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Renal Support for Acute Kidney Injury in Critically Ill Patients

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Acute Kidney Injury (AKI) is a frequent complication in critically ill patients, and occurs in approximately two-thirds of patients admitted to the intensive care unit (ICU). Of these patients approximately one-third have advanced stage of AKI and about a quarter require dialysis support for management of AKI.

Renal support in the ICU may be provided by non-dialysis and dialysis techniques. Various dialysis techniques have been described for critically unwell patients including, Intermittent Hemodialysis (IHD), Prolonged Intermittent Renal Replacement Therapy (PIRRT), Continuous Renal Replacement Therapy (CRRT) and Peritoneal Dialysis (PD).

With regards dialysis, no mortality benefit has been reported between intermittent and continuous forms of renal replacement therapy. However, CRRT was reported as initial modality in more than half to three-quarter of patients in various multi-center studies. Successful prescription and delivery of CRRT should focus on multiple aspects including vascular access, choice of modality, effluent dose, anticoagulation strategy and management of fluid balance, nutrition and drug dosing. In addition, timely initiation and discontinuation of renal support minimizes exposure of patient to potential adverse effects related to dialysis.

Renal support in critically ill may also be extended to provide other extracorporeal organ support and in certain scenarios, for example sepsis related AKI, to include potential modification of underlying disease process.