Wellmark Advantage Health Plan

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Effective Date: 1/1/2022

Tegsedi® (inotersen)

FDA approval: 10/05/2018
HCPCS: J3490
Benefit: Medical

Policy:

Requests must be supported by submission of chart notes and patient specific documentation.

A. Coverage of the requested drug is provided when all the following are met:
   a. FDA approved indication
   b. FDA-approved age
   c. Must have diagnosis of peripheral nerve disease caused by hereditary transthyretin amyloidosis (hATTR; formerly known as familial amyloidosis polyneuropathy or FAP) with documented TTR mutation
      i. Signs and symptoms of ocular or cerebral area involvement (such as in ocular amyloidosis or primary/leptomeningeal amyloidosis), if present, must not predominate over polyneuropathy symptomology associated with hATTR
   d. Documentation of clinical signs and symptoms of peripheral neuropathy (such as: tingling or increased pain in the hands, feet and/or arms, loss of feeling in the hands and/or feet, numbness or tingling in the wrists, carpal tunnel syndrome, loss of ability to sense temperature, difficulty with fine motor skills, weakness in the legs, difficulty walking)
      AND/OR
      Documentation of clinical signs and symptoms of autonomic neuropathy symptoms (such as: orthostasis, abnormal sweating, dysautonomia [constipation and/or diarrhea, nausea, vomiting, anorexia, early satiety])
   e. Must have a baseline polyneuropathy disability (PND) score ≤ IIIb and/or baseline FAP Stage 1 or 2
   f. Tegsedi will not be used in combination with any of the following :
      i. Small interfering ribonucleic acid (siRNA) agents for hATTR (such as: patisiran)
      ii. TTR stabilizers (such as: tafamidis)
   g. Must not have New York Heart Association (NYHA) heart failure classification > 2
   h. Must not have undergone a prior liver transplant
   i. Trial and failure, contraindication, or intolerance to the preferred drugs as listed in the NBND's prior authorization and step therapy documents

B. Quantity Limitations, Authorization Period and Renewal Criteria
   a. Quantity Limits: Align with FDA recommended dosing
   b. Authorization Period: One year at a time

c. Renewal Criteria: Clinical documentation must be provided to confirm that current criteria are met and that the medication is providing clinical benefit

***Note: Coverage may differ for Medicare Part B members based on any applicable criteria outlined in Local Coverage Determinations (LCD) or National Coverage Determinations (NCD) as determined by Center for Medicare and Medicaid Services (CMS). See the CMS website at http://www.cms.hhs.gov/. Determination of coverage of Part B drugs is based on medically accepted indications which have supported citations included or approved for inclusion determined by CMS approved compendia.

Therapeutic considerations:

A. **FDA approved indication / Diagnosis**

**Please refer to most recent prescribing information.*

B. **Background Information**

a. Transthyretin amyloidosis (ATTR) is a progressive, life-threatening disorder characterized by the deposition of amyloid fibrils composed of transthyretin, a plasma transport protein for thyroxine and vitamin A that is predominantly produced by the liver and to a lesser extent by the choroid plexus and in retinal cells.

b. In ATTR, transthyretin dissociates its form then misfolds, causing it to aggregate into amyloid fibrils that accumulate in organs, nerves, and tissues. The buildup of these amyloid deposits results in progressive dysfunction at the site of deposition.

c. ATTR is the most common form of hereditary amyloidosis and is caused by mutations in the TTR gene that are responsible for destabilization of the transthyretin protein. Hereditary transthyretin amyloidosis (hATTR) has an autosomal dominant inheritance pattern with variable penetrance; the phenotypic presentation of the disease varies across genotypes, geographic locations, and individuals. Approximately 120 different mutations or gene deletions have been identified in the TTR gene, with Val30Met as the most prevalent in the world.

d. hATTR is a multisystem disease involving the heart, gastrointestinal tract, kidneys, thyroid, salivary glands, eyes, peripheral and central nervous system. Depending on the mutation, the phenotype may be predominantly cardiac, neurologic, or mixed.

e. hATTR with polyneuropathy (hATTR-PN) is the most common neurologic manifestation. Without treatment, patients will have progressive neuropathy and disability ultimately resulting in death within 10-15 years of disease onset.

i. Patients with hATTR-PN may present with peripheral neuropathy (sensory and motor; tingling or increased pain in the hands, feet and/or arms, loss of feeling in the hands and/or feet, numbness or tingling in the wrists, carpal tunnel syndrome, loss of ability to sense temperature, difficulty with fine motor skills, weakness in the legs, difficulty walking), autonomic neuropathy (e.g., orthostasis, abnormal sweating, dysautonomia [constipation and/or diarrhea, nausea, vomiting, anorexia, early satiety]), GI impairment, cardiomyopathy, nephropathy, or ocular deposition. Most hATTR-PN cases, however are classified as neuropathic.

ii. Amyloid deposition induces a length-dependent peripheral neuropathy beginning in the lower limbs with symptoms like toe discomfort due to numbness and spontaneous pain. Continued aggregation of amyloid on the nerve fibers contributes to sensory loss extending upwards toward the proximal

lower limbs as motor deficits and impaired sensations occur. Walking becomes increasingly difficult as balance and gait are affected. Neuropathic pain transitions to a burning sensation worsening at night. Over time, sensory deficit extends to the upper limbs, forearms, fingers and trunk and motor deficit follows with the same length dependent progression. At this stage, potentially life-threatening autonomic dysfunction is present manifesting as orthostatic hypotension, anhidrosis, neurogenic bladder, disturbances of gastrointestinal motility, and sexual impotence.

iii. Cardiac disease may occur in approximately 50% of patients with hATTR-PN. Ocular involvement is also common, including vitreous opacity, dry eye, glaucoma, and pupillary disorder.

f. hATTR may also have a strictly cardiologic presentation with cardiomyopathy (hATTR-CM) where left ventricle ejection fraction is normal or only mildly reduced coupled with ventricular hypertrophy. Amyloid deposition commonly affects the conduction system as well, leading to bundle branch block and on occasion atrioventricular and sinoatrial block. ATTR with a predominantly cardiomyopathy phenotype may also occur sporadically sans inheritance pattern due to wild-type TTR.

g. A rarer presentation of hATTR is leptomeningeal and meningovascular amyloidosis, often with concomitant vitreous opacity (oculoleptomeningeal amyloidosis). A number of mutations have reportedly been linked to this type of hATTR, though it may also manifest in more advanced cases of Val30MET hATTR-PN.

i. Central nervous system symptoms include stroke, subarachnoid hemorrhage, dementia, ataxia, seizures, and sensorineural hearing loss.

ii. The source of mutant TTR in (oculo)leptomeningeal and meningovascular amyloidosis is thought to be the choroid plexus and retinal cells versus the liver. As such, ocular and meningovascular manifestations are commonly seen after liver transplantation because the source of mutant TTR is left unaffected.

iii. To date, no treatments have been proven to be beneficial for the treatment of (oculo)leptomeningeal and meningovascular amyloidosis.

h. The 2013 guideline of transthyretin-related hereditary amyloidosis for clinicians recommends that the most reliable diagnostic approach involves genetic testing and tissue biopsy to confirm the presence of active amyloid formation. Genetic testing is needed to document the TTR gene mutations; if testing is normal, a diagnosis of hATTR is excluded.

i. Options for treatment of hATTR are limited. Treatment strategies for hATTR include depletion of the source of mutant TTR, inhibiting the formation of TTR, stabilizing the TTR molecule from dissociating, and therapy directed at removing the amyloid deposits. For hATTR-PN, our best treatment options include liver transplantation and the newer pharmacologic agents Onpattro® and Tegsedi.

j. Regardless the choice of treatment, the 2013 guidelines recommend initiation as soon as possible after diagnosis to slow or halt disease progression. The best outcomes have been shown in patients diagnosed at younger ages and/or without advanced disease. Though the guidelines have not yet been updated to include Onpattro and Tegsedi specifically, they do note that early detection is critical and patients with early stage disease should be treated with any approved drugs as they become available and as the patient's disease state meets drug indications, independent of liver transplant plans.

k. Orthoptic liver transplant removes the source of mutant TTR and has been considered the gold standard for hATTR-PN treatment early in the course of disease. In hATTR-PN, the liver is the primary source of mutant TTR; transplantation eliminates approximately 95% of the production of mutant TTR and may slow or halt

disease progression outside of the brain and/or eyes, though nerve function rarely improves post-transplant. Transplant does not effectively prevent cardiomyopathy, however, and is not recommended for patients with late stage hATTR-PN or leptomeningeal disease. With later stages of hATTR-PN and cardiomyopathy, there are concerns of disease progression due to deposition of wild-type TTR from the transplanted liver on the preexisting amyloid from the variant TTR.

l. Tegsedi and Onpattro® are both approved by the FDA for the treatment of polyneuropathy of hereditary transthyretin-mediated amyloidosis in adults. To date, there is no literature supporting the use of one product over another, nor is there support for the use of both products together or in combination with other therapies approved for ATTR (e.g., tafamidis (Vyndamax® and Vyndaqel®)).

m. Tegsedi is an antisense oligonucleotide directed at TTR. It works by binding to and degrading TTR messenger RNA (mRNA) in the liver to prevent the production of TTR protein. Preventing TTR protein synthesis in the liver can help reduce the accumulation of amyloid deposits in peripheral nerves.

n. In the pivotal phase 3 NEURO-TTR trial, Tegsedi was shown to slow the progression of neurologic worsening and declines in quality of life in patients with stage 1 or stage 2 hATTR-PN compared to placebo. Treatment with Tegsedi demonstrated improved motor, sensory, and/or autonomic neuropathy over placebo, and patient-reported assessments noted subjective neuropathy improvement, including physical functioning and activities of daily living. Of note, data is limited on cardiovascular outcomes or mortality.

o. In clinical trials, Tegsedi was only evaluated in patients with a baseline familial amyloidotic polyneuropathy (FAP) stage of 1 or 2, which equates to a polyneuropathy disability (PND) score $\leq$IIIb. The FAP stage (stage 0-3) assesses the patient's level of ambulation and the severity/progression of neuropathy, while the PND score (range 0-IV) stages disease based on walking ability. Tegsedi was not evaluated in patients with baseline FAP stage 3 which, like a PND score of IV, designates patients with late-stage, significantly advanced disease who are wheelchair-bound or bedridden; therefore, clinical trials do not support use of Tegsedi in this patient population with advanced disease.

p. Patients with a history of liver transplant were also excluded from clinical trials of Tegsedi. There is no literature to support that patients who received a liver transplant would experience benefit from treatment with Tegsedi as they would not be expected to produce mutated TTR post-transplant. Additionally, there are no published clinical trials evaluating safety or efficacy of Tegsedi for the treatment of any condition other than polyneuropathy of hATTR.

C. **Efficacy**

**Please refer to most recent prescribing information.*

D. **Medication Safety Considerations**

**Please refer to most recent prescribing information.*

E. **Dosing and administration**

**Please refer to most recent prescribing information.*

F. **How supplied**

**Please refer to most recent prescribing information.*

References:

1. Onpattro (patisiran) [prescribing information]. Cambridge, MA: Alnylam Pharmaceuticals, Inc; February 2020.
2. Tegsedi (inotersen) [prescribing information]. Boston, MA: Akcea Therapeutics Inc; July 2020.
3. Manufacturer press release. Available at: https://ir.akceatx.com/news-releases/news-release-details/akcea-and-ionis-announce-approval-tegseditm-inotersen-injection. Accessed October 9, 2018.
4. Ando Y, Coelho T, Berk JL, et al. Guideline of transthyretin-related hereditary amyloidosis for clinicians. Orphanet Journal of Rare Diseases. 2013;8:31. Doi: 10.1186/1750-1172-8-31.
5. Sekijima Y, Yoshida K, Tokudo T, et al. Familial Transthyretin Amyloidosis. Gene Reviews [internet]. Available at: https://www.ncbi.nlm.nih.gov/books/NBK1194/. Accessed September 2018.
6. Benson MD, Waddington-Cruz M, Berk JL, et al. Inotersen treatment for patients with hereditary transthyretin amyloidosis. N Engl J Med. 2018;379(1):22-31.
7. ESI Express Scripts® Drug Evaluation: inotersen (Tegsedi™) [Ionis/Akcea Therapeutics] October 2018.

Policy History		
#	Date	Change Description
1.0	Effective Date: 1/1/2022	Effective date of policy.

** The prescribing information for a drug is subject to change. To ensure you are reading the most current information it is advised that you reference the most updated prescribing information by visiting the drug or manufacturer website or http://dailymed.nlm.nih.gov/dailymed/index.cfm.*