



**AMERICAN SOCIETY OF  
EXTRACORPOREAL TECHNOLOGY**  
Lead - Collaborate - Educate - Care

## **ECMO Specialist Job Description**

AmSECT and IBBM define the role of Certified ECMO Specialist to offer a certification exam recognizing minimally acceptable mastery of the knowledge, skills, and abilities listed in the CES job description. The ECMO Specialist is an integral member of the Extracorporeal Membrane Oxygenation (ECMO) service team, working primarily in intensive care units and participating in the transport of ECMO patients between care areas.

### **ECMO Specialist Knowledge Statements**

1. Can list the advantages of venovenous and venoarterial ECMO support
2. Understands the principles of left heart decompression, aortic afterload, and myocardial protection during ECMO support
3. Demonstrates an understanding medical gas blenders, connections, and gas administration
4. Is aware of ECC component specifications
5. Can apply the basic principles for troubleshooting the ECMO circuit
6. Can recognize and manage issues associated with loss of venous return during ECMO
7. Can describe pump/gas flow ECMO weaning techniques, managing ACT, and ventilatory changes during weaning, low-flow scenarios, and trial offs
8. Describes the procedures for ECMO patient and circuit blood product administration
9. Understands issues for infection control for ECMO patients
10. Explains the principles for coagulation cascades, management of anticoagulation, control of clotting times, and disseminated intravascular coagulopathy for ECMO patients
11. Understands the methods for bedside and laboratory blood tests regarding ECMO patient management and the presence of coagulopathies
12. Assumes personal responsibility for continuous learning, and engaging in educational activities annually
13. Reviews and applies the local ECMO program policy and procedure manual, clinical practice guidelines, and ELSO guidelines
14. Can recognize hypotension/hypovolemia, hypertension, and cardiac arrest during ECMO support
15. Apply management principles for bleeding ECMO patients regarding blood product administration, control of bleeding and circuit surface blood interactions

16. Understands delivering and managing care to ECMO patients requiring CRRT
17. Can cite rated blood flow, priming volume, and pressure drops for ECC components
18. Can describe open and percutaneous cannulation procedures at the initiation of ECMO
19. Can cite indications, contraindications, risks, and benefits for venoarterial and venovenous ECMO support
20. Understands and lists ECMO patient fluid balance, electrolytes, and nutrition management issues
21. Understands issues for neurologic protection for ECMO patients
22. Understands and can complete ECMO circuit priming and de-airing methods
23. Can list clinical signs for pulmonary/cardiac recovery during ECMO support
24. Can recognize and manage venous or arterial air entrainment during ECMO
25. Understands delivering and managing care to ECMO patients requiring hemoconcentration
26. Understands and lists post ECMO complications such as platelet, coagulation, and electrolyte alterations
27. Can describe how to handle emergencies and complications including mechanical issues, circuit disruption, raceway rupture, system or component alarms and failures
28. Understands management of complex ECMO cases, possible surgery on ECMO, and post-operative bleeding
29. Can cite specifications for ECC pumps, oxygenators, and other components
30. Contributes to formal team meetings which include case reviews, updates on ECMO therapy, quality assurance, review of ECMO policy and procedures, administrative information
31. Knows team member responsibilities for pre-procedure notification of the ECMO team
32. Demonstrates an understanding of ventilator modalities and management
33. Can recognize and manage issues associated with ECMO roller pump head occlusion checks, and centrifugal pump complications such as pump stop scenarios and need for hand-cranking
34. Comprehends the applications of intra-aortic balloon pump and left ventricular assist (Impella) during ECMO
35. Comprehends the ethical and social issues, consent process, parental and family support, during the potential withdrawal of ECMO support
36. Can recite steps to emergently manage situations such as ECMO circuit raceway ruptures, heat exchanger failures, and need to change out membrane lungs and other components
37. Understands issues associated with sedation and pain control, seizures and cerebral protection during ECMO
38. Appreciates and can communicate the psychosocial aspects of ECMO support
39. Applies principles of management of intra- and inter-hospital transport on ECMO
40. Can recognize uncontrolled bleeding, intracranial and other cites for hemorrhage during ECMO

41. Can recognize and communicate issues during ECMO such as pneumothorax / pneumopericardium and hemothorax / hemopericardium
42. Understands personnel, medications required, complications, vessel ligation, and vessel reconstruction during ECMO decannulation
43. Completes current and valid basic life support certification
44. Appreciates and can cite milestones in the history of ECMO

### **ECMO Specialist Skill Statements:**

1. Assists patients and family members with understanding ECMO support and related care
2. Demonstrates expertise in caring for ECMO patients with multiple and complex problems
3. Completes circuit priming sequences and ensures de-airing has occurred
4. Completes functional testing of circuit components prior to clinical application
5. Evaluates the effectiveness of plans of care and recommends revisions to the multidisciplinary care team
6. Able to push PVC tubing onto a connector up to the second barb with aseptic technique
7. Corrects damaged tubing, membrane oxygenators, connectors, and other circuit components
8. Directs transport personnel during ECMO transport to ensure patient and caregiver safety
9. Operates, maintains, calibrates, and performs quality control testing on all point of care laboratory equipment per protocols and CLIA requirements
10. Maintains and manages the continuous renal replacement therapy (CRRT) circuit when placed in conjunction within the ECMO circuit

### **ECMO Specialist Ability Statements:**

1. Completes periodic skills testing and competency drills to maintain credentialing
2. Obtains and prepares equipment based on type of support, patient diagnosis, age, and condition
3. Confers with surgical team regarding cannulation strategies and selected cannulae
4. Receives and gives constructive criticism when indicated
5. Administers all blood products and medications appropriately when ordered to be given through the ECMO circuit
6. Supports the team and customers to achieve quality, patient satisfaction, teamwork, culture of safety, and employee satisfaction
7. Uses self-appraisal performance review and peer review, including annual goal-setting to promote safe and value-based practice
8. Works in conjunction with the bedside nurse to manage cardiac drugs to ensure that the patient is hemodynamically stable

9. Conducts the collection and management of quality improvement data
10. Can monitor and troubleshoot continuous veno-venous hemofiltration (CVVH)
11. Can monitor and troubleshoot centrifugal pump based ventricular assist devices (VADs)
12. Coordinates a comprehensive, age, and culture specific continuum of care planning for all patients and families