Clinical Policy Bulletin: Hippotherapy

Policy

*Please see amendment for Pennsylvania Medicaid at the end of this CPB.

Aetna considers the use of hippotherapy (also known as equine therapy) experimental and investigational for the treatment of the following indications and all other indications because there is insufficient scientific data in the peer reviewed medical literature to support the effectiveness of hippotherapy for the treatment of individuals with these indications.

- Anxiety
- Attention deficit and/or hyperactivity disorder
- Autism
- Behavioral and psychiatric disorders (including aggressive violent behavior and eating disorders)
- Cerebral palsy or other motor dysfunctions (e.g., arthritis, balance deficits, children with psychomotor impairment, head injury, multiple sclerosis, spinal cord injury, and stroke)
- Post-traumatic stress disorder
- Rehabilitation of cancer survivors
- Sexual abuse and emotional stress
- Substance abuse disorder

Background

Cerebral palsy (CP) also known as static encephalopathy, refers to a wide variety of non-progressive brain disorders resulting from insults to the central nervous system during the perinatal period. The management of the motor dysfunction of patients with CP includes the conventional orthopedic approach of range of motion, stretch, and strengthening, as well as neurodevelopmental treatment. A general objective of physiotherapy for children with CP is to reduce the influence of abnormal muscle tone and facilitate the emergence of normal postural and movement components. For many children with CP or other motor dysfunction, physical therapy is a long and arduous process. In order to sustain patients' interest and enthusiasm in their continuing treatment, therapists have developed adjunctive therapeutic activities such as dancing, swimming, and horseback riding.

Hippotherapy, also known as therapeutic horseback riding, equine-facilitated therapy, or horse therapy, is the passive use of the physical movements of the horse in the treatment of patients with neurological or other disabilities. This is often performed under the direct supervision of a physical therapist or occupational therapist who is horse-knowledgeable. By using the horse as a treatment modality, the therapist tries to facilitate normal muscle tone and inhibit abnormal posture. The therapist may place
the patient in a variety of positions on the horse such as prone across horse, prone lengthwise with hips abducted and knees flexed, side sitting, or sitting. It is believed that the rhythmic, swinging movement of the horse enhances balance, co-ordination, and motor development. Patients who participate in therapeutic riding include not only children with CP, but also individuals with arthritis, multiple sclerosis, head injury, and stroke. The horse is usually led at a walking or trotting pace by a skilled equestrian to ensure safety and expert handling of the animal. Assistants are present, usually one on each side, to help repositioning or stabilizing the patient. For more severely disabled patients, the therapist may also serve as a back rider.

For children with CP, hippotherapy utilizes the basic principles of Rood, Bobaths (individuals who had put forth/developed neurodevelopment treatment concepts for neuromuscular dysfunction), and proprioceptive neuromuscular facilitation. It is believed that therapeutic horseback riding can reduce spasticity, maintain and increase range of motion in the upper extremities of these children. Haskin and colleagues (1982) described the benefits of a hippotherapy program (30 mins per week) in a 5-year old patient who has participated in this type of therapy since she was 2 1/2. Improvements included strengthening of the back and neck, better balance, ability to sit up longer, less spasticity in the lower extremities, the legs are externally rotated and abducted, and the feet are dorsiflexed. However, the patients also swam once a week and received physical therapy for her lower extremities 6 days a week. Thus, it is unclear whether the observed improvements were due to hippotherapy, adjunctive therapeutic swimming, intensive physical therapy, and/or the result of natural growth and development.

Using a repeated-measured design, Bertoti (1988) assessed postural changes in 11 children (4 girls and 7 boys, aged 28 to 114 months) with spastic CP after participation in a 10-week hippotherapy program (1-hour session, 2 times per week). Evaluation of posture was carried out 3 times by 3 pediatric physical therapists --

I. pretest-1 followed by a 10-week period of no riding,
II. pretest-2 followed by a 10-week therapeutic riding program, and
III. post-test.

A composite score for each test period was computed for each patient, and a median score was calculated for the entire group at each test period. A statistical difference was observed among the 3 test periods with significant improvement occurring during the period of hippotherapy. Subjective clinical improvements such as reduced hypertonicity, as well as improved weight-bearing and functional balance skills were reported by parents and referring physical therapists. These findings represented the first objective report that hippotherapy may have beneficial effect on the posture of children with spastic CP. However, the author concluded that further investigation is needed to isolate additional variables such as range of motion, balance, weight shift, and strength, and to evaluate the effects of hippotherapy on different disabilities.

In an article on hippotherapy, Tuttle (1987) stated that research on the effect and application of the various forms of therapeutic horseback riding is needed to refine program planning, and to support funding and third party reimbursement. Furthermore, a workshop on “The Health Benefits of Pets” sponsored by the National Institutes of Health concluded that “solid data on the success of therapeutic riding is limited. ... Future research is indicated to compare the efficacy of therapeutic riding with other clinical treatment procedures that do not involve the horse and to validate dramatic clinical observations” (NIH, 1983). Additionally, in an article published in the Journal of American Veterinarian Medicine Association, Potter and colleagues (1994) stated that “Lack of scientific documentation of the benefits of therapeutic riding is a major obstacle that must be overcome. ... Research is critically needed in all aspects of therapeutic riding”.

In a single-subject experimental design study (n = 11), Hammer and associates (2005) examined whether therapeutic riding (TR, Sweden), also known as hippotherapy (HT, United States) may affect balance, gait, spasticity, functional strength, coordination, pain, self-rated level of muscle tension
SRLMT), activities of daily living (ADL), and health-related quality of life in patients with multiple sclerosis (MS). The intervention comprised 10 weekly TR/HT sessions of 30 mins each. The subjects were measured a maximum of 13 times. Physical tests were: the Berg balance scale, taking a figure of 8, the timed up and go test, 10-m walking, the modified Ashworth scale, the Index of Muscle Function, the Birgitta Lindmark motor assessment, part B, and individual measurements. Self-rated measures were: the visual analog scale (VAS) for pain, a scale for SRLMT, the Patient-Specific Functional Scale for ADL, and the Medical Outcomes Study 36-item Short-Form health survey (SF-36). Data were analyzed visually, semi-statistically and considering clinical significance. Results showed improvement for 10 subjects in one or more of the variables, particularly balance, and some improvements were also seen in pain, muscle tension, and ADL. Changes in SF-36 were mostly positive, with an improvement in Role-Emotional seen in 8 patients. These investigators concluded that balance and Role-Emotional were the variables most often improved, but TR/HT appeared to benefit the subjects differently.

Debuse et al (2005) noted that despite a substantial body of anecdotal and clinical evidence for its benefits, research evidence for hippotherapy is sparse. In a questionnaire survey, these researchers explored the views of physiotherapists and people with CP who use hippotherapy. This study was aimed to:

I. establish the pattern of hippotherapy practice in Germany and the U.K.;
II. examine the perceived main effects of hippotherapy on people with CP in Germany and the U.K.; and
III. investigate how these effects are being measured in both countries.

The results highlighted considerable differences in how hippotherapy is practiced in the U.K. compared with in Germany. In spite of this, the study revealed agreement among respondents on the overall perceived effects of hippotherapy on individuals with CP, namely, the regulation of muscle tone, improvement of postural control and psychological benefits. The results also indicated scant use of outcome measures to evaluate these effects.

Casady and Nichols-Larsen (2004) examined if hippotherapy has an effect on the general functional development of children with CP. The study employed a repeated-measures design with 2 pre-tests and 2 post-tests conducted 10 weeks apart using the Pediatric Evaluation of Disability Inventory (PEDI) and the Gross Motor Function Measure (GMFM) as outcome measures. A convenience sample of 10 children with CP participated whose ages were 2.3 to 6.8 years at baseline (mean +/- SD 4.1 +/- 1.7). Subjects received hippotherapy once-weekly for 10 weeks between pre-test 2 and post-test 1. Test scores on the GMFM and PEDI were compared before and after hippotherapy. The authors concluded that results of this study suggest that hippotherapy has a positive effect on the functional motor performance of children with CP. Hippotherapy appears to be a viable treatment strategy for therapists with experience and training in this form of treatment and a means of improving functional outcomes in children with CP, although specific functional skills were not investigated.

There are 2 main drawbacks with this study:

I. the GMFM scorers were not blinded to the order of test date and they were allowed to keep the scores sheets, which may have biased the scorers, and
II. with the individualized approach to treatment, there is no protocol that would allow replication of this study.

The authors stated that hippotherapy has the potential to be a valuable treatment strategy in treating children with CP. Future studies should use more homogeneous patient populations in terms of age and type of CP to ascertain precise areas of function affected most by hippotherapy.

In a review on the use of complementary and alternative therapies for the treatment of children with CP, Liptak (2005) noted that although studies of hippotherapy have shown beneficial effects on body structures and functioning, unanswered questions remain. For example, it is unclear which subgroups
of children with CP would benefit the most, what "dose" or frequency of intervention is optimal.

An assessment of the evidence for hippotherapy by the Institute for Clinical Effectiveness and Health Policy (Pichon Riviere et al, 2006) concluded: "The efficacy of this therapy does not seem to have been sufficiently proven for any specific indication. Its recreational role and impact on the quality of life of these patients have not been sufficiently analyzed."

Snider et al (2007) performed a systematic review of the literature on hippotherapy as an intervention for children with CP. Retrieved articles were rated for methodological quality using Physiotherapy Evidence Database (PEDro) scoring to assess the internal validity of randomized trials and the Newcastle Ottawa Quality Assessment Scale to assess cohort studies. Population, Intervention, Comparison, and Outcomes (PICO) questioning was used to identify questions of interest to clinicians for outcomes within the context of the International Classification of Functioning, Disability and Health. Levels of evidence were then accorded each PICO question. The authors reported that there is Level 2a evidence that hippotherapy has short-term positive effects on muscle symmetry in the trunk and hip and that hippotherapy is effective for improving muscle tone in children with CP when compared with regular therapy or time on a waiting list. However, no studies addressed participation outcomes. (Note: Level 2a evidence refers to 1 or more "fair" quality randomized controlled trials [PEDro = 4 to 5]; 6 to 8 is considered "good"; and 9 to 10 is considered "excellent"). An assessment of this systematic evidence review by the Centre for Reviews and Dissemination (2009) found that this systematic review was "poorly reported" and that, "given the potential for error or bias during the review process, these cautious conclusions may not be reliable." In particular, the authors did not report how many reviewers carried out study selection and data extraction. Conclusions are limited due to heterogeneity of the primary data, small sample sizes, and limited generalization of the patient samples.

Hamill et al (2007) examined the effects of a once-weekly, 10-week hippotherapy program for 3 children, aged 27 to 54 months, with CP. Participants were rated as Level V on the Gross Motor Function Classification System. The Sitting Dimension of the Gross Motor Function Measure was used to establish a baseline of sitting abilities, and was administered every 2 weeks during intervention. The Sitting Assessment Scale and the Gross Motor Function Measure were administered before, after, and 4 weeks post-intervention. Parental perceptions of the hippotherapy intervention were assessed using questionnaires. None of the children made gains on any of the standardized outcome measures. However, parental perceptions were very positive, with reported improvements in range of motion and head control.

Lechner et al (2007) examined the effect of hippotherapy on spasticity and on mental well-being of persons with spinal cord injury (SCI), and compared it with the effects of other interventions. A volunteer sample of 12 people with spastic SCI (American Spinal Injury Association grade A or B) were included in this study; interventions consisted of hippotherapy, sitting astride a Bobath roll, and sitting on a stool with rocking seat. Each session lasted 25 mins and was conducted twice-weekly for 4 weeks; the control condition was spasticity measurement without intervention. Main outcome measures were clinical rating by a blinded examiner of movement-provoked muscle resistance, using the Ashworth Scale; self-rating of spasticity by subjects on a VAS; and mental well-being evaluated with the self-rated well-being scale Befindlichkeits-Skala of von Zerssen. Assessments were performed immediately after intervention sessions (short-term effect); data from the assessments were analyzed 3 to 4 days after the sessions to calculate the long-term effect. By analyzing the clinically rated spasticity, only the effect of hippotherapy reached significance compared with the control condition (without intervention); median differences in the Ashworth scores’ sum before and after hippotherapy sessions ranged between -8.0 and +0.5. There was a significant difference between the spasticity-reducing effect of hippotherapy and the other 2 interventions in self-rated spasticity by VAS; median differences of the VAS before and after hippotherapy sessions ranged between -4.6 and +0.05cm. There were no long-term effects on spasticity. Immediate improvements in the subjects’ mental well-being were detected only after hippotherapy (p = 0.048). The authors concluded that hippotherapy is more efficient than sitting astride a Bobath roll or on a rocking seat in reducing spasticity temporarily. Hippotherapy had a positive short-term effect on subjects’ mental well-being.
The major drawbacks of this study was its small sample size and that hippotherapy had no long-term effects on spasticity.

Sterba (2007) reported on a review of evidence for hippotherapy in CP, and concluded that hippotherapy and horseback riding are effective in improving gross motor skills. However, a critical assessment of this evidence review by the Centre for Reviews and Dissemination (CRD, 2008) stated that "given the methodological limitations of both included studies and the review, these conclusions should be treated with caution." The CRD found insufficient information about the study selection, data extraction and quality assessment process to determine whether these had been carried out independently by more than one reviewer, "thus the possibility of bias cannot be ruled out." The CRD stated that methodological limitations evident in the included studies were: the inclusion of participants with developmental disabilities other than cerebral palsy, lack of statistical analysis, small sample sizes, use of outcome measures which have not been proven reliable or valid, and the possibility of bias. The CRD found that "study quality and study design do not appear to have been considered sufficiently when interpreting the results."

McGibbon and colleagues (2009) investigated the immediate effects of 10 mins of hippotherapy, compared with 10 mins of barrel-sitting, on symmetry of adductor muscle activity during walking in children with CP (phase I; \( n = 47 \)). These researchers also investigated the long-term effects of 12 weekly sessions of hippotherapy on adductor activity, gross motor function, and self-concept (phase II; \( n = 6 \)). Main outcomes measures were: for phases I and II -- adductor muscle activity measured by surface electromyography; for phase II -- gross motor function and self-perception profiles. In the phase I study, hippotherapy significantly improved adductor muscle asymmetry \((p < 0.001; \eta^2 = 1.32)\). Effects of barrel-sitting were not significant \((p > 0.05; \eta = 0.10)\). In the phase II study, after 12 weeks of hippotherapy, testing in several functional domains showed improvements over baseline that were sustained for 12 weeks post-treatment. The authors concluded that hippotherapy can improve adductor muscle symmetry during walking and can also improve other functional motor skills.

McGee and Reese (2009) examined the immediate effects of a hippotherapy session on temporal and spatial gait parameters in children with spastic CP. Subjects comprised 9 children with a diagnosis of CP (6 girls and 3 boys, 7 to 18 years of age). Data for temporal and spatial gait parameters were collected immediately before and after a hippotherapy session. No statistically significant differences \((p < 0.05)\) were noted in the post-ride temporal and spatial gait parameter values when compared with the pre-ride values. The authors concluded that the findings of this study provides baseline data for future research and useful clinical information for physical therapists using hippotherapy as a treatment modality for children with spastic CP.

Schwesig et al (2009) tested the hypothesis that hippotherapy has both positive short- and long-term effects on gait and posture control of persons suffering from motoric disabilities. A total of 22 children and adolescents aged 9.69 +/- 4.01 years (range of 9.69 +/- 4.01 years) with motoric dysfunctions were included in a prospective matched-control study. In each participant, gait and posture control were investigated on 4 different occasions (O1 to O4) using the Interactive balance system and the portable gait analysis system RehaWatch. The dates of gait and posture analysis were defined as follows: O1: immediately prior to first therapeutic riding session (TRS); O2: immediately after first TRS; O3: after the last day of an 8-week period of daily TRS; O4: 7 weeks later after a TRS-free interval. The following parameters were slightly improved (adjusted significance level of \( p < 0.003 \)) after 8 weeks of therapeutic riding: (O1 versus O 3):

1. walking distance \((p = 0.009, \eta^2 = 0.339)\);
2. pace frequency \((p = 0.007, \eta^2 = 0.358)\);
3. walking speed \((p = 0.006, \eta^2 = 0.367)\), and (iv) time of attachment \((p = 0.007, \eta^2 = 0.360)\).

The only short-term effect observed was a significant decrease of the attachment phase \((p = 0.002, \eta^2 = 0.387)\). Interestingly, gait symmetry remained unaffected. Posturography (adjusted
The significance level of \( p < 0.01 \) at O1 versus O2 (short-term) showed a significant decrease of the performance of both the visual-nigrostriatal subsystem \( (p < 0.001) \) and the somato-sensory subsystem \( (p = 0.001) \). At O1 versus O3 (long-term), the following parameters were sharply decreased:

1. postural stability \( (p = 0.011) \), and
2. somato-sensory performance \( (p = 0.011) \).

The authors concluded that in the individuals investigated, an 8-week series of therapeutic riding did not improve posture control and had only a small positive effect on gait performance. The reasons for these rather disappointing results could have been the low number of therapeutic riding sessions (0.5 sessions per week), and the relatively short duration (30 mins) of each session. It remains to be seen, whether a higher density and longer duration of therapeutic riding sessions yields better results.

Oppenheim (2009) stated that there are no published studies specifically addressing complementary and alternative methods (CAM) in adults with CP. However, national surveys of adults with chronic disabilities document that a majority of them use such treatments, that they are willing to pay out of pocket, if necessary, and that they believe that pursuing such treatment relieves pain, reduces stress and anxiety, and leads to improved feelings of fitness and well-being. Individuals enjoy taking charge of their own health care decisions, and frequently feel more in control with these therapies than with more traditional methods. In contrast to adults, there is some information on CAM in children with CP. The author discussed some of the CAM used in children that may be carried over into adulthood, as well as the pitfalls for patients and conventional physicians as they try to sort out what might be helpful and what might be harmful in this arena. Practitioners of both conventional and CAM therapies believe that exercise can be beneficial; accordingly, activities such as recreational sports, yoga, and hippotherapy may be continued from childhood into adulthood. General treatments for stress and anxiety, through such activities as yoga and meditation, though not directed at CP per se, may be more popular for adults than children. Research in this area should first identify what methods are being utilized and then subject these methods to well-designed outcome studies that take into account any associated risks.

Johnson (2009) analyzed evidence of the benefits of physical activity for youth with developmental disabilities. A total of 3,263 citations was found. Systematic reviews and articles about studies quantitatively examining the effects of physical activity in youth with developmental disabilities aged 0 to 20 years were included. Only articles published in English in peer-reviewed journals were included; 3 systematic reviews and 14 studies were reviewed. Strong evidence indicated that children and adolescents with developmental disabilities derive health benefits from participation in group exercise programs, treadmill training, or hippotherapy. Lesser levels of evidence indicated that health benefits might be present for adapted skiing or aquatic programs. Documented benefits of physical activity include improvements in aerobic capacity, improved gross motor function, and high levels of participant/parent satisfaction. The author stated that further research studies are needed that are of greater scientific rigor including larger sample sizes, control groups, and stringent, replicable methodology.

More scientific evidence, especially controlled studies with outcome measures, is needed to ascertain the effectiveness of hippotherapy for the treatment of CP, MS, and other motor dysfunction.

In a pilot study, Shurtleff and Engsberg (2010) evaluated the effectiveness of hippotherapy in improving head/trunk stability in children with CP. The participants were 6 children with spastic diplegia and 6 children without disability. Head and trunk stability was challenged by using a motorized barrel and measured by a video motion capture system before and after a 12-week intervention of 45-min of hippotherapy a week. The variables measured were anterior-posterior (AP) translation of the head, and spine at 5 points and average AP head angles. At pre-testing, children with CP demonstrated significant differences in AP translation and AP head rotation compared with children without disability. Following hippotherapy, children with CP demonstrated significant reductions in head rotation and AP translation at C7, eye, and vertex. At post-testing, translation at C7 did not differ
significantly between children with CP and children without disability. After hippotherapy intervention, children with CP reduced their AP head rotation and translation, suggesting that they had increased stability of the head and trunk in response to perturbations at the pelvis. The findings suggested that hippotherapy might improve head and trunk stability in children with CP. These preliminary findings need to be validated by well-designed studies with more subjects and follow-up.

Bronson et al (2010) reviewed the evidence for hippotherapy as an intervention to improve balance in persons with MS. Major electronic databases were searched for articles relating to hippotherapy, MS and balance. Only full length articles published in peer reviewed journals that were written in English or translated into English were included. Articles were assessed using a modified quality index that was used for descriptive purposes only and did not exclude any study from the review. All studies examined in this review were either case-control or case-series. Collectively, all 3 studies reported improvements in balance. Pre-test and post-test Berg Balance Scale scores in 2 studies revealed that primary progressive MS demonstrated the greatest amount of change after hippotherapy compared to other subtypes of MS. The authors concluded that hippotherapy has a positive effect on balance in persons with MS and has an added benefit of enhancing quality of life. They stated that data are limited and further research will lead to a greater knowledge base and has the potential to increase accessibility for hippotherapy to be used as a rehabilitation modality.

Munoz-Lasa et al (2011) examined the effect of THR on the balance and gait of ambulatory patients with MS. A total of 27 subjects were included in the study. Patients were divided into 2 groups:

- I. 12 underwent THR, and
- II. 15 traditional physiotherapy (for both groups, 2 series of 10 weekly sessions were performed).

Before and after the study period, the following outcome measures were applied: Extended Disability Status Scale (EDSS), Barthel Index, Tinetti Performance-Oriented Mobility Assessment (POMA). In addition, patients of the THR group underwent a gait analysis to assess spatiotemporal gait parameters and ground reaction forces. The THR group showed a significant improvement in POMA scores (p < 0.005) and 2 gait parameters: stride time (p < 0.04) and ground reaction forces (p < 0.01). No statistically significant change was found in the control group. The authors concluded that the results of the study showed that THR can improve balance and gait of ambulatory patients with MS. Moreover, they stated that these findings are preliminary, but promising and in line with the recent literature.

In a meta-analysis, Zadnikar and Kastrin (2011) examined the effects of hippotherapy and therapeutic horseback riding (THR) on postural control or balance in children with CP. To synthesize previous research findings, a systematic review and meta-analysis were undertaken. Relevant studies were identified by systematic searches of multiple online databases from the inception of the database through to May 2010. Studies were included if they fulfilled the following criteria:

- I. quantitative study design,
- II. investigation of the effect of hippotherapy or THR on postural control or balance, and
- III. the study group comprised children and adults with CP. The selected articles were rated for methodological quality. The treatment effect was coded as a dichotomous outcome (positive effect or no effect) and quantified by odds ratio (OR). The pooled treatment effect was calculated using a random-effects model. Meta-regression of the effect size was performed against study covariates, including study size, publication date, and methodological quality score. From 77 identified studies, 10 met the inclusion criteria. Two were excluded because they did not include a comparison group. Therapy was found to be effective in 76 out of 84 children with CP included in the intervention groups. The comparison groups comprised 89 children: 50 non-disabled and 39 with CP. A positive effect was shown in 21 of the children with CP in the comparison group regardless of the activity undertaken (i.e., physiotherapy, occupational therapy, sitting on a barrel or in an artificial saddle). The pooled effect size
estimate was positive (OR 25.41, 95% confidence interval [CI]: 4.35 to 148.53), demonstrating a statistically significant effectiveness of hippotherapy or THR in children with CP (p < 0.001). Meta-regression of study characteristics revealed no study-specific factors. The authors concluded that the 8 studies found that postural control and balance were improved during hippotherapy and THR. They stated that although the generalization of their findings may be restricted by the relatively small sample size, the results demonstrated that riding therapy is indicated to improve postural control and balance in children with CP.

Whalen and Case-Smith (2012) examined the effectiveness of hippotherapy or THR on motor outcomes in children with CP. Databases were searched for clinical trials of hippotherapy or THR for children with CP. A total of 9 articles were included in this review. Although the current level of evidence is weak, this synthesis found that children with spastic CP, Gross Motor Function Classification System (GMFCS) levels I to III, aged 4 years and above are likely to have significant improvements on gross motor function as a result of hippotherapy and THR. Evidence indicated that 45-min sessions, administered once-weekly for 8 to 10 weeks, resulted in significant effects. The authors concluded that the current literature on hippotherapy and THR is limited. They stated that large randomized controlled trials (RCTs) using specified protocols are needed to more conclusively determine the effects on children with CP.

Tseng et al (2013) evaluated the literature on the effectiveness of equine-assisted activities and therapies (EAAT) on gross motor outcomes representing the ICF component of body functions and activity in children with CP. These investigators conducted a systematic review and meta-analysis of RCTs and observational studies of hippotherapy (HPOT) and THR for children with spastic CP. Gross motor outcomes, assessed via muscle activity and muscle tone, gait, posture and GMFM were evaluated. A total of 5 THR studies and 9 HPOT studies were included. This meta-analysis indicated that short-term HPOT (total riding time 8 to 10 mins) significantly reduced asymmetrical activity of the hip adductor muscles. HPOT could improve postural control in children with spastic CP, GMFCS level of less than 5. However, the evidence did not show a statistically significant effect on GMFM after long-term HPOT or THR (total riding time, 8 to 22 hrs) in children with spastic CP. The authors concluded that this systematic review found insufficient evidence to support the claim that long-term THR or HPOT provides a significant benefit to children with spastic CP. They found no statistically significant evidence of either therapeutic effect or maintenance effects on the gross motor activity status in CP children.

Hippotherapy has also been used in the treatment of patients with autism. However, there is a lack of reliable scientific evidence regarding its effectiveness.

In a pilot study, Manikowska (2013) examined the effect of hippotherapy on spatio-temporal parameters of gait in children with CP. A total of 16 ambulatory CP children (GMFCS Level I to III; female: 10, male: 6; age of 5.7 to 17.5 years) qualified for hippotherapy were investigated. Basic spatio-temporal parameters of gait, including walking speed, cadence, step length, stride length and the left-right symmetry, were collected using a 3-dimensional accelerometer device (DynaPort MiniMod) before and immediately after a hippotherapy session. The Wilcoxon test was used to verify the differences between pre- and post-session results. Changes of walking speed were statistically significant. With the exception of step length, all spatio-temporal parameters improved, i.e., were closer to the respective reference ranges after the session. However, these changes were not statistically significant. The authors concluded that 1 session of hippotherapy may have a significant effect on the spatio-temporal parameters of gait in children with CP. The findings of this small, pilot study need to be validated by well-designed studies.

In a single-blind RCT, Beinotti et al (2013) examined the impact of horseback riding therapy (HBRT) on the quality of life (QOL) of individuals with hemiparesis after stroke. A total of 24 post-stroke patients were assigned to the experimental (n = 12) and control (n = 12) groups. The control group participated in a conventional physiotherapy program, whereas the
experimental group participated in physiotherapy plus HBRT sessions for 16 weeks. The patients were evaluated by means of the SF-36. Data analysis was applied through the use of descriptive and inferential statistics, with a 5% level of significance. Significant improvement was observed in the total score of the SF-36 in the experimental group when compared with the control group. The combination of conventional physiotherapy and HBRT was associated with improvements in functional capacity (p = 0.02), physical aspects (p = 0.001), and mental health (p = 0.04) of the stroke patients. The authors concluded that supplementation of conventional physiotherapy with HBRT, applied in different contexts, may yield positive QOL outcomes for people with stroke. These investigators recommended that further studies be carried out to clarify the benefits of HBRT applied singly.

In a pilot study, Ajzenman et al (2013) examined if hippotherapy increased function and participation in children with autism spectrum disorder (ASD). These researchers hypothesized improvements in motor control, which might increase adaptive behaviors and participation in daily activities. A total of 6 children with ASD aged 5 to 12 participated in 12 weekly 45-min hippotherapy sessions. Measures pre- and post-hippotherapy included the Vineland Adaptive Behavior Scales-II and the Child Activity Card Sort. Motor control was measured pre-intervention and post-intervention using a video motion capture system and force plates. Postural sway significantly decreased post-intervention. Significant increases were observed in overall adaptive behaviors (receptive communication and coping) and in participation in self-care, low-demand leisure, and social interactions. The authors concluded that these results suggested that hippotherapy has a positive influence on children with ASD and can be a useful treatment tool for this population. The findings of this small, pilot study need to be validated by well-designed studies.

O'Haire (2013) stated that the inclusion of animals in therapeutic activities, known as animal-assisted intervention (AAI), has been suggested as a treatment practice for ASD. These investigators presented a systematic review of the empirical research on AAI for ASD. A total of 14 studies published in peer-reviewed journals qualified for inclusion. The presentation of AAI was highly variable across the studies. Reported outcomes included improvements for multiple areas of functioning known to be impaired in ASD, namely increased social interaction and communication as well as decreased problem behaviors, autistic severity, and stress. The author concluded that despite unanimously positive outcomes, most studies were limited by many methodological weaknesses; this review showed that there is preliminary "proof of concept" of AAI for ASD and high-lighted the need for further, more rigorous research.

Homnick et al (2013) examined the effect of an 8-week therapeutic riding (TR) program on measures of balance and QOL in community-dwelling older adults with established balance deficits. The study was conducted at a Professional Association of Therapeutic Horsemanship (PATH) International Premier riding center. Subjects comprised 9 adults (5 females, 4 males) with a mean age of 76.4 years (range of 71 to 83). Treatment included an 8-week observation period followed by an 8-week TR program consisting of 1 hour/week of supervised horseback riding and an 8-week follow-up period. Subjects received balance testing at weeks 0, 8, 16, and 24 using the Fullerton Advanced Balance Scale (FABS), and QOL was measured at weeks 8 and 16 using the Rand SF-36 QOL measure. Outcome measures were change in the FABS and Rand SF-36. There was no significant difference in balance scores between the start and end of the observation period. There was a significant improvement in the balance score and perception of general health from the start to the end of the intervention period, and no significant difference between the end of the intervention and the end of study, suggesting that improvements may have been sustained. The authors concluded that TR is a safe activity for older adults with mild-to-moderate balance deficits and leads to both improvements in balance and QOL. Moreover, they stated that longer and larger studies are needed to ascertain the benefit of equine-assisted activities on improvements in balance and reduction in fall risk.

Dezutti (2013) noted that patients with eating disorders may have the most complex inter-
disciplinary treatment plans of any mental illness. Nurses need innovative evidence-based treatment interventions to assist their patients with eating disorders on their road to recovery. Although much has been written about equine-assisted psychotherapy (EAP) and equine-facilitated psychotherapy, the literature has not described a detailed session that can help nurses understand how this experiential treatment works and the impact it can have on the patient.

In a pilot study, Cerulli et al (2014) evaluated the physiologic and psychological effects of an equine-assisted therapy (EAT) protocol in breast cancer survivors. A total of 20 women (mean age of 45.61 ± 2.71 years) whose breast cancer treatment had concluded at least 6 months previously underwent a screening protocol to certify their eligibility to participate in non-competitive sports. The patients were randomly assigned to an intervention group (n = 10) or a control group (n = 10). Intervention patients participated in a 16-week EAT protocol consisting of 2 hours of activity per week. All patients were tested before and after the intervention for maximal oxygen consumption (VO2max), fat mass percentage, total body water percentage, strength of principal muscular groups (measured on 5 weight-lifting machines [leg press, leg extension, leg curl, shoulder press, vertical traction]), and quality of life using the Functional Assessment of Chronic Illness Therapy-Fatigue questionnaire (FACIT-F). After intervention, the intervention group showed an improvement in VO2max (28.29 %; p < 0.001), a decrease in fat mass percentage (change, -7.73 %; p < 0.002), an increase in total body water percentage (6.90 %; p = 0.027), and an increase in strength (leg press, 17.75 % [p = 0.018]; leg extension, 21.55 % [p = 0.005]; leg curl, 26.04 % [p < 0.001]; shoulder press, 49.72 % [p = 0.003]; vertical traction, 19.27 % [p = 0.002]). Furthermore, the increase in the 3 FACIT-F scores (FACIT-F trial outcome: 9.29 % [p = 0.010]; Functional Assessment of Cancer Therapy-General total score, 14.80 % [p = 0.022]; and FACIT-F total score, 11.48 % [p =0.004]) showed an increase in quality of life. No significant changes for any variable were found for the control group. The authors concluded that EAT had positive effects on both physiologic and psychological measures, enhancing quality of life of breast cancer survivors. They stated that these results suggested a new method for rehabilitation intervention strategies after cancer in a non-medical environment. These findings from a pilot study need to be validated by well-designed studies.

Nurenberg et al (2015) stated that animal-assisted therapy (AAT), most frequently used with dogs, is being used increasingly as an adjunctive alternative treatment for psychiatric patients. Animal-assisted therapy with larger animals, such as horses, may have unique benefits. In this randomized controlled study, equine and canine forms of AAT were compared with standard treatments for hospitalized psychiatric patients to determine AAT effects on violent behavior and related measures. The study included 90 patients with recent in-hospital violent behavior or highly regressed behavior. Hospitalization at the 500-bed state psychiatric hospital was 2 months or longer (mean of 5.4 years). Participants were randomly selected to receive 10 weekly group therapy sessions of standardized EAP, canine-assisted psychotherapy (CAP), enhanced social skills psychotherapy, or regular hospital care. Participants’ mean age was 44, 37 % were female, 76 % had diagnoses of schizophrenia or schizoaffective disorder, and 56 % had been committed involuntarily for civil or forensic reasons. Violence-related incident reports filed by staff in the 3 months after study intake were compared with reports 2 months pre- intake. Interventions were well-tolerated. Analyses revealed an intervention group effect (F = 3.00, df = 3 and 86, p = 0.035); post-hoc tests showed specific benefits of EAP (p < 0.05). Similar AAT effects were found for the incidence of 1:1 clinical observation (F = 2.70, df = 3 and 86, p = 0.051); post-hoc tests suggested benefits of CAP (p = 0.058) as well as EAP (p = 0.082). Co-variance analyses indicated that staff can predict which patients are likely to benefit from EAP (p = 0.01). The authors concluded that AAT, and perhaps EAP uniquely, may be an effective therapeutic modality for long-term psychiatric patients at risk of violence. These preliminary findings need to be validated by well-designed studies with longer follow-up.

Del Rosario-Montejo et al (2015) stated that equine therapy is used to treat patients susceptible to psychomotor delays. These researchers examined development of gross motor function
compared to other psychomotor skills in patients undergoing this therapy, and analyzed how this improvement affects general health status and quality of life. The study included 11 children with delayed psychomotor development (aged 8.82 ± 3.89; 6 boys, 5 girls). The main study variables were gross motor function (GMFM-88) and perceived quality of life (Pediatric Quality of Life Inventory, PedsQL). Three measurements were performed:

A. before and after a period of inactivity,
B. 2 months after the second measurement, and
C. following completion of a sustained period of therapy.

These investigators observed significant differences in overall results on the GMFM-88 between the initial and final tests and between the intermediate and final tests. Regarding the PedsQL quality of life scale, no statistically significant results were recorded. The authors concluded that noticeable changes in motor control were recorded throughout the course of the intervention, which suggested that equine therapy may be appropriate treatment in cases of delayed psychomotor development. These preliminary findings need to be validated by well-designed studies.

Cerebral Palsy

Dewar et al (2015) evaluated the efficacy and effectiveness of exercise interventions that may improve postural control in children with CP. These investigators performed a systematic review using American Academy of Cerebral Palsy and Developmental Medicine (AACPDM) and Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) methodology. Six databases were searched using the following keywords: ('cerebral palsy' OR 'brain injury'); AND ('postur*' OR 'balance' OR 'postural balance' [MeSH]); AND ('intervention' OR 'therapy' OR 'exercise' OR 'treatment'). Articles were evaluated based on their level of evidence and conduct. Searches yielded 45 studies reporting 13 exercise interventions with postural control outcomes for children with CP. Five interventions were supported by a moderate level of evidence: gross motor task training, hippotherapy, treadmill training with no body weight support (no-BWS), trunk-targeted training, and reactive balance training. Six of the interventions had weak or conflicting evidence: functional electrical stimulation (FES), hippotherapy simulators, neurodevelopmental therapy (NDT), treadmill training with body weight support, virtual reality, and visual biofeedback. Progressive resistance exercise was an ineffective intervention, and upper limb interventions lacked high-level evidence. The authors concluded that the use of exercise-based treatments to improve postural control in children with CP has increased significantly in the last decade. Improved study design provided more clarity regarding broad treatment efficacy. Moreover, they stated that research is needed to establish links between postural control impairments, treatment options, and outcome measures. Low-burden, low-cost, child-engaging, and mainstream interventions also need to be explored.

An UpToDate review on “Management and prognosis of cerebral palsy” (Miller, 2015) states that “Not recommended -- In a comprehensive review, physical therapy approaches that were not recommended because of lack of efficacy include neurodevelopmental therapy (NDT) and sensory integration therapy (SIT). NDT is the direct passive handling of limbs by the therapist, with guidance intended to normalize the patterns of movement. It is not recommended because of the availability of more effective alternatives. Any gains in range of motion that are achieved during an NDT session do not carry over. Better functional gains are achieved with motor-learning approaches, and BTX is more effective than NDT for managing spasticity. Similarly, systematic reviews conclude that SIT is not effective and should be replaced by effective alternatives such as those listed above. Many other activities' interventions are supported only by low-quality or inconclusive evidence, precluding a recommendation for or against their use. Among these, early intervention for motor outcomes is a promising approach because of supporting evidence in populations without CP. Interventions with weak evidence are animal-assisted therapy, assistive technology, hippotherapy (therapeutic horse-riding) .... ".
Behavioral and Psychiatric Disorders

Anestis et al (2014) stated that equine-related treatments (ERT) for mental disorders are becoming increasingly popular for a variety of diagnoses; however, they have been subjected only to limited systematic investigation. These researchers examined the quality of and results from peer-reviewed research on ERT for mental disorders and related outcomes. Peer-reviewed studies (n = 14) examining treatments for mental disorders or closely related outcomes were identified from databases and article reference sections. All studies were compromised by a substantial number of threats to validity, calling into question the meaning and clinical significance of their findings. Additionally, studies failed to provide consistent evidence that ERT is superior to the mere passage of time in the treatment of any mental disorder. The authors concluded that the current evidence base does not justify the marketing and utilization of ERT for mental disorders. Such services should not be offered to the public unless and until well-designed studies provide evidence that justify different conclusions.

Multiple Sclerosis

In a case-series study, Lindroth et al (2015) examined if there were observable changes in sensory processing for postural control in individuals with MS following physical therapy using HPOT or changes in balance and functional gait. This pre-test non-randomized design study, with follow-up assessment at 6 weeks, included 2 females and 1 male (age range of 37 to 60 years) with diagnoses of relapse-remitting or progressive MS. The intervention consisted of twelve 40-min physical therapy sessions which included HPOT twice-weekly for 6 weeks. Sensory organization and balance were assessed by the Sensory Organization Test (SOT) and Berg Balance Scale (BBS). Gait was assessed using the Functional Gait Assessment (FGA). Following the intervention period, all 3 participants showed improvements in SOT (range of 1 to 8 points), BBS (range of 2 to 6 points), and FGA (average of 4 points) scores. These improvements were maintained or continued to improve at follow-up assessment; 2 of the 3 participants no longer over-relied on vision and/or somatosensory information as the primary sensory input for postural control, suggesting improved use of sensory information for balance. The authors concluded that these findings indicated that HPOT may be a beneficial physical therapy treatment strategy to improve balance, functional gait, and enhance how some individuals with MS process sensory cues for postural control. Moreover, they stated that randomized clinical trials are needed to validate results of this study.

Anxiety and Post-Traumatic Stress Disorder

Earles and colleagues (2015) examined the effectiveness of the Equine Partnering Naturally(©) approach to equine-assisted therapy for treating anxiety and post-traumatic stress disorder (PTSD) symptoms. Participants were 16 volunteers who had experienced a Criterion A traumatic event, such as a rape or serious accident, and had current PTSD symptoms above 31 on the PTSD Checklist (PCL-S; Weathers, Litz, Herman, Huska, and Keane). Participants engaged in tasks with horses for 6 weekly 2-hour sessions. Immediately following the final session, participants reported significantly reduced post-traumatic stress symptoms, $d = 1.21$, less severe emotional responses to trauma, $d = 0.60$, less generalized anxiety, $d = 1.01$, and fewer symptoms of depression, $d = 0.54$. As well, participants significantly increased mindfulness strategies, $d = 1.28$, and decreased alcohol use, $d = 0.58$. There was no significant effect of the treatment on physical health, proactive coping, self-efficacy, social support, or life satisfaction. Thus, the authors found evidence that the Equine Partnering Naturally(©) approach to equine-assisted therapy may be an effective treatment for anxiety and post-traumatic stress symptoms. They stated that future research should include larger groups, random assignment, and longer term follow-up.

Attention Deficit and/or Hyperactivity Disorder
Lee and colleagues (2015) examined the effects of hippotherapy on brain function and levels of blood-derived neurotrophic factor (BDNF) in children with attention deficit and/or hyperactivity disorder (ADHD). The hippotherapy group (HRG) included 20 children with ADHD and the control group (CG) included 19 children. All participants' physical fitness, functional magnetic resonance imaging (fMRI) brain scans, and blood BDNF levels were measured at baseline and after 32 weeks of participating in hippotherapy. After 32 weeks of participating in hippotherapy, the body fat of the HRG was significantly decreased (-1.12 ± 4.20 %) and the body fat of the CG was increased (2.38 ± 6.35 %) (p = 0.049). There was no significant difference of physical fitness in both groups (p > 0.05). Although there was a higher decrease in the activated insular area in the HRG (-1.59 ± 0.99) than in the CG (-1.14 ± 1.41), there was no significant difference between the 2 groups (p > 0.05). Furthermore, there was a higher increase in the activated cerebellum area in the HRG (1.97 ± 1.45) than in the CG (1.92 ± 1.81). However, there was no significant difference between the 2 groups (p > 0.05); BDNF levels showed an increased tendency in the HRG (166.29 ± 277.52 pg) compared to the CG (21.13 ± 686.33 pg); otherwise, there was not any significant difference in these blood levels between the 2 groups (p > 0.05). It can be assumed that big individual differences in the level of ADHD in the study participants might not cause any significant results, although there might be positive changes in the brain function of children with ADHD. The authors concluded that the findings of this study suggested that hippotherapy training would need to be modified and developed to increase the effectiveness of hippotherapy in children with ADHD.

In a 12-week, prospective, open-label trial, Jang and associates (2015) examined the clinical effects of equine-assisted activities and therapy (EAA/T) for treating ADHD in children aged 6 to 13 years. This study entailed 24 sessions of EAA/T with 20 participants (19 boys and 1 girl) completed 12 weeks of EAA/T. Various clinical tests were administered at baseline and after EAA/T. Assessments included the investigator-administered ADHD-Rating Scale (ARS-I), Clinical Global Impressions (CGI)-Severity Scale, Clinical Global Impressions-Improvement Scale (CGI-I), Gordon Diagnostic System, Korea-Child Behavior Checklist (K-CBCL), Self-Esteem Scale, second edition of the Bruininks-Oseretsky test of motor proficiency (BOT-2), and quantitative electroencephalography. The primary efficacy measure was the response rate. The response rate was 90 % based on a 30 % or greater decline in the ARS-I score or 85 % based on CGI-I scores of 1 or 2. The mean ± standard deviation ARS-I score decreased from 33.65 ± 6.42 at baseline to 16.80 ± 6.86 after 12 weeks of EAA/T (p < 0.001, paired t-test). It was reported that EAA/T also resulted in significant improvement in the social problems subscale of the K-CBCL and in the manual dexterity, bilateral coordination, and total motor composite subscales of the BOT-2. The theta/beta ratio on electroencephalography was decreased significantly at the Pz electrode after 12 weeks of EAA/T. The authors concluded that this was the first study demonstrating that EAA/T is effective for improving core ADHD symptoms. They stated that on the basis of these results, EAA/T could be a viable treatment strategy as part of a multi-modal therapy for children with ADHD. The main drawbacks of this study were its small sample size (n = 20), short-term follow-up (12 weeks) and its open-label design. These preliminary findings need to be validated by well-designed studies.

Furthermore, an UpToDate review on “Attention deficit hyperactivity disorder in children and adolescents: Overview of treatment and prognosis” (Krull, 2015) does not mention hippotherapy as a therapeutic option.

In a pilot study, Yoo and colleagues (2016) examined the effects of EAA/T on participants with ADHD by comparing resting-state fMRI (rs-fMRI) signals and their clinical correlates. A total of 10 subjects with ADHD participated in a 12-week EAA/T program without any medication; 2 rs-fMRIs were acquired for all subjects before and after EAA/T. For estimating therapeutic effect, the regional homogeneity (ReHo) method was applied to capture the changes in the regional synchronization of functional signals. After the EAA/T program, clear symptom improvement was found even without medication. Surface-based pair-wise comparisons revealed that ReHo in the right precuneus and right pars orbitalis clusters had significantly diminished after the
program. Reduced ReHo in the right precuneus cluster was positively correlated with changes in the scores on DuPaul's ADHD Rating Scale-Korean version. The authors concluded that these findings indicated that EAA/T is associated with short-range functional connectivity in the regions related to the default mode network and the behavioral inhibition system, which are associated with symptom improvement. They stated that for equine therapy to be accepted as an adjunct therapeutic option for ADHD, additional studies with larger samples, controlled designs, and purposeful fMRI sessions are needed.

This pilot study had several drawbacks:

A. the study included only a subset of ADHD subjects who finished the 12-weeks of EAA/T. Comparison with the typically developing children would be needed in the future,
B. these researchers only analyzed resting-state data, and thus, the direct effects of EAA/T on task-related performance such as attention, emotion, and cognition could not be estimated. Investigating those effects requires task-specific fMRI designs for each domain, and
C. long-term effects could not be examined from a single 12-week EAA/T session.

Sexual Abuse and Emotional Stress

Guerino et al (2015) evaluated 2 women aged 18 and 21 years, who had suffered sexual violence when they were children between the ages of 6 and 7 years old. The subjects did not have mental dysfunction but they were regular students registered at a school of special education; patients presented with severe motor limitation, difficulty with coordination, significant muscular retraction, thoracic and cervical kyphosis, cervical protrusion, which was basically a function of the postures they had adopted when they were victims of the sexual violence suffered in childhood. The patients performed 20 sessions of 30-min of HPOT on a horse. The activities were structured to stimulate coordination, proprioception, the vestibular and motor-sensorial systems for the improvement of posture, muscle activity and cognition. The activities provided during HPOT sessions elicited alterations in postural adjustment resulting in 30% improvement, 80% improvement in coordination in, 50% improvement in corporal balance and in sociability and self-esteem. The authors concluded that HPOT proved to be an effective treatment method for coordination, balance and postural correction, and also improved the patients' self-esteem that had suffered serious emotional stress. These preliminary findings need to be validated by well-designed studies.

Traumatic Brain Injury

In a single-case study, Erdman and Pierce (2016) described the use of hippotherapy with a boy who sustained a traumatic brain injury (TBI). A 13-year old boy, 6 months after TBI received 12 physical therapy sessions, which included hippotherapy. Improvements were noted in balance, strength, gross motor skills, gait speed, functional mobility, and reported participation. The authors concluded that hippotherapy used with a 13-year old boy after TBI may have had a positive effect in the body structure, activity, and participation domains. These preliminary findings need to be validated by well-designed studies.

Rigby and Grandjean (2016) summarized the physical benefits of therapeutic horseback riding and hippotherapy and suggested directions for future research. Databases included Medline via Ebsco, Web of Science, PubMed, Google Scholar, and Academic Search Complete. Articles were limited to those with full-text access published in English since 1987. Acute and residual improvements in physical benefits, such as gross motor function (e.g., walking, running, jumping), spasticity, muscle symmetry, posture, balance, and gait occurred in adults and children with varying disabilities. The benefits appeared to be greatest following multi-week interventions with 1 or more sessions per week. Modest acute cardiovascular responses were observed during EAA/T with little or no evidence for training improvements in heart rate or blood pressure at rest or during riding. The authors concluded that the present body of literature
provided evidence that EAA/T are an effective means of improving many measures of physical health. However, more controlled trials are urgently needed to strengthen the current knowledge base, establish dose-response characteristics of EAA/T, and explore the physiologic basis for the promising results suggested from the literature.

**Substance Abuse Disorder**

Kern-Godal et al (2016) noted that inclusion of horse-assisted therapy (HAT) in substance abuse disorder treatment is rarely reported. The authors’ previous studies showed improved treatment retention and the importance of the patient-horse relationship. This qualitative study used thematic analysis, within a social constructionist framework, to explore how 8 patients experienced contextual aspects of HAT's contribution to their substance abuse disorder treatment. Participants described HAT as a "break from usual treatment". However, 4 interrelated aspects of this experience, namely "change of focus", "activity", "identity", and "motivation," suggested HAT is more than just a break from usual substance abuse disorder treatment. The stable environment is portrayed as a context where participants could construct a positive self: one which is useful, responsible, and accepted; more fundamentally, a different self from the "patient/self" receiving treatment for a problem. The authors concluded that the implications extend well beyond animal-assisted or other adjunct therapies; and their relevance to broader substance abuse disorder policy and treatment practices warrants further study.

**CPT Codes / HCPCS Codes / ICD-10 Codes**

*Information in the [brackets] below has been added for clarification purposes. Codes requiring a 7th character are represented by "+":*

**HCPCS codes not covered for indications listed in the CPB:**

S8940 Equestrian / hippotherapy, per session

**ICD-10 codes not covered for indications listed in the CPB (not all-inclusive):**

A88.1 Epidemic vertigo
F01.50 - F99 Mental and behavioral disorders
F50.00 - F50.9 Eating disorders
G20 Parkinson's disease
G35 Multiple sclerosis
G71.0 - G71.9 Primary disorders of muscles
G80.0 - G80.9 Cerebral palsy
H81.01 - H82.9 Disorder of vestibular function and vertiginous syndromes in diseases classified elsewhere
H83.2X1 - H83.2X9 Labyrinthine dysfunction
I60.00 - I69.998 Cerebrovascular diseases
M00.00 - M99.9 Diseases of the musculoskeletal system and connective tissue
R25.0 - R29.9 Symptoms and signs involving the nervous and musculoskeletal systems
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<td>R42</td>
<td>Dizziness and giddiness</td>
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<tr>
<td>R48.0 - R48.9</td>
<td>Dyslexia and other symbolic dysfunctions, not elsewhere classified</td>
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<tr>
<td>R62.0 - R62.7</td>
<td>Lack of expected normal physiological development in childhood and adults</td>
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<td>R63.2</td>
<td>Polyphagia</td>
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<td>R68.0 - R68.89</td>
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<td>Fracture of skull and facial bones</td>
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<td>S02.0XS - S02.92XS</td>
<td>Fracture of skull and facial bones, sequela</td>
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<td>Intracranial injury</td>
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<td>Z91.411</td>
<td>Personal history of adult physical and sexual abuse</td>
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**The above policy is based on the following references:**

2. Tuttle JI. The horse as member of a therapeutic team. Rehab Nursing. 1987;12(60):334-335.


47. Krull KR. Attention deficit hyperactivity disorder in children and adolescents: Overview of treatment and prognosis. UpToDate Inc. ,Waltham, MA. Last reviewed November 2015.


AETNA BETTER HEALTH® OF PENNSYLVANIA

Amendment to
Aetna Clinical Policy Bulletin Number: 0151 Hippotherapy

There are no amendments for Medicaid.