Extracorporeal Membrane Oxygenation (ECMO) for Neonates

Policy Number: MM.12.006
Original Effective Date: 05/16/2006
Line(s) of Business: HMO; PPO
Current Effective Date: 06/22/2012
Section: Other/Miscellaneous
Place(s) of Service: Inpatient

I. Description

Extracorporeal membrane oxygenation (ECMO) is a life-support system which temporarily takes over some or all of the functions of the heart and lungs, performing the same life-support functions as a cardiopulmonary bypass does during cardiac surgery. ECMO is indicated as a life-saving procedure in infants with severe but reversible pulmonary or cardiac insufficiency resulting from congenital malformation, prematurity, infection, aspiration, or persistence of fetal circulation. It is initiated with the expectation that the infant's cardiorespiratory function will improve sufficiently to allow discontinuation of ECMO within two weeks.

Because ECMO is extremely invasive, resource intensive, and high-risk, ECMO is reserved for those infants who would die or progress to chronic irreversible lung disease with other treatment modalities (e.g., conventional mechanical ventilation, high frequency ventilation or pharmacologic intervention).

II. Criteria/Guidelines

A. ECMO is covered (subject to Limitations/Exclusions and Administrative Guidelines) for critically ill newborns (age 28 days or younger) with respiratory failure after conservative management (medication and mechanical ventilation) is found to be ineffective and all of the following clinical criteria are met:

1. The newborn's gestational age is 34 weeks or more or a birth weight of 2,000 grams or more
2. The newborn has reversible lung disease
3. The newborn has not been on mechanical ventilation for more than 14 days and meets any of the following criteria:

   a. AaDO2 of 605 mm Hg or more for four to 12 hours (at sea level). \[AaDO2 = \left(\text{atmospheric pressure} - 47\right) - \text{(PaCO2 + PaO2)})/\text{FiO2}\]
b. Oxygen index (OI) of 35 or more for 1/2 hour to six hours. OI = (MAP x FiO2 x 100)/PaO20

c. PaO2 of 50 mm Hg or less for two to 12 hours, despite maximum ventilatory assistance
d. Acidosis and shock with a pH of less than 7.25 for two hours or more or with intractable hypotension
e. Acute deterioration with a PaO2 40 mm Hg or less, despite aggressive intervention

B. Prior to ECMO or prior to transfer to an ECMO unit the following studies should be performed to assess patient status:

1. Cardiac evaluation by ultrasound to rule out uncorrectable heart disease
2. Head ultrasound (within 24 hours) to rule out significant (grade III and IV) intracranial hemorrhage
3. Coagulation status tests, (e.g., partial thromboplastin (PTT), prothrombin time (PT), fibrinogen, fibrin degradation products (FDP), platelet count)

III. Limitations/Exclusions

A. ECMO is not covered for neonates with any of the following conditions:

1. Significant coagulopathy or uncontrolled bleeding complications
2. Major intracranial hemorrhage (grade III and IV)
3. Uncorrectable cardiac lesions
4. Lethal congenital anomalies
5. Evidence of severe irreversible brain damage

B. ECMO for patients more than 28 days old or who have been on a ventilator longer than 14 days will be considered on a case-by-case basis.

IV. Administrative Guidelines

A. Precertification is not required since ECMO is generally provided on an emergency basis.

B. HMSA reserves the right to perform retrospective review using the above criteria to validate if services rendered met payment determination criteria.

C. ECMO services provided for infants more than 28 days old and/or on a ventilator for more than 14 days will be reviewed by a Medical Director. Supporting documentation must be submitted with the claim for review.

<table>
<thead>
<tr>
<th>CPT Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>36822</td>
<td>Insertion of cannula(s) for prolonged extracorporeal circulation for cardiopulmonary insufficiency (ECMO) (Separate procedure)</td>
</tr>
<tr>
<td>33960</td>
<td>Prolonged extracorporeal circulation for cardiopulmonary insufficiency; initial 24 hours</td>
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<tr>
<td>33961</td>
<td>each additional 24 hours (List separately in addition to code for primary procedure)</td>
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V. Important Reminder

The purpose of this Medical Policy is to provide a guide to coverage. This Medical Policy is not intended to dictate to providers how to practice medicine. Nothing in this Medical Policy is intended to discourage or prohibit providing other medical advice or treatment deemed appropriate by the treating physician.

Benefit determinations are subject to applicable member contract language. To the extent there are any conflicts between these guidelines and the contract language, the contract language will control.

This Medical Policy has been developed through consideration of the medical necessity criteria under Hawaii’s Patients’ Bill of Rights and Responsibilities Act (Hawaii Revised Statutes §432E-1.4), generally accepted standards of medical practice and review of medical literature and government approval status. HMSA has determined that services not covered under this Medical Policy will not be medically necessary under Hawaii law in most cases. If a treating physician disagrees with HMSA’s determination as to medical necessity in a given case, the physician may request that HMSA reconsider the application of the medical necessity criteria to the case at issue in light of any supporting documentation.

VI. References