

## High Cut Off (HCO) Dialysis:

### Treatment of Acute Renal Failure from Multiple Myeloma Cast Nephropathy

#### Bottom Line

#### Criteria for initiating therapy

Funding for costs of treatment with the Theralite membranes will be available for patients with the following:

- ➔ Biopsy-Proven Myeloma Cast Nephropathy with <20% interstitial chronic damage
- ➔ Dialysis Requiring Acute Renal Failure (eGFR or Cr Cl <15ml/minute)
- ➔ Abnormal serum Free Light Chain (FLC) ratio (>500mg/L)
- ➔ Effective anti-myeloma therapy in conjunction with Haematology Unit.

#### HCO Dialysis Process:

- **HCO is an Intensive dialysis therapy** for 8 hours per day x5 days (week 1), followed by 8 hours per day alternate daily (weeks 2 and 3) = total 3 weeks
- Dialysis treatment with HCO membranes is effective in prolonged reduction of serum FLCs only when used in conjunction with **intensive chemotherapy** (usually given towards the end of dialysis session)
- Intensive dialysis with HCO membranes may **diminish the response to active sepsis**, and caution should be exercised in this clinical scenario
- **Monitor Free Kappa Light Chains (FLCs) pre and post dialysis**
  0. Likelihood of dialysis independence is dependent of FLCs reduction
  1. Therefore aim for sustained reduction of **>50% by day 12** (in this scenario 75% became dialysis independent, if not then only 50% chance of dialysis independence)
    - Prime the lines with 1L saline & 5000 units of Heparin
    - Heparin -check patient's platelet level and if below 100 low dose heparin 500u/s loading with 200-1000u/s maintenance.
    - If the platelet level is reasonable (above 100) then use 1000u/s stat and 500-1000u/s maintenance.
    - Flush lines with normal saline 200mls hourly and assess the dialysis membrane for clotting. If streaks and clots are present, increase Heparin dose at the rate of 250u/s per hour to prevent further clotting.
    - Up to 1500u/s Heparin per hour can be used to ensure the dialysis membrane remains clear of streaks
    - Maximum blood flow rates 250-300ml/min need to be achieved before adjusting heparin doses.
- **Dialysate** – 2 bottles of dialysate ( as per prescription) and check K+ level pre and at 4hrs, as again since the dialyser is so porous
  - Use 4K dialysate bath, and oral potassium if required
- **Blood tests**- must be done at the pre HD, 4hr and post stage of treatment.
  - Pre – U+E's, LFT's, CMP, FBC, APTT and Free light chain (1 large yellow top)
  - 4hrs – U+E's, LFT's and CMP
  - Post – U+E's, LFT's, CMP, FBC and Free light chain
  - All blood tests need to be marked urgently so changes can be made promptly according to the results.
  - Free light chain tests are sent to RPA for processing.

- **Phosphate** - requires close monitoring – if it drops below 0.8 on pre-dialysis bloods, then
  - 50mls of PO<sub>4</sub> solution is initially added to the 5L acid concentrate (dose may change according to Dr's orders) Dose can be increased to 133mls if the PO<sub>4</sub>- is dropping.
  - Add Fleet enema only after dialysis machine has completed the function check phase. Adding enema to 5L acid concentrate too early could cause machine problems. **If the dose changes a fresh bottle of acid is required with the new dose of fleet enema.**
  - Replace phosphate orally as required
- **Albumin** - due to the dialyser being so porous, the patient's albumin must be
  - checked as *urgent* pre and at 4hrs.
  - If it's below 20, the patient will need to have albumex 20% in 100mls
- **Calcium** monitoring
  - Can change dialysate bath according to Ca levels
- **Magnesium** monitoring
  - Replace orally
  - If Magnesium below 0.74 mmol/L, give intravenous Magnesium 10mmol in 100ml normal saline over 1 hour.
  - Maximum 30mmol over the duration of each dialysis treatment.