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Extracorporeal blood purification

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Extracorporeal treatments for blood purification are initiated for many reasons in the management of the poisoned patient. Although the more common indication is for renal replacement therapy in patients with impaired kidney function, other indications include enhanced elimination of a poison or correction of metabolic disequilibria. The anticipated benefits of enhancing the elimination of a drug or chemical include reducing the duration and/or severity of poisoning. This can be beneficial on both clinical and economic grounds.

A range of techniques are available for extracorporeal blood purification, each with varying effects on solute clearance. The type and operational parameters ("dose") of the renal replacement prescribed depends on the indication and patient factors. In general, clearance will increase as the blood and dialysate flows increase, so in most cases intermittent haemodialysis is the most efficient technique. Possible exceptions to this include larger-sized drugs or those which are highly protein bound. In any case, drugs or chemicals with a large volume of distribution are not removed from the body to a significant extent.

Enhanced elimination using an extracorporeal treatment may be indicated on the basis of either clinical or laboratory criteria. This treatment has been proposed for many poisonings, but high-quality data supporting a clinical benefit are lacking in most cases. Instead, surrogate endpoints such as pharmacokinetics are often relied upon but thresholds for ascertaining that the extracorporeal treatment is helpful are poorly defined. Expert consensus recommendations from the EXTRIP group have provide specific guidance for the use of extracorporeal treatments in recent years. They support its use in methanol, lithium, salicylates, valproate, theophylline, metformin, phenobarbital and carbamazepine. Extracorporeal treatments were considered less useful for paracetamol and phenytoin, and not supported for tricyclics or digoxin. According to the published literature, poisoning with organophosphorus pesticides and paraquat are the most common reasons for extracorporeal treatment.

Improving our understanding of the benefits of extracorporeal treatments in acute poisoning is important for the Asia-Pacific region due to the incidence of pesticide poisoning, and in countries with limited resources extracorporeal treatments may be of limited availability.