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## Overcoming barriers to optimal drug dosing during ECMO in critically ill adult patients

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### EXPERT OPINION ON DRUG METABOLISM & TOXICOLOGY

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### Abstract

Introduction: One major challenge to achieving optimal patient outcome in extracorporeal membrane oxygenation (ECMO) is the development of effective dosing strategies in this critically ill patient population. Suboptimal drug dosing impacts on patient outcome as patients on ECMO often require reversal of the underlying pathology with effective pharmacotherapy in order to be liberated of the life-support device. Areas covered: This article provides a concise review of the effective use of antibiotics, analgesics, and sedative by characterizing the specific changes in PK secondary to the introduction of the ECMO support. We also discuss the barriers to achieving optimal pharmacotherapy in patients on ECMO and also the current and potential research that can be undertaken to address these clinical challenges. Expert opinion: Decreased bioavailability due to sequestration of drugs in the ECMO circuit and ECMO induced PK alterations are both significant barriers to optimal drug dosing. Evidence-based drug choices may minimize sequestration in the circuit and would enable safety and efficacy to be maintained. More work to characterize ECMO related pharmacodynamic alterations such as effects of ECMO on hepatic cytochrome system are still needed. Novel techniques to increase target site concentrations should also be explored.

### Keywords

**Author Keywords:** Critical illness; ECMO; pharmacokinetics; pharmacodynamics; antibiotics; sedatives; analgesics

**KeyWords Plus:** EXTRACORPOREAL MEMBRANE-OXYGENATION; CONTINUOUS-INFUSION; INTENSIVE-CARE; PHARMACOKINETICS; VANCOMYCIN; SEQUESTRATION; INFANTS; PHARMACODYNAMICS; MODELS; REQUIREMENTS

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