Termination of CRRT

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STOPPING CRRT OR TRANSITIONING TO INTERMITTENT HEMODIALYSIS

- There is no standard approach to stopping CRRT.
- CRRT may be discontinued when there is sufficient recovery of kidney function.
- Patients are often transitioned to hemodialysis once they are sufficiently hemodynamically stable and increased mobility is desired.
Renal Recovery

- There are no accepted standards for discontinuation of dialysis.
- In some cases, renal recovery is obvious, as indicated by rapidly increasing urine output and/or decreasing levels of predialysis serum creatinine and/or blood urea nitrogen (BUN) values.
- In this setting, we generally use the serum creatinine, rather than the BUN, because the creatinine is less confounded by the effects of metabolism.
Critically ill

- For patients who are acutely ill, the decision to discontinue RRT should not be made solely on the presence or degree of renal recovery.

- The decision should consider the patient’s overall condition (including presence of increased catabolism, fluid overload, ongoing hemodynamic instability, and ongoing requirement for nephrotoxic drugs or large volumes of fluid).

- It should be noted that the recovery of electrolyte homeostasis does not always parallel the recovery of GFR, so electrolyte abnormalities may also determine the need for support during the AKI recovery phase.
Urine output

- Urine output and duration of the need for dialysis have been reported to be important predictors of successful discontinuation of RRT. It is less likely to be successful if urine output is less than 400 to 600 mL/day (without diuretics).
There are no studies that suggest an optimal approach to withdrawing CRRT support.

We generally tailor our approach to the individual patient and expected patient response.

For those with clinically obvious and rapid renal recovery, abrupt cessation of CRRT is appropriate and well tolerated, as long as adequate monitoring is in place.
However, for those who are still acutely ill or who have had a very slow or sporadic recovery, we generally wean dialysis by decreasing the frequency of treatments as tolerated, which is usually over several weeks.

This approach may also be optimal for those with pre-existing chronic kidney disease (CKD) or those with other important comorbidities such as congestive heart failure, where renal recovery might be compromised.
Patients with high weight gains (despite improved GFR) may benefit from a trial of loop diuretic therapy while the dialysis duration or frequency is being decreased.

But, two clinical trials and one observational study have shown that the addition of high-dose diuretics in patients with AKI does not improve weaning from kidney replacement therapy (KRT) in the hospital or intensive care unit (ICU) setting. Diuretic therapy should thus not be routinely used for this purpose.
Acute RRT

- RRTs include intermittent hemodialysis, peritoneal dialysis, continuous renal replacement therapies (CRRTs), and hybrid therapies such as prolonged intermittent renal replacement therapies (PIRRTs), which provide prolonged but still intermittent dialysis.
PIRRT

- PIRRT is useful if the patient requires multiple procedures that would interrupt CRRT.
- In some institutions, PIRRT is used to transition patients from CRRT to standard intermittent hemodialysis as hemodynamic stability improves.
- Other terms used to describe PIRRT include sustained low-efficiency (daily) dialysis (SLED or SLEDD), sustained low-efficiency (daily) diafiltration (SLEDD-f), extended daily dialysis (EDD), slow continuous dialysis (SCD), go slow dialysis, and accelerated venovenous hemofiltration (AVVH) or hemodiafiltration (AVVHDF).
PIRRT

PIRRT is a hybrid treatment that provides RRT for an extended period of time (ie, 6 to 18 hours) but is intermittent (at least three times per week).

PIRRT includes both convective (ie, hemofiltration) and diffusive (ie, hemodialysis) therapies, depending on the method of solute removal.
PIRRT

- Similar to CRRT, blood pressures are more stable on PIRRT compared with standard intermittent RRT because the rate of solute and fluid removal is slower.

- Metabolic control is comparable with CRRT and mortality with PIRRT appears to be comparable with other forms of RRT, including CRRT in critically ill patients with AKI.

- Moreover, a time-series analysis of three intensive care units (ICUs) from three different countries showed that a change from CRRT to PIRRT was not associated with a change in mortality risk even when accounting for patient illness severity and underlying trends for improvement in mortality rates of AKI patients over time.
Intermittent hemodialysis is more likely to worsen cerebral edema via a decrease in mean arterial pressure (which causes compensatory cerebral vasodilation) and via a rapid removal of urea resulting in a shift of water to the intracellular space. Limited data, however, suggest that PIRRT is safe for such patients
- PIRRT is useful if the patient requires multiple procedures that would interrupt CRRT.
- In order to deliver an adequate dialysis dose, CRRT needs to be operating with as few interruptions as possible over 24 hours. Because PIRRT incorporates scheduled time off dialysis (and off anticoagulation, which is often required for both CRRT and PIRRT) procedures may be performed without compromising the dialysis dose.
- In some institutions, PIRRT is used to transition patients from CRRT to standard intermittent hemodialysis as hemodynamic stability improves. PIRRT allows for greater mobilization and rehabilitation of patients because of scheduled time off dialysis.
Session length: At least three times per week. The time per session ranges from 6 to 18 hours but is typically approximately eight hours.

Dialysate composition: Potassium of 4 mEq/L • Bicarbonate of 24 to 28 mEq/L • Calcium of 2.5 to 3.0 mEq/L for eight hours or more.

Dialysate flow rate: Ranges from 100 to 300 mL/min.

Ultrafiltration goal: Is the amount of fluid that the clinician wishes to remove (e.g., 5 or 10 percent over the body weight on admission).

Ultrafiltration rate: The rate is the amount of fluid removed per hour, such mL/kg/hour.

Blood flow: The highest blood flow (QB) that the catheter will allow (generally 300 to 400 mL/min) is used.
IN THE CONFRONTATION BETWEEN THE STREAM AND THE ROCK, THE STREAM ALWAYS WINS...NOT THROUGH STRENGTH, BUT THROUGH PERSISTENCE.