Extracorporeal Membrane Oxygenation (ECMO)

Enterprise Policy

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 determination 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 a lung transplant). It may also be referred to as Extracorporeal Life Support (ECLS).

Criteria

Commercial

Extracorporeal Membrane Oxygenation (ECMO) for Neonates (starting on date of birth or immediately afterwards):

PacificSource considers ECMO medically necessary in neonates who meet ALL of the following criteria:

I. Diagnosis of any of the following:
   A. Congenital diaphragmatic hernia; or
   B. Hyaline membrane disease; or
   C. Meconium aspiration; or
   D. Persistent fetal circulation; or
   E. Possible cardiac anomaly; or
F. Refractory neonatal septic shock; or
G. Respiratory distress syndrome; or
H. Uncontrollable air leak

And

II. Gestational age of at least 34 weeks; and
III. Birth weight of 2,000 grams or greater; and
IV. Age less than 10 days (preferably less than 7 days).

Experimental/Investigational/Unproven

PacificSource considers ECMO for neonates experimental, investigational or unproven when criteria are not met because of insufficient evidence of its safety and effectiveness.

ECMO for Children and Adults:

PacificSource considers ECMO and extracorporeal life support (ECLS) medically necessary for children and adults with any of the following clinical situations:

- Adult respiratory distress syndrome (ARDS)
- As a short-term (i.e., hours to a few days) bridge to heart, lung or heart-lung transplantation
- As a short-term bridge to durable mechanical circulatory support (MCS) (ventricular assistive device (VAD), Intra-aortic balloon pump (IABP), ECMO and percutaneous MCS devices such as Thoratec pVAD, Centrimag, Tandem Heart and the Impella)
- Following heart surgery to ease transition from cardiopulmonary bypass to ventilation
- Non-necrotizing pneumonias
- Primary graft failure after heart, lung or heart-lung transplantation
- Refractory pediatric septic shock
- Respiratory failure is due to a potentially reversible etiology (see Policy Guidelines below)
- Smoke inhalation injury
- Other reversible causes of respiratory or cardiac failure (e.g., myocarditis, cardiogenic shock) that is unresponsive to all other measures.

Policy Guidelines

Respiratory Failure Reversibility

The reversibility of the underlying respiratory failure is best determined by the treating physicians, ideally physicians with expertise in pulmonary medicine and/or critical care. Some of the underlying causes of respiratory failure which are commonly considered reversible are as follows:

- Acute respiratory distress syndrome (ARDS)
- Acute pulmonary edema
- Acute chest trauma
- Infectious and noninfectious pneumonia
- Pulmonary hemorrhage
- Pulmonary embolism
- Asthma exacerbation
- Aspiration pneumonitis
PacificSource Community Solutions follows Oregon Health Plan (OHP) Oregon Administrative Rules (OARs) 410-141-3820 to 3835 & 410-120-1200 for coverage of Extracorporeal Membrane Oxygenation (ECMO).

**Medicare**

PacificSource Medicare follows CMS guidelines and criteria. In the absence of internal policy guidelines, CMS criteria, and evidence-based criteria, requests are reviewed on an individual basis for determination of coverage and medical necessity.

**Experimental/investigational/Unproven**

PacificSource considers ECMO/ECLS for children and adults experimental, investigational or unproven for all other indications because of insufficient evidence of its safety and effectiveness. Examples Include:

1. Signs of intracranial bleeding, or other major central nervous system injury without the potential to recover meaningful function; or
2. Presence of an irreversible, terminal illness (e.g., Stage IV cancer, end stage renal/heart disease with a life expectancy of less than 6 months; or
3. Chronic organ failure without the potential to recover meaningful function; or
4. Cardiogenic shock or CPR in progress without adequate tissue perfusion.

**CPT Coding information**

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

33947 initiation, veno-arterial

33948 daily management, each day, veno-venous

33949 daily management, each day, veno-arterial

33951 insertion of peripheral (arterial and/or venous) cannula (e), percutaneous, birth through 5 years (includes fluoroscopic guidance, when performed)

33952 insertion of peripheral (arterial and/or venous) cannula(e), percutaneous, 6 years and older (includes fluoroscopic guidance, when performed)

33953 insertion of peripheral (arterial and/or venous) cannula(e), open, birth through 5 years of age

33954 insertion of peripheral (arterial and/or venous cannula(e), open, 6 years and older

33955 insertion of central cannula(e), by sternotomy or thoracotomy, birth through 5 years of age

33956 insertion of central cannula(e) by sternotomy or thoracotomy, 6 years and older

33957 reposition peripheral (arterial and/or venous) cannula(e), percutaneous, birth through 5 years of age
age (includes fluoroscopic guidance, when performed)

33958 reposition peripheral (arterial and/or venous) cannula(e), percutaneous 6 years and older (includes fluoroscopic guidance, when performed)

33959 reposition peripheral (arterial and/or venous) cannula(e), open, birth through 5 years of age (includes fluoroscopic guidance, when performed)

33962 reposition peripheral (arterial and/or venous) cannula(e), open, 6 years and older (includes fluoroscopic guidance, when performed)

33963 reposition of central cannula(e), by sternotomy or thoracotomy, birth through 5 years of age (includes fluoroscopic guidance when performed)

33964 reposition of central cannula(e), by sternotomy or thoracotomy, 6 years and older (includes fluoroscopic guidance when performed)

33965 removal of peripheral (arterial and/or venous) cannula(e), percutaneous, birth through 5 years of age

33966 removal of peripheral (arterial and/or venous) cannula(e), percutaneous, 6 years or older

33969 removal of peripheral (arterial and/or venous) cannula(e), open, birth through 5 years of age

33984 removal of peripheral (arterial and/or venous) cannula(e), open, 6 years and older

33985 removal of central cannula(e), by sternotomy or thoracotomy, birth through 5 years of age

33986 removal of central cannula(e), by sternotomy or thoracotomy, 6 years and older

33987 Arterial exposure with creation of graft conduit (eg, 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 (eg, sternotomy, thoracotomy) for ECMO/ECLS

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

References


Extracorporeal Life Support Organization (ELSO). ELSO Guidelines for Adult Respiratory Failure v1.3.4 August 2017; 7/30/2020
https://www.elso.org/Portals/0/ELSO%20Guidelines%20For%20Adult%20Respiratory%20Failure%201_3_4.pdf


Appendix

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Policy type: Enterprise
Author(s):
Depts: Health Services
Applicable regulation(s): [Applicable Regulation(s)]
[External Entities Affected]