Hippotherapy is considered investigational.

The following HCPCS code is specific to this therapy:
- **S8940**: Equestrian/hippotherapy, per session

**Description**

Hippotherapy, also referred to as equine-assisted therapy, describes a treatment strategy that uses equine movement to engage sensory, neuromotor, and cognitive systems to achieve functional outcomes. Hippotherapy has been proposed as a therapy for patients with impaired walking or balance.

**Related Policies**

- N/A

**Benefit Application**

Benefit determinations should be based in all cases on the applicable contract language. To the extent there are any conflicts between these guidelines and the contract language, the contract language will control. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

Some state or federal mandates (e.g., Federal Employee Program [FEP]) prohibits plans from denying Food and Drug Administration (FDA)-approved technologies as investigational. In these instances, plans may have to consider the coverage eligibility of FDA-approved technologies on the basis of medical necessity alone.

**Regulatory Status**

- N/A

**Rationale**

**Background**

**Ambulation and Balance Disorders**

Patients with spastic cerebral palsy frequently have impaired walking ability due to hyperactive tendon reflexes, muscle hypertonia, and increased resistance to increasing velocity of muscle stretch. These abnormalities result in a lack of selective muscle control and poor equilibrium responses.

**Hippotherapy**

Hippotherapy has been proposed as a technique to decrease the energy requirements and improve walking in patients with cerebral palsy. It is thought that the natural swaying motion of
the horse induces a pelvic movement in the rider that simulates human ambulation. Also, variations in the horse’s movements can prompt natural equilibrium movements in the rider. Hippotherapy is also being evaluated in patients with multiple sclerosis and other causes of gait disorders, such as strokes.

As a therapeutic intervention, hippotherapy is typically conducted by a physical or occupational therapist and is aimed at improving impaired body function. Therapeutic horseback riding is typically conducted by riding instructors and is more frequently intended as social therapy. It is hoped that the multisensory environment may benefit children with profound social and communication deficits, such as autism spectrum disorder and schizophrenia. When considered together, hippotherapy and therapeutic riding are described as equine-assisted activities and therapies.

This evidence review addresses equine-assisted activities that focus on improving physical functions such as balance and gait.

**Literature Review**

Evidence reviews assess the clinical evidence to determine whether the use of technology improves the net health outcome. Broadly defined, health outcomes are the length of life, quality of life, and ability to function—including benefits and harms. Every clinical condition has specific outcomes that are important to patients and managing the course of that condition. Validated outcome measures are necessary to ascertain whether a condition improves or worsens; and whether the magnitude of that change is clinically significant. The net health outcome is a balance of benefits and harms.

To assess whether the evidence is sufficient to draw conclusions about the net health outcome of technology, two domains are examined: the relevance, and quality and credibility. To be relevant, studies must represent one or more intended clinical use of the technology in the intended population and compare an effective and appropriate alternative at a comparable intensity. For some conditions, the alternative will be supportive care or surveillance. The quality and credibility of the evidence depend on study design and conduct, minimizing bias and confounding that can generate incorrect findings. The randomized controlled trial (RCT) is preferred to assess efficacy, however, in some circumstances, nonrandomized studies may be adequate. RCTs are rarely large enough or long enough to capture less common adverse events and long-term effects. Other types of studies can be used for these purposes and to assess generalizability to broader clinical populations and settings of clinical practice. The following is a summary of the key literature to date.

**Cerebral Palsy**

**Systematic Reviews**

A number of systematic reviews on hippotherapy in children with CP have been published. A 2013 meta-analysis included 5 studies on therapeutic horseback riding and 9 studies on hippotherapy (total n=277 children with spastic CP). Included in the analysis were RCTs and observational studies that compared pre- with post-riding results; 10 of the 14 studies provided level 4 evidence. Reviewers evaluated Gross Motor Function Measures (GMFM) across studies; meta-analysis indicated that short-term hippotherapy (8-10 minutes of total riding time) significantly reduced the asymmetrical activity of the hip adductor muscles and could improve postural control in cases of spastic CP (Gross Motor Function Classification System level <5). However, long-term hippotherapy or therapeutic riding (8-22 hours) did not have a statistically significant effect on GMFM in children with spastic CP. Methodologic limitations included the use of nonvalidated outcome measures, lack of clinically meaningful differences between groups, and in the meta-analysis specifically the inclusion of observational studies (pre-post comparisons) without control groups.

Zadnikar and Kastrin (2011) published a meta-analysis of hippotherapy and therapeutic horseback riding in children with CP. Eight studies meeting inclusion criteria (quantitative study
Hippotherapy

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Randomized Controlled Trials

A 2009 RCT included children ages 4 to 12 years with CP who completed a 10-week session of hippotherapy with pre- and posttreatment assessments obtained from 72 families (representing 35 intervention, and 37 control subjects). Randomization to hippotherapy or a waiting-list control with usual therapy was stratified by age and level of gross motor function. The physical therapist assessor was blinded to randomization, and participants were asked not to mention if they had completed the intervention at the time of the assessment. No differences between the hippotherapy and control groups were found for functional status (therapist-assessed) or child-reported quality of life. Minor differences were found in the parent-reported quality of life and child health scores in the domain of family cohesion. Overall, hippotherapy did not have a clinically significant impact on children with CP.

McGibbon et al (2009) investigated the impact of hippotherapy on the symmetry of adductor muscle activity during walking in children with spastic CP. In phase 1 of the trial, 47 children (age range, 4-16 years) with spastic CP were randomized to a single 10-minute session of hippotherapy or barrel sitting. Adductor muscle symmetry was measured before and after the session. The hippotherapy group demonstrated a statistically significant difference in adductor symmetry after this single intervention. Six children went on to participate in a phase 2, 36-week study (12 weeks without hippotherapy [baseline], 12 weeks of weekly hippotherapy, 12 weeks without intervention). Four of 6 subjects showed improved symmetry during walking after 12 weeks of hippotherapy; this improvement was maintained for an additional 12 weeks posttreatment. All 6 children improved on the 66-item Gross Motor Function Measure (GMFM-66), and 1 child began walking without a walker after 4 weeks of hippotherapy. Five children improved in at least one area of the Self-Perception Profile. The authors noted that the trial had a small sample size in phase 2, spasticity was diversely distributed among subjects, and inclusion criteria led to a sample with mixed characteristics.

Benda et al (2003) used remote surface electromyography to assess outcomes in 15 children (age range, 4-12 years) with CP who were randomized to 8 minutes of hippotherapy or sitting stationary astride a barrel. The authors reported that the hippotherapy group showed greater symmetry of muscle activity. The clinical significance of this outcome is uncertain.

Kwon et al (2015) published an RCT of hippotherapy in children (age range, 4-10 years) with CP. Ninety-one subjects were randomized to hippotherapy (30 minutes twice weekly) or home-based aerobic exercise, both for 8 consecutive weeks. Significant differences in composite measures of gross motor function improvement using the GMFM-88 and GMFM-66 were observed between groups. Trial limitations included the unclear clinical significance of the outcomes, uncertain attributes of the control group treatment, and lack of long-term outcomes.

Case Series

Sterba et al (2002) reported on the results of an 18-week horseback riding intervention in 17 subjects with CP. GMFM was assessed before and after a once weekly horseback riding
program; after 18 weeks, GMFM total score improved by 7.6% and returned to baseline 6 weeks after the program ended.

**Section Summary: CP**
We identified four RCTs comparing hippotherapy with a control, only one of which involved usual physical therapy and blinded outcomes assessment. The trial with blinded outcome assessment showed no difference between groups in functional status at follow-up, while other trials reported significant between-group differences, which suggests that observed differences might have been due to bias.

**Multiple Sclerosis**
The use of hippotherapy for patients with MS was addressed in a 2010 systematic review of 3 studies. Included in the review was a comparative study by Silkwood-Sherer and Warmbier (2007), which found that 14 weekly sessions of hippotherapy significantly improved balance in 9 patients with MS compared with a control group of 6 patients. Each of the other 2 studies in the review, both case series, included 11 subjects; these series also reported improvements in balance with hippotherapy. Reviewers concluded these studies provided emerging evidence that hippotherapy could improve balance in persons with MS, although they acknowledged the small sample sizes, lack of randomization (especially given the variable nature of MS), and lack of controls in two studies.

A 2011 study compared therapeutic horseback riding (with nontherapist riding instructors) with traditional physical therapy in 27 patients who had MS. The therapeutic horseback riding focused on progressively challenging the rider’s motor skills and the individualized physical therapy consisted of aerobic, balance, strengthening, and flexibility exercise sessions. The interventions were self-selected and were provided in 20 sessions over 6 months. The therapeutic horseback riding group showed a significant improvement on the balance subscale of the Tinetti Performance Oriented Mobility Assessment and two gait parameters (stride time, ground reaction forces). Five (42%) of 12 horseback riders showed a clinically significant improvement. Gait speed and cadence and scores on the Extended Disability Status Scale and the Barthel Index did not improve. No significant change was found in the control group. It was not reported whether the changes found after therapeutic horseback riding were significantly greater than those of the physical therapy control group.

In an RCT, Frevel and Maurer (2015) compared an Internet-based home training program with hippotherapy in 18 patients who had MS. In this trial, hippotherapy was considered the control intervention and the home training program the experimental intervention. Although both intervention groups showed significant improvements in static and dynamic balance capacity, no significant differences were found between groups. The trial had weak statistical power to detect a difference between treatments. It cannot be determined from this trial whether hippotherapy is more effective than standard physical therapy.

**Section Summary: Multiple Sclerosis**
Current evidence on the use of hippotherapy to treat MS is inconclusive and the studies conducted have been flawed.

**Stroke**
Lee et al (2014) conducted a small randomized trial assessing hippotherapy for recovery of gait and balance in 30 patients poststroke. Patients were selected if they could walk independently or with a walking aid, had spasticity in a paretic lower extremity as graded by a score of less than 2 on the Ashworth Scale, and could train for more than 30 minutes. Patients were randomized to hippotherapy or treadmill for 30 minutes, 3 days a week, for 8 weeks. At the end of training, gait speed and step length asymmetry ratio were assessed, and balance was measured with the Berg Balance Scale. The hippotherapy group showed significant improvements in balance, gait speed, and step length asymmetry, while the treadmill training...
group improved only in step length asymmetry. Improvements in gait speed and step length asymmetry were significantly greater for the hippotherapy group than for the treadmill group.

Section Summary: Stroke
The current evidence base on the use of hippotherapy to treat stroke is not sufficiently robust to draw conclusions about efficacy.

Other Gait and Balance Disorders
Comparative studies of hippotherapy and treatments for the outcomes other than balance and gait have been conducted in community-dwelling subjects. Although they showed some improved outcomes, the study subjects did not have any balance or gait disorders, and so the clinical importance of the findings is unclear. A 2013 prospective U.S. study of 9 older adults (mean age, 76.4 years) with balance deficits found improvements in balance and quality of life measured with a pretest-posttest design. Without a comparison group, it is uncertain to what extent the improvements can be attributed to hippotherapy.

Silkwood-Sherer et al (2012) reported on the efficacy of hippotherapy in a convenience sample of 16 children with mild-to-moderate balance deficits secondary to a variety of disorders. The most common diagnoses were CP (n=5), Down syndrome (n=3), developmental coordination disorder (n=2), and autism (n=2). Baseline and posttreatment Pediatric Balance Scale tests were videotaped and sent in random order to three pediatric physical therapists for scoring. The Activities Scale for Kids-Performance questionnaires were completed by the children or their parents. Hippotherapy sessions, conducted twice weekly for 6 weeks, yielded significant improvements on the Pediatric Balance Scale (from a median of 49.0 to 53.0) and the Activities Scale for Kids-Performance (from a median of 81.7 to 92.1). This trial lacked a control group.

Giagazoglou et al (2012) reported on the effect of hippotherapy on balance and strength in a controlled trial of 19 adolescents with intellectual disability. Balance and strength were assessed using a pressure platform before and after ten weeks of both hippotherapy (n=10) and the nonintervention control (n=9). There were no significant differences between groups in double leg stance or left leg stance; however, there were significant group-by-time interactions in balance with the right leg stance. Measures of strength were improved following hippotherapy, with significant group-by-time interactions. This study is lacking a control group.

In another small study (2007) of 12 patients with spastic spinal cord injury, hippotherapy resulted in short-term improvements in spasticity and well-being.

Section Summary: Other Gait and Balance Disorders
Current evidence has suggested potential benefit in the treatment of other gait and balance disorders with hippotherapy but the relevant studies lack control groups, which limits the conclusions that can be drawn.

Summary of Evidence
For individuals who have CP, MS, stroke, or gait and balance disorders other than CP, MS, and stroke who receive hippotherapy, the evidence includes systematic reviews, randomized trials, and case series. The relevant outcomes include symptoms and functional outcomes. Studies in CP, MS, stroke, and other indications have had variable findings. The randomized trials are generally small and have significant methodologic problems. In the largest randomized trial conducted to date (72 children), which had blinding outcome assessment, hippotherapy had no clinically significant impact on children with CP. There are no RCTs showing that hippotherapy is superior to alternative treatments for patients with MS. Hippotherapy for other indications has been compared primarily with no intervention and has not been shown to be more effective than other active therapies. The evidence is insufficient to determine the effects of the technology on health outcomes.
**Supplemental Information**

**Practice Guidelines and Position Statements**
No guidelines or statements were identified.

**U.S. Preventive Services Task Force Recommendations**
Not applicable.

**Medicare National Coverage**
There is no national coverage determination. In the absence of a national coverage determination, coverage decisions are left to the discretion of local Medicare carriers.

**Ongoing and Unpublished Clinical Trials**
Some currently unpublished trials that might influence this review are listed in Table 1.

### Table 1. Summary of Key Trials

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<th>Completion Date</th>
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<td>NC01372059</td>
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NCT: national clinical trial.

**References**


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**Documentation for Clinical Review**

- No records required

**Coding**

This Policy relates only to the services or supplies described herein. Benefits may vary according to product design; therefore, contract language should be reviewed before applying the terms of the Policy. Inclusion or exclusion of codes does not constitute or imply member coverage or provider reimbursement.

**IE**

The following services may be considered investigational.

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<th>Type</th>
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<td>Equestrian/hippotherapy, per session</td>
</tr>
<tr>
<td>HCPCS</td>
<td>S8940</td>
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<tr>
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<tr>
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**Policy History**

This section provides a chronological history of the activities, updates and changes that have occurred with this Medical Policy.
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**Definitions of Decision Determinations**

**Medically Necessary:** A treatment, procedure, or drug is medically necessary only when it has been established as safe and effective for the particular symptoms or diagnosis, is not investigational or experimental, is not being provided primarily for the convenience of the patient or the provider, and is provided at the most appropriate level to treat the condition.

**Investigational/Experimental:** A treatment, procedure, or drug is investigational when it has not been recognized as safe and effective for use in treating the particular condition in accordance with generally accepted professional medical standards. This includes services where approval by the federal or state governmental is required prior to use, but has not yet been granted.

**Split Evaluation:** Blue Shield of California/Blue Shield of California Life & Health Insurance Company (Blue Shield) policy review can result in a split evaluation, where a treatment, procedure, or drug will be considered to be investigational for certain indications or conditions, but will be deemed safe and effective for other indications or conditions, and therefore potentially medically necessary in those instances.

**Prior Authorization Requirements (as applicable to your plan)**

Within five days before the actual date of service, the provider must confirm with Blue Shield that the member's health plan coverage is still in effect. Blue Shield reserves the right to revoke an authorization prior to services being rendered based on cancellation of the member's eligibility. Final determination of benefits will be made after review of the claim for limitations or exclusions.

Questions regarding the applicability of this policy should be directed to the Prior Authorization Department. Please call (800) 541-6652 or visit the provider portal at www.blueshieldca.com/provider.

Disclaimer: This medical policy is a guide in evaluating the medical necessity of a particular service or treatment. Blue Shield of California may consider published peer-reviewed scientific literature, national guidelines, and local standards of practice in developing its medical policy. Federal and state law, as well as contract language, including definitions and specific contract provisions/exclusions, take precedence over medical policy and must be considered first in determining covered services. Member contracts may differ in their benefits. Blue Shield reserves the right to review and update policies as appropriate.