSION AT 10unit/kg/hr

10unit/kg BOLUS HEPARIN & UP RATE
5unit/kg/hr

ACT <150
APTR <1.6

ACT 150-175
APTR 1.6-1.9

INCREASE HEPARIN INFUSION BY
5unit/kg/hr

AIM FOR: APTR of 2.0 – 2.5 or ACT of 180 – 200 sec’s (post filter)

ACT >230
APTR >3

STOP HEPARIN INFUSION AND RECHECK IN 2hrs

ACT 200-220
APTR 2.5-3

DECREASE HEPARIN INFUSION BY
5unit/kg/hr

CONTINUE AT PRESENT RATE.

YES.
SODIUM ADDITIVES:

**AIM FOR**
SERUM SODIUM OF
135 – 145 mmols/l

- **<135 mmols/l**
  - **INCREASE SODIUM IN**
  - **HEMOSOL BO**
  - **BY**
  - **50 mmols per**
  - **4.5 litre BAG**

- **YES**

- **>145 mmols/l**
  - **REDUCE SODIUM IN**
  - **HEMOSOL BO**
  - **BY**
  - **50 mmols per**
  - **4.5 litre BAG**

- **CONTINUE WITH**
  - **PRESENT SODIUM ADDITIVES**
HEMOSOL BO SUBSTITUTION FLUID WITH SODIUM BICARBONATE INFUSION OF 1 – 5 mmols/kg/hr

AIM FOR SERUM BICARBONATE OF 22 – 26 mmols/l

< 22 mmols/l INCREASE BICARBONATE INFUSION BY 0.5 – 1.0 mmols/kg/hr

> 26 mmol/l REDUCE BICARBONATE INFUSION BY 0.5 – 1.0 mmols/kg/hr

SODIUM BICARBONATE INFUSION See also page 25
AIM FOR
SERUM POTASSIUM OF
3.5 – 5.2 mmols/l

< 3.5 mmols/l

IV CORRECTION PLUS
20mmols K+ per 5 litre of HEMOSOL

3.5 - 4.2 mmols/l

20 mmols POTASSIUM per 5 litre BAG of HEMOSOL

4.2 – 5.2 mmols/l

10 mmols POTASSIUM per 5 litre BAG of HEMOSOL

> 5.2 mmols/l

0 – 5 mmols POTASSIUM per 5 litre BAG of HEMOSOL
AIM FOR
SERUM PHOSPHATE
OF
> 1.0 mmols/l

NO

0.33 mmols/kg
IV CORRECTION
RECHECK IN
4 – 6 hrs.

YES

> 1.0 mmols/l

NO ADDITIONAL PHOSPHATES REQUIRED.
MONITOR 4 - 6 hrly

< 1.0 mmols/l

START POLYFUSOR
PHOSPHATE INFUSION AT
0.4 mmols/kg/hr

MONITOR 4 – 6 hrly
AND DECREASE INFUSION ACCORDINGLY.
PRISMAFLEX CRIB SHEETS

Any problems please ring the 24 Hour Help Line / Adult ITU or Simon (The Rep)
- All numbers are on side of machine -

MANUAL PRIME

Put 500ml Bag of Saline onto Circuit
(in place of priming solution)

↓

Push and hold Manual Prime Button until 200mls have been used
( you will need to watch the saline bag and wait until ½ the bag has run through)

↓

Take Finger Off Button

↓

You Can Now Start Circuit

Before putting on to the patient, you will need to run 0.9% Saline through the circuit.
(See Circuit Volumes Below)

TO CHANGE BLOOD PUMP SPEED

Press Flow Rates Button

↓

Press blood pump button along bottom of screen
(it will be highlighted in red on screen once selected)

↓

Using arrow keys, change the rate of the blood pump

↓

Press Enter / Confirm
TO SET TREATMENT

Press Flow Rate Button

↓

Select button from bottom of screen - ie post dilution
( this will then be highlighted in red on screen)

↓

Using arrow keys enter volume in

↓

Confirm / Enter

TO ALTER BUBBLE TRAP LEVEL

Press System Button

↓

Press Adjust Chamber Button

↓

Use arrow keys to move level up or down

↓

Confirm Level

↓

Press status button to return to normal screen

CHANGING FLUID BAGS

Mute The Alarm

↓

Clamp Line

↓

Pull Scale Out

↓

Lift Old Bag Off Scale

↓
Connect new bag and put back on scale

↓

Unclamp The Line

↓

Push Scale Back In Until it Clicks in Place

---

TO CHECK AND READ TREATMENT NUMBERS

Press History Button

↓

Numbers on Screen
(don’t leave it on this screen as you won’t see updated numbers)

↓

Press Status to Return to Normal Screen

---

TO CHANGE EFFLUENT BAG (WASTE/ URINE)

The machine will alarm when ready to change.

Clamp Effluent Bag

↓

Pull Scales Out

↓

Empty via tap at the button

↓

Push scales back in until they click

↓

Unclamp Bag
ENDING TREATMENT

TO WASH BACK THE CIRCUIT

Press Stop
↓
Press End Treatment
↓
Press Return Blood
↓
Use ↑ arrow to increase to 100ml/min Blood Return Rate
↓
Press Continue
↓
Clamp Red (Access Line)
↓
Disconnect from Patient
↓
Attach a spike and 500ml Bag of 0.9% Saline
↓
Press Continue
↓
Press and Hold - Start Return Button
↓
When Return Line (Blue) is Rose coloured, clamp and disconnect from patient
↓
Clamp all lines and Press - Unload Button
↓

PLEASE PRESS SAVE DATA BEFORE TURNING OFF MACHINE
HEALTH AND SAFETY CONSIDERATIONS:

- Gloves and apron should be worn for any manipulation of circuit access ports, drainage bags or removal of used circuits.

- There is a risk of blood spray when taking blood samples from the ‘venous’ sampling port – the use of goggles is advisable.

- Any sampling should be taken from the designated sampling ports with a 22 or 24-gauge needle (blue or orange).

- ‘Venous’ and ‘arterial’ limbs of the circuit should be visible at all times, especially at point of connection to access catheter, to ensure any accidentally disconnection is promptly identified.

- Any used circuits / equipment should be double bagged in yellow clinical waste bags to avoid leakage of contaminated fluid.

- Filtrate bags should be emptied into an unused sharps box and disposed of in sluice.

- The PRISMAFLEX machine needs to be moved smoothly and slowly, by guiding from back panel. It would not be difficult to tilt / topple machine! Brakes should be applied when positioned at bedside.

- The must not be used in the presence of flammable anaesthetic gases.

- Diluted general detergent and soft cloth can be used to clean machine following any blood spillages and following patient use.

- The PRISMAFLEX machine must be plugged into mains when not in use to ensure back-up battery remains charged. If there is a mains power failure, the fluid pathway will cease first, allowing time and power for a controlled washback of the circuit.
**EXTRA CORPOREAL VOLUME NOT TO EXCEED 10% OF CHILD’S CIRCULATING VOLUME – 80mls/kg (weight x 80 x 10%)**

<table>
<thead>
<tr>
<th>WEIGHT.</th>
<th>CIRCUIT.</th>
<th>FILTER.</th>
<th>TOTAL VOL.</th>
<th>MACHINE MODE.</th>
<th>ACCESS SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-11kg</td>
<td>Neonatal</td>
<td>HF20</td>
<td>55mls</td>
<td>PAED</td>
<td>6.5 – 8 Fr 10 / 12.5 / 15 cms</td>
</tr>
<tr>
<td>11 –30 Kgs</td>
<td>Paediatric.</td>
<td>ST60</td>
<td>93mls</td>
<td>PAED</td>
<td>8 – 11 Fr 10 / 12.5 / 15 cms</td>
</tr>
<tr>
<td>30 Kgs</td>
<td>Adult</td>
<td>ST100 or M100</td>
<td>152mls</td>
<td>ADULT</td>
<td>11 Fr 12.5 / 15 / 20 cms</td>
</tr>
<tr>
<td>&gt;30kgs</td>
<td>Adult</td>
<td>ST150</td>
<td>189mls</td>
<td>ADULT</td>
<td>11 Fr 15/29cms</td>
</tr>
</tbody>
</table>

**GUIDE TO BLOOD FLOW SHOULD BE 10% OF CIRCULATING VOLUME. BLOOD FLOW mls/min = (weight x 80 x 10%)**

<table>
<thead>
<tr>
<th>WEIGHT.</th>
<th>SUGGESTED BLOOD FLOW.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 – 10 Kgs.</td>
<td>40 – 80 mls/minute.</td>
</tr>
<tr>
<td>11 – 15Kgs.</td>
<td>80 – 120mls/minute.</td>
</tr>
<tr>
<td>16 – 20Kgs.</td>
<td>120- 150mls/minute.</td>
</tr>
<tr>
<td>21 – 25Kgs.</td>
<td>150mls/minute.</td>
</tr>
<tr>
<td>26 – 30Kgs.</td>
<td>200-250mls/minute.</td>
</tr>
<tr>
<td>&gt; 31 Kgs.</td>
<td>250-300mls/minute.</td>
</tr>
</tbody>
</table>

**CALCULATIONS**

| HEPAHRIN PRIME | 5,000 units per litre bag 0.9% sodium chloride. |
| HEPARIN CONCENTRATION: INFUSION: | 10 units / kg / ml in 50mls 0.9% sodium chloride. 10 – 30 units / kg / hr. |
| SUBSTITUTION: | 30 or 50 or 80 mls / kg / hr |
| CVVHD SUBSTITUTION: DIALYSATE: | 80 mls / kg / hr 40 mls / kg / hr |
| SODIUM: | 200 mmols per 5 litre bag LF10 |
| POTASSIUM: | 5 – 20 mmols per 5 litre bag |
| BICARBINATE: | 1 – 5 mmols / kg / hr |
| PHOSPHATE: | 0.1 – 0.4 mmols / kg / hr |
| MAXIMUM SUBSTITUTION PAED MODE: ADULT MODE: | 2000 mls / hr 4000 mls / hr |
| MAXIMUM FILTRATE PAED MODE: ADULT MODE: | 2000 mls / hr 4000 mls / hr |
| MAXIMUM BLOOD FLOW PAED MODE: ADULT MODE: | 150 mls / min 500 mls / min |
Access: Red line, Blood line, taking blood from the patient via the vas-cath.

Air Bubble: Air trap.

Detector: Continuously monitors the return line for air bubbles in the return line.

Blood leak: Monitors the effluent line for the presence of red blood cells, indicating a leak in the filter membrane.


Haemodialysis: Unwanted solutes pass from the patient’s blood across the semi permeable membrane and into the dialysate flowing at the counter flow through the fluid compartment of the filter. Solute clearance is achieved by diffusion (solute moving from an area of greater concentration i.e. the patient’s blood to an area of lesser concentration i.e. the dialysate solution).

Haemodiafiltration: Hemodiafiltration, use both hemodialysis and hemofiltration. The solute removal occurs by Convection and Diffusion. Dialysate solution is pumped through the filter compartment of the filter, at the same time the effluent pump controls ultrafiltration and replacement solution is infused into the blood flow path.

Haemofiltration: Plasma water with solutes is pulled from the patient’s blood across the semi permeable membrane by means of ultrafiltrate. A replacement solution is simultaneously infused into the blood flow path. The replacement solution adds back some of the water removed as well as the wanted solutes. Solutes are removed via convection (solvent drag across the membrane).


Return: Blue Line. Blood line, returning blood back to the patient into the vas-cath.

Status Lights: Green Run mode, all monitored parameters are within the normal limits during the treatment. Yellow Caution or Advisory alarm has been overridden. Immediate patient safety is not compromised. Operator must investigate. Red Indicates a warning or malfunction alarm has occurred because of a condition of possible patient hazard. Immediate operator intervention is required.

TMP: Trans membrane pressure.

Ultra filtration: Plasma water with solutes is pulled from the patient’s blood across the semi permeable membrane in the filter. The effluent pump automatically controls the ultrafiltration rate.
**Prismaflex Therapy Modes**

**CVVH**  
*Continuous veno-venous hemofiltration*  
- Provides solute removal by convection, also can provide patient fluid removal.  
- **Green** line (Replacement). Post replacement (30% pre and 70% post).  
- White line pre blood pump.

**CVVHD**  
*Continuous veno-venous hemodialysis*  
- Provides solute clearance by diffusion, can also provide patient fluid removal.

**CVVHDF**  
*Continuous veno-venous hemodiafiltration*  
- Provides solute removal by both convection and diffusion. Can also provide patient fluid removal.  
- **Green** line (Dialysate)  
- **Purple** line (Replacement)  
- Post replacement.  
- White Line pre blood pump.  
- When not using Diafiltration Green line must be connected to a 1000ml bag of 0.9%NaCL.

**SCUF**  
*Slow Continuous Ultrafiltration*  
- Provides patient fluid removal by ultrafiltration.
6) IMPLEMENTATION

<table>
<thead>
<tr>
<th>Training required for staff</th>
<th>☐ Yes ☐ No</th>
</tr>
</thead>
<tbody>
<tr>
<td>If yes, who will provide training:</td>
<td>PICU clinical educators and Senior nursing staff</td>
</tr>
<tr>
<td>When will training be provided?</td>
<td>Induction of new starters</td>
</tr>
<tr>
<td>Date for implementation of guideline:</td>
<td>Guideline is currently in use this is a review.</td>
</tr>
</tbody>
</table>

7) MONITORING / AUDIT

| When will this guideline be audited? | As part of PICU audits |
| Who will be responsible for auditing this guideline? | Tamzin Dawson and Anne Dowson, PICU nurses |
| Are there any other specific recommendations for audit? | No |

8) REVIEW

<table>
<thead>
<tr>
<th>Frequency of review</th>
<th>Please indicate frequency of review:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug related guidance must be reviewed every 2 years</td>
<td>2019</td>
</tr>
<tr>
<td>Therapy related guidance must be reviewed every 3 years</td>
<td>Person and post responsible for the review:</td>
</tr>
<tr>
<td>Clinical treatment guidance must be reviewed every 3 years</td>
<td>Claudine De-Munter (Consultant), Tamzin Dawson (Clinical Nurse Educator)</td>
</tr>
</tbody>
</table>

9) REFERENCES

10) GUIDELINE DETAIL

| Start Date: | June 2016 |
| Approval Dates | Name of Divisional group: Paediatric Guideline Date of ratification: 01/07/2015 |
| Name of Directorate group: Paediatric Quality and Safety committee Date of ratification: 09/07/2015 |
| Has all relevant legislation, national guidance, recommendations, alerts and Trust action plans been considered, and included as appropriate in the development | Please list ALL guidance considered: |
of this guideline?

Have all relevant stakeholders been included in the development of this guideline?  
Please list all (name and role):  
PICU St Mary’s Hospital

Who will you be notifying of the existence of this guidance?  
Please give names/depts:  
PICU St Mary’s Hospital

Related documents
Hemofiltration Care Plan

Author/further information
Claudine DeMunter, PICU Consultant
Claudine.demunter@imperial.nhs.uk
Penny Fletcher, Senior Lead Pharmacist, Women’s and Children’s
Penny.Fletcher@imperial.nhs.uk
Tamzin Dawson, PICU Clinical Educator
Tamzin.dawson@imperial.nhs.uk
Kelly Wood, PICU Band 7
Kelly.wood@imperial.nhs.uk

Document review history
Next review due:
Feb 2019

THIS GUIDELINE REPLACES:
September 2010 and December 2012 Hemofiltration guideline.

11) INTRANET HOUSEKEEPING

Key words
Haemofiltration; CVVH; Haemodialfiltration; CVVHDF; Ultrafiltration; Haemodialysis; Prismaflex; Gambro; Heparin; HAS; Blood; Sodium Chloride; Potassium Chloride; Citrate; Potassium; Sodium; Magnesium; Phosphates; Bicarbonate; Vascath; Ultrafiltrate; Replacement Fluid; Dialysis Fluid; Neonatal; Paediatric; Children; Adult; Anticoagulation; Trans Membrane Pressure; TMP; epoprostenol, flolan, prostacycline

Which Division/Directorate category does this belong to?
PICU – Paediatrics- Women and Children’s Division

Which specialty should this belong to when appearing on the Source?
PICU guideline

12) EQUALITY IMPACT OF GUIDELINE

Is this guideline anticipated to have any significant equality-related impact on patients, carers or staff?
No ☐