Protocol

Serum Biomarker Tests for Multiple Sclerosis

(204118)

Medical Benefit		**Effective Date**: 10/01/14	**Next Review Date**: 07/15
Preauthorization	No	**Review Dates**: 07/14	

The following Protocol contains medical necessity criteria that apply for this service. It is applicable to Medicare Advantage products unless separate Medicare Advantage criteria are indicated. If the criteria are not met, reimbursement will be denied and the patient cannot be billed. ***Preauthorization is not required but is recommended if, despite this Protocol position, you feel this service is medically necessary.*** *Please note that payment for covered services is subject to eligibility and the limitations noted in the patient's contract at the time the services are rendered.*

Description

Serum antibodies to polysaccharide-containing molecules, called glycans, and other potential serum biomarkers are in development for the diagnosis of multiple sclerosis (MS). These tests include gMS® Dx, for patients with a first episode or clinically isolated syndrome (CIS), and the multimarker prognostic test, gMS® Pro EDSS, for predicting deterioration in patients diagnosed with MS.

Background

Disease Description

Estimated prevalence of MS in North America varies regionally and ranges from 240 of 100,000 in Canada to 191 of 100,000 in Minnesota and 40 of 100,000 in Texas. (1) Women are affected twice as often as men, and median age of onset is 24 years. Most patients (85%) have the relapsing remitting form of MS (RRMS), and of these, 60% to 70% will progress to secondary progressive MS, usually 10 to 30 years after disease onset. (2) Rarer forms are primary progressive MS and progressive relapsing MS.

MS is characterized by destruction of myelin in the central nervous system. Progressive focal demyelination eventually leads to axonal degeneration and cumulative physical and cognitive disabilities. Because any area of the brain, optic nerve, or spinal cord can be affected, symptoms are diverse and may include cognitive, speech, or vision deficits; numbness; pain; weakness or dyscoordination; and bowel or bladder dysfunction. Diagnosis is made by clinical symptoms, typical magnetic resonance imaging (MRI) findings, and oligoclonal antibodies in the cerebrospinal fluid according to current McDonald criteria. (3) Diagnosis requires two clinical episodes occurring at two discreet points in time, or one clinical episode (CIS, defined next) with MRI lesions indicating development at two discreet points in time (i.e., simultaneous appearance of old and new lesions). Disability progression is quantified in practice and in clinical trials by the Kurtzke Expanded Disability Status Scale. (4) Patients with scores less than five are fully ambulatory; scores of five to 10 are defined by incrementally decreasing ability to walk.

The term clinically isolated syndrome describes patients who have suffered a first episode suggestive of MS but do not meet diagnostic criteria for definite MS. Studies indicated that early treatment with interferon beta-1b (IFNβ-1b) may delay relapse (i.e., a second episode), although long-term disability outcomes were unaffected. (5, 6)

In addition to IFNβ-1b, eight other disease-modifying drugs are currently U.S. Food and Drug Administration (FDA)–approved for first- or second-line treatment of MS with varying degrees of efficacy for reducing relapses and preventing neurologic deterioration. First-line treatments include self-injectable drugs (interferon and

glatiramer acetate) and newer oral agents, such as fingolimod, teriflunomide, and dimethyl fumarate. Choice of first-line agent depends on severity of initial presentation, patient preference, and adverse effect profile. Patients with more active or refractory disease are more likely to tolerate greater risk for greater efficacy, for example with second- or third-line agents, natalizumab and alemtuzumab. (2, 7, 8)

Biomarkers

Glycominds Ltd., based in Israel, markets the diagnostic test, gMS® Dx, for patients with a first episode or CIS, and the multi-marker prognostic test, gMS® Pro EDSS, for predicting deterioration in patients diagnosed with MS. Both tests are based on detection of serum antibodies to glycans, which are polysaccharide- or carbohydrate-containing molecules on the surface of immune and other cells. gMS Dx detects immunoglobulin M (IgM) antibodies to the disaccharide glycan, glucose (α1,4)glucose(α) (GAGA4), and gMS Pro EDSS detects IgM antibodies to GAGA2, -3, -4, and -6. These anti-glycan antibodies are thought to interfere with normal function of the immune system. (9) Temperature controls are implemented during assay runs to prevent IgM precipitation.

Several other serum biomarkers for MS have been investigated, but no other commercially-available tests were identified.

Regulatory Status

FDA-approved tests for serum biomarkers in MS are currently unavailable. Glycominds Ltd offered gMS® Dx and gMS® Pro EDSS as laboratory-developed (in-house) tests at its Clinical Laboratory Improvement Act (CLIA)–certified laboratory in Simi Valley, California. However, current status of the tests is unknown because links to the company website are inactive, and ordering information is not readily available through the parent company, Coronis Partners. Although commercial versions of other biomarker assays were not identified, clinical laboratories may offer in-house assays to measure serum biomarkers in MS.

Clinical laboratories may develop and validate tests in-house and market them as a laboratory service; laboratories offering such tests as a clinical service must meet general regulatory standards of CLIA and must be licensed by CLIA for high-complexity testing.

Policy (Formerly Corporate Medical Guideline)

Serum biomarker tests for multiple sclerosis are considered **investigational** in all situations.

Services that are the subject of a clinical trial do not meet our Technology Assessment Protocol criteria and are considered investigational. *For explanation of experimental and investigational, please refer to the Technology Assessment Protocol.*

It is expected that only appropriate and medically necessary services will be rendered. We reserve the right to conduct prepayment and postpayment reviews to assess the medical appropriateness of the above-referenced procedures. **Some of this Protocol may not pertain to the patients you provide care to, as it may relate to products that are not available in your geographic area.**

References

We are not responsible for the continuing viability of web site addresses that may be listed in any references below.

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