Extracorporeal Membrane Oxygenation (ECMO)

Lines of Business	Document Type
Commercial, Medicaid, Medicare	Policy
Who This Applies To	**States**
Health Services	Idaho, Montana, Oregon, Washington

Enterprise Policy

PacificSource is committed to assessing and applying current regulatory standards, widely-used treatment guidelines, and evidenced-based clinical literature when developing clinical criteria for coverage determination. Each policy contains a list of sources (references) that serves as the summary of evidence used in the development and adoption of the criteria. The evidence was considered to ensure the criteria provide clinical benefits that promote patient safety and/or access to appropriate care. Each clinical policy is reviewed, updated as needed, and readopted, at least annually, to reflect changes in regulation, new evidence, and advancements in healthcare.

Clinical Guidelines are written when necessary to provide guidance to providers and members in order to outline and clarify coverage criteria in accordance with the terms of the Member's policy. This Clinical Guideline only applies to PacificSource Health Plans, PacificSource Community Health Plans, and PacificSource Community Solutions in Idaho, Montana, Oregon, and Washington. Because of the changing nature of medicine, this list is subject to revision and update without notice. This document is designed for informational purposes only and is not an authorization or contract. Coverage determinations are made on a case-by-case basis and subject to the terms, conditions, limitations, and exclusions of the Member's policy. Member policies differ in benefits and to the extent a conflict exists between the Clinical Guideline and the Member's policy, the Member's policy language shall control. Clinical Guidelines do not constitute medical advice nor guarantee coverage.

Background

Extracorporeal membrane oxygenation (ECMO) provides extracorporeal circulation and physiologic gas exchange for temporary cardiorespiratory support in cases of severe respiratory and cardiorespiratory failure. ECMO is used in clinical situations in which there is respiratory or cardiac failure, or both, in which death would be imminent unless medical interventions can immediately reverse the underlying disease process or physiologic functions can be supported for long enough that normal reparative processes or treatment can occur (e.g., resolution of acute respiratory distress syndrome (ARDS) or treatment of infection) or other life-saving intervention can be delivered (e.g., provision of transplant). ECMO may also be referred to as Extracorporeal Life Support (ECLS).

Criteria

Commercial

ECMO may be subject to post-service review

I. Extracorporeal Membrane Oxygenation (ECMO) for Neonates

A. PacificSource may consider ECMO to be medically necessary in neonates who meet **ALL** of the following criteria:

1. Diagnosis of **ONE** or more of the following:

a. Congenital diaphragmatic hernia

b. Hyaline membrane disease

c. Meconium aspiration

d. Persistent pulmonary hypertension of newborn (PPHN)

e. Cardiac anomaly

f. Refractory neonatal septic shock

g. Respiratory distress syndrome

h. Uncontrollable air leak syndrome causing severe respiratory compromise despite conventional treatment (e.g., optimized mechanical ventilation strategies, chest tube drainage, and/or other standard supportive measures)

2. Gestational age of at least 34 weeks

3. Birth weight of 2,000 grams or greater

4. Age less than 10 days.

II. Extracorporeal Membrane Oxygenation (ECMO) for Children and Adults

A. PacificSource may consider ECMO to be medically necessary for children and adults who have at least **ONE** of the following clinical conditions:

1. Acute respiratory distress syndrome (ARDS) when conventional treatments fail to provide adequate gas exchange (e.g., pharmacologic therapies, lung-protective mechanical ventilation, prone positioning when appropriate, neuromuscular blockade, and/or optimization of fluid management and medical treatment of the underlying cause)

2. As a short-term bridge (i.e., hours to a few days) to heart, lung, or heart-lung transplantation

3. As a short-term bridge to durable mechanical circulatory support (MCS) (e.g., ventricular assistive device (VAD), Intra-aortic balloon pump (IABP) and percutaneous MCS devices such as Thoratec pVAD, Centrimag, Tandem Heart and the Impella)

4. Following heart surgery to ease transition from cardiopulmonary bypass to ventilation

5. Liver transplant recipients with reversible respiratory or cardiovascular failure refractory to conventional treatment (e.g., optimized mechanical ventilation, vasopressor and/or inotropic support, correction of reversible metabolic or hemodynamic causes, and/or standard post-transplant critical care measures)

6. Non-necrotizing pneumonias (both bacterial and viral)

7. Primary graft failure after heart, lung, or heart-lung transplantation

8. Refractory pediatric septic shock
9. Smoke inhalation injury
10. Other reversible causes of respiratory or cardiac failure (e.g., myocarditis, cardiogenic shock, refractory ventricular tachycardia or fibrillation) that is unresponsive to all other measures

Medicaid

PacificSource Community Solutions (PCS) follows the general coverage, limitations, and exclusions outlined in OARs 410-141-3820, 410-141-3825, and 410-120-1200. Relevant coverage guidance, including any relevant Guideline notes in the Health Evidence Review Commission (HERC) Prioritized List of Health Services and as any applicable Oregon Administrative Rules (OARs), may be used to determine coverage of Extracorporeal Membrane Oxygenation (ECMO).

PacificSource Community Solutions (PCS) follows the Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) coverage requirements in OAR 410-151-0000 through 410-151-0003 for EPSDT beneficiaries. Relevant coverage guidance, including any relevant Guideline notes may be used to assist in informing a determination of medical necessity and medical appropriateness during the individual case review. A case-by-case review for EPSDT Medical Necessity and EPSDT Medical Appropriateness as defined in OAR 410-151-0001 is required prior to denying. Refer to the Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) policy for details.

Medicare

PacificSource Medicare follows CMS guidelines and criteria. In the absence of CMS guidelines and criteria, PacificSource Medicare will follow the PacificSource commercial criteria above for determination of coverage and medical necessity coverage for Extracorporeal Membrane Oxygenation (ECMO).

Experimental/investigational/Unproven

PacificSource considers ECMO for neonates to be experimental, investigational, or unproven for any other indication than listed above

PacificSource considers ECMO for children and adults to be experimental, investigational, or unproven for any other indication than listed above

Coding Information

The following list of codes are for informational purposes only and may not be all-inclusive. Deleted codes and codes which are not effective at the time the service is rendered may not be eligible for reimbursement.

33946 Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; initiation, veno-venous

33947 Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; initiation, veno-arterial

33948 Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; daily management, each day, veno-venous

33949 Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; daily management, each day, veno-arterial

33951 Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; insertion of peripheral (arterial and/or venous) cannula(e), percutaneous, birth through 5 years of age (includes fluoroscopic guidance, when performed)

33952 Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; insertion of peripheral (arterial and/or venous) cannula(e), percutaneous, 6 years and older (includes fluoroscopic guidance, when performed)

33953 Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; insertion of peripheral (arterial and/or venous) cannula(e), open, birth through 5 years of age

33954 Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; insertion of peripheral (arterial and/or venous) cannula(e), open, 6 years and older

33955 Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; insertion of central cannula(e) by sternotomy or thoracotomy, birth through 5 years of age

33956 Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; insertion of central cannula(e) by sternotomy or thoracotomy, 6 years and older

33957 Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; reposition peripheral (arterial and/or venous) cannula(e), percutaneous, birth through 5 years of age (includes fluoroscopic guidance, when performed)

33958 Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; reposition peripheral (arterial and/or venous) cannula(e), percutaneous, 6 years and older (includes fluoroscopic guidance, when performed)

33959 Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; reposition peripheral (arterial and/or venous) cannula(e), open, birth through 5 years of age (includes fluoroscopic guidance, when performed

33962 Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; reposition peripheral (arterial and/or venous) cannula(e), open, 6 years and older (includes fluoroscopic guidance, when performed)

33963 Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; reposition of central cannula(e) by sternotomy or thoracotomy, birth through 5 years of age (includes fluoroscopic guidance, when performed)

33964 Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; reposition central cannula(e) by sternotomy or thoracotomy, 6 years and older (includes fluoroscopic guidance, when performed)

33965 Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; removal of peripheral (arterial and/or venous) cannula(e), percutaneous, birth through 5 years of age

33966 Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; removal of peripheral (arterial and/or venous) cannula(e), percutaneous, 6 years and older

33969 Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; removal of peripheral (arterial and/or venous) cannula(e), open, birth through 5 years of age

33984 Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; removal of peripheral (arterial and/or venous) cannula(e), open, 6 years and older

33985 Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; removal of central cannula(e) by sternotomy or thoracotomy, birth through 5 years of age

33986 Extracorporeal membrane oxygenation (ECMO)/extracorporeal life support (ECLS) provided by physician; removal of central cannula(e) by sternotomy or thoracotomy, 6 years and older

33987 Arterial exposure with creation of graft conduit (e.g., chimney graft) to facilitate arterial perfusion for ECMO/ECLS (List separately in addition to code for primary procedure)

33988 Insertion of left heart vent by thoracic incision (e.g., sternotomy, thoracotomy) for ECMO/ECLS

33989 Removal of left heart vent by thoracic incision (e.g., sternotomy, thoracotomy) for ECMO/ECLS

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HCPCS® codes, descriptions and materials are copyrighted by Centers for Medicare and Medicaid Services (CMS).

Definitions

Extracorporeal Life Support (ECLS) - A broader term for extracorporeal therapies that provide temporary support for severe cardiac and/or pulmonary failure. ECMO is a type of ECLS.

Mechanical Circulatory Support - Temporary or durable mechanical devices used to support or replace impaired cardiac function in patients with cardiac failure.

Neonate - An infant less than four weeks (28 days) old.

Ventricular Assist Device (VAD) - A mechanical circulatory support device that helps pump blood from one or both ventricles of the heart to the systemic or pulmonary circulation.

Related Policies

Clinical Criteria Used in UM Decisions

Early and Periodic Screening, Diagnostic, and Treatment (EPSDT)

References

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Appendix A. Document Control – to update appendix fields, go to Properties Wizard

Version 2 **of Doc #** 300

Policy Number: N/A

Effective Date: 08/20/2026

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Original Creation Date: 05/28/2024

Date Archived: Not Archived Yet

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Business Owner: Health Services

Applicable regulation(s):

- 42 CFR § 422.101(b-c)
- OAR 410-120-1200 Excluded Services and Limitations
- OAR 410-141-3820 Covered Services
- OAR 410-141-3825 Excluded Services and Limitations
- OAR 410-151-0001 Definitions
- OAR 410-151-0002 Coverage Requirements

Policy Function: Posted to PacificSource.com - Clinical Policy

External entities affected: N/A

LOBO Committee Review completed: 08/20/2026