

PRESCRIBING ACUTE DIALYSIS

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Dialysis

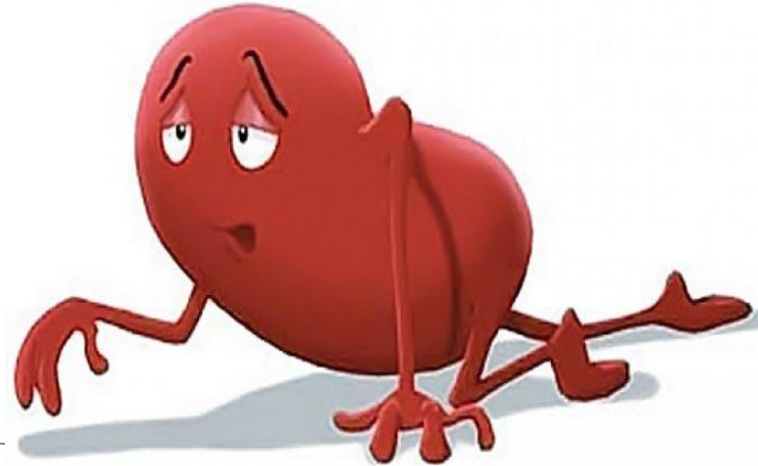


WHO NEED DIALYSIS ????



INDICATION

- 1-ACUTE ON CHRONIC RF
- 2- METABOLIC ACIDOSIS
- 3- PUL..OEDEMA NOT RESPONDING TO TREATMENT
- 4-HYPERKALEMIA NOT RESPONSE TO TREATMENT
- 5- UREMIC ENCEPHALITIS
- 6- UREMIC PRICARDITIS
- 7-UREMIC GASTRITIS
- 8- UREMIC ENCEPHALOPATHY





I really feel that you should
start dialysis immediately!


CHRONIC KIDNEY DISEASE STAGE 5 PATIENTS

A first chronic dialysis session may be performed as an outpatient





Factors to be considered

- Anticoagulation.
 - Skill of nursing and medical staff.
 - length of session.
 - Blood flow rate.
 - Choice of dialyzer.
 - Dialysate composition.
 - Fluid removal (UF).
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Anticoagulation

- Heparin-free dialysis is preferred for a first dialysis session,
to minimize the risk of
 - ** pericardial bleeding,
 - ** bleeding from access sites,
 - ** or intra cerebral bleeding
 - ** in case of hypertension.
- Anticoagulation (heparin or other) can be introduced subsequently.

Nursing and medical staff

- A first dialysis session requires skilled staffing, for monitoring both the patient and equipment, and for patient reassurance.
- Complications may be severe or unexpected

The first dialysis session

Length of session

–Major concern is the dialysis disequilibrium syndrome.
which occurs from overcorrection of uremia.

Can occur in either ARF or CRF

if blood urea levels are reduced too fast,
or the initial blood urea is very high.

–Together with blood flow, this is the major determinant of the quantity
of dialysis administered.

*A first dialysis should only reduce
blood urea by 30%.*



*For most patients an optimum first session is about 2 h.

–Many patients will require daily dialysis for a few days before instituting a standard dialysis regimen.

*A second session is 2.5-3 h, and the third 3.5-4 h.

–Reduced hours are only necessary if the blood urea remains very high on the second or third day.

–Very catabolic patients need increased dialysis times after the first session.

–Marked urea rebound is common in acute dialysis

Blood flow

- Usually about 150-200 ml/min for the first session.
- Larger patients may require a slightly longer session (2.5 h) or slightly higher blood flows (250 ml/m).

Dialyser

- High-efficiency dialysers (K0A >400) are not needed for the first few dialysis sessions.
- If they are used, the length of session or blood flow should be reduced.
- Some evidence suggests that biocompatible membranes are associated with better outcomes from ARF, but this is controversial
- Atopic patients may be more at risk of reaction to ethylene oxide sterilant.

Patients on ACE inhibitors can rarely develop anaphylactic reactions when dialysed with AN69 membranes.

Ultrafiltration

- No more than 2 liters should be removed during a first dialysis session.
- For patients with severe fluid overload or pulmonary edema. isolated (or additional) UF can be used first to remove fluid.
- Some patients are dry, and require additional fluid.

Dialysate

solute	blood	dialysate	direction
UREA	high	zero	To Dx
OTHER TOXINS	high	zero	To Dx
Sodium	135-140	135-140	NO
Potassium	Above 5	1.4-3.0	To Dx
Magnesium	Above 1	0.5-1.0	To Dx
glucose	+/-140 (8)	180 (10)	+/-
chloride	100-119	100-119	NO
Ionized Calcium	4.5-5 mg/dl 2-2.5mEq/L	5-6 mg/dl 2.5-3 mEq/L	+/-

Dialysate

- Bicarbonate

- Preferred to acetate to minimize risks of hypotension.

Patients at severe risk of alkalemia may need reduced bicarbonate concentrations (<35 m.eq/l).

Dialysate bicarbonate – adjusted to partially correct plasma bicarbonate b/c excessive correction of sever metabolic acidosis can have adverse S/E

Serum bicarbonate level <20mmol/l dialysis against bicarbonate conc no more than 15 mmol/l above plasma level

Serum bicarbonate level>20 mmol/l dialysis against bicarbonate conc of 35mmol/l

Sodium

- Avoid correction of hyponatraemia too rapidly by altering the dialysate sodium.
 - In general 140-145 m.eq/l is satisfactory. i.e sodium in serum >125 mmol/l
 - For patients with serum sodium <130 m.eq/l, keep dialysate sodium no $>15-20$ m.eq/l higher than the predialysis serum sodium.
- IF > 155 MMOL/L dialysate against a sodium conc no lower than 15 mmol/l below the plasma

For hypernatremia patients, the dialysate sodium should be equal to or slightly higher (1-3 m.eq/l) than the plasma sodium.

–Hyponatremic dialysate (relative to blood) may cause hyponatremia in venous blood returning to the patient and lead to acute hypotension as water moves into the interstitial compartment.

Potassium

- Serum potassium will be reduced with correction of acidosis.
- Use 4-4.5 m.eq/l dialysate potassium if serum Level <4.5 m.eq/l, and 2-3 m.eq/l if serum level >5.5 m.eq/l.
- For severe hyperkalemia, dialysate potassium of 2 m.eq/l is usually satisfactory, but some physicians use 0 m.eq/l dialysate potassium.

Serum potassium must be carefully monitored after dialysis in this case.

Calcium

-Avoid low calcium dialysate as it may contribute to hypotension.

Dialysate flow

–Rate does not need altering (500 ml/mm).

Access care

This is very important to avoid:

- Sepsis.
- Clotting.
- Bleeding

Dialysis dose

- Should be monitored and regularly reassessed, either by formal UKM measurement of Kt/V,
or by the URR.
- What is adequate dialysis in ARF is not clear.
Most units aim for a daily Kt/V of about 1.0 vs 1.3

Dialysis adequacy in acute renal failure

- A 50kg catabolic patient with ARF needs at least 4.4 dialysis sessions per week to maintain a steady-state blood urea of 20 mmol/L.
- For an 80kg patient such a steady state can only be achieved with daily dialysis for 4h.

CRRT can achieve these targets.

- Several studies have shown that in patients with ARF, increasing Kt/V is associated with increased survival.
- Current guidelines suggest that patients should have a daily Kt/V of 0.9-1.4 vs 1.4

Achieving prescribed dialysis in ARF is compromised by poor access flows, low BP and cardiac output, clotting of circuit due to lack of anticoagulation, hypercatabolism, increased edema.

- Delivered dialysis should be checked with **pre-**and **post** dialysis blood urea measurements, and ideally with formal UKM.
- The difference between prescribed and delivered Kt/V is much greater in ARF than CRF.

CRRT removes urea (and other small solutes) by convection during UF, and not by diffusion.

- In the short term this provides much less clearance, but over 24 and 48 h more solute is removed by CRRT than conventional dialysis.
- **Slow or sustained extended dialysis (SLED)** achieves the same outcome using a conventional dialysis machine with **low dialysate flows (100 ml/m)** rather than a dedicated CRRT machine.

This may be more efficient but is not widely available.

OTHER NEEDED POINTS

DIALYSATE TEMPERATURE - 36 C

VIRAL SEROLOGY

X- RAYS AFTER CVC INSERTION

FAMILY & PATIENT COCENT

