BACKGROUND

Adenosine deaminase (ADA) deficiency is an autosomal recessive genetic disorder that damages the immune system and causes severe combined immunodeficiency (SCID). People with SCID lack all immune protection from bacteria, viruses, and fungi. They are prone to repeated and persistent opportunistic infections that can be serious or life-threatening.1,2

Most individuals with ADA deficiency are diagnosed with SCID in the first 6 months of life. Without treatment, babies usually do not survive past age 2. However, there are a few patients with a later onset. In about 10 percent to 15 percent of cases, onset of immune deficiency is delayed to between 6 and 24 months of age or even until adulthood. Immune deficiency in later-onset cases tends to be less severe, primarily causing recurrent upper respiratory and ear infections. Over time, affected individuals may develop chronic lung damage, malnutrition, and other health problems.1,2

ADA deficiency has an overall incidence of 1 in 200,000 livebirths. About 40-100 patients are diagnosed with it in the United States each year. This disorder is responsible for approximately 15 percent of SCID cases.1,2

Patients with ADA-SCID experience severe, recurrent opportunistic infections, failure to thrive, extreme lymphopenia with nonexistent or profoundly impaired immune function, and metabolic abnormalities. The main symptoms of ADA deficiency are pneumonia, chronic diarrhea, and widespread skin rashes. Affected children also grow much more slowly than healthy children and some have developmental delay.1,2

Adenosine deaminase deficiency is caused by mutations in the ADA gene. This gene provides instructions for producing the enzyme adenosine deaminase. This enzyme is found throughout the body but is most active in...
specialized white blood cells called lymphocytes. These cells protect the body against potentially harmful invaders, such as bacteria and viruses, by making immune proteins called antibodies or by directly attacking infected cells. Mutations in the ADA gene reduce or eliminate the activity of adenosine deaminase and allow the buildup of deoxyadenosine to levels that are toxic to lymphocytes. 1,2

The definitive treatment of choice for patients with ADA is hematopoietic cell transplantation from an identical sibling donor (matched sibling donor or matched family donor). Because of the greater risks involved in haploidentical grafts, other treatment avenues, including enzyme replacement therapy, have been explored for patients who do not have a histoidentical donor. 1,2

First generation medication therapy for ADA is a replacement therapy called Adagen® (pegademase bovine). This injection is a modified enzyme used for enzyme replacement therapy for the treatment of severe combined immunodeficiency disease (SCID) associated with a deficiency of adenosine deaminase. 1,2

On October 15, 2018, the United States Food and Drug Administration (FDA) approved Revcovi™ (elapegademase-lvr), a second-generation medication therapy for ADA. The drug is a recombinant adenosine deaminase (ADA) indicated for the treatment of adenosine deaminase severe combined immune deficiency (ADA-SCID) in pediatric and adult patients. It is not sourced from animals. 1,2

Patients transitioning from Adagen to Revcovi™ should have a starting dose of 0.2 mg/kg weekly, intramuscularly. Patients who have are Adagen-naïve should have a starting dose of 0.4 mg/kg weekly based on ideal body weight, divided into two doses (0.2 mg/kg twice a week), intramuscularly. 3

The most commonly reported adverse reactions were cough and vomiting. 3

**POSITION STATEMENT**

**Applicable To:**
- Medicaid – Kentucky

**Exclusions**

Revcovi™ is **not considered medically necessary and not a covered benefit** when any of the following apply:

1. Member has severe thrombocytopenia (platelet count <50,000 cells/mm3)

**Coverage**

Revcovi™ is **considered medically necessary and a covered benefit** for treatment of adenosine deaminase severe combined immune deficiency (ADA-SCID) when all of the following apply:

2. Member has documented diagnosis of ADA-SCID confirmed by genetic testing; **AND**,  
3. Attestation that member is able to comply with twice weekly injections (dose 0.2 mg/kg twice weekly) if treatment naïve OR weekly injections if previously treated with Adagen; **AND**,  
4. Attestation that physician will perform all necessary therapeutic drug monitoring:
   a. Trough ADA activity measured every 2 weeks if treatment naïve OR every 4 weeks if previously treated with Adagen for the first 8 to 12 weeks of therapy, then every 3 to 6 months; **AND**,  
   b. Trough erythrocyte deoxyadenosine nucleotides (dAXP) measured at least twice a year
beginning two months after starting Revcovi™; AND,

   c. Total and subset lymphocyte counts every 4 to 8 weeks for up to 1 year then every 3 to 6 months thereafter if treatment naïve OR every 3 to 6 months if previously treated with Adagen.

5. Authorization will be granted for 12 months.

Reauthorization:

Continued treatment with Revcovi™ is considered medically necessary and a covered benefit for treatment of adenosine deaminase severe combined immune deficiency (ADA-SCID) when all of the following apply:

1. Member has documented compliance with treatment regimen; AND,

2. Member is receiving therapeutic drug monitoring as described above.

DOSING APPENDIX

• Dose if treatment naïve: 0.2 mg/kg of ideal body weight twice weekly, for a minimum of 12 to 24 weeks until immune reconstitution is achieved.

• Dose if Adagen dose ≤30 units/kg: 0.2 mg/kg weekly

• Dose conversion from Adagen >30 units/kg to Revcovi:

If a patient’s weekly Adagen dose is above 30 U/kg, an equivalent weekly REVCOSI dose (mg/kg) should be calculated using the following conversion formula:

$$\text{REVCOSI dose in mg/kg} = \frac{\text{Adagen dose in U/kg}}{150}$$

• Therapeutic drug monitoring: titrate dose to maintain trough ADA activity >30 mmol/hr/L, trough dAXP level <0.02 mmol/L, and/or to maintain adequate immune reconstitution based on clinical assessment of the patient.

CODING

CPT
None

HCPCS
C9399 Unclassified Drugs or biologicals
J3490 Unclassified Drug
J3590 Unclassified Biologic

ICD-10
D81.3 Adenosine deaminase [ADA] deficiency

Coding information is provided for informational purposes only. The inclusion or omission of a CPT, HCPCS, or ICD-10 code does not imply member coverage or provider reimbursement. Consult the member’s benefits that are in place at time of service to determine coverage (or non-coverage) as well as applicable federal / state laws.
REFERENCES


2. IPD Analytics – New drug approval – Health Systems Revcovi (elapegademase-lvir): for adults and pediatric patients with adenosine deaminase severe combined immune deficiency published October 2018

3. Revcovi Highlights of Prescribing Information. Published October 2018.

MEDICAL POLICY COMMITTEE HISTORY AND REVISIONS

<table>
<thead>
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<th>Date</th>
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<td>12/10/2018</td>
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