

Treatment Intervention Advisory Committee Review and Determination

Date: January 30, 2015

To: DHS/DLTC

From: Wisconsin Department of Health Services Autism and other Developmental Disabilities
Treatment Intervention Advisory Committee: Lana Collet-Klingenberg, Ph.D. (chairperson)

RE: Determination of hippotherapy as a proven and effective treatment for individuals with autism spectrum disorder and/or other developmental disabilities

This is an initial review

This is a re-review. The initial review was May 2012.

Section One: Overview and Determination

Please find below a statement of our determination as to whether or not the committee views hippotherapy as a proven and effective treatment for children with autism spectrum disorder and/or other developmental disabilities. In subsequent sections you will find documentation of our review process including a description of the proposed treatment, a synopsis of review findings, the treatment review evidence checklist, and a listing of the literature considered. In reviewing treatments presented to us by DHS/DLTC, we implement a review process that carefully and fully considers all available information regarding a proposed treatment. Our determination is limited to a statement regarding how established a practice is in regard to quality research. We do not make funding decisions.

Description of proposed treatment

Practitioners of hippotherapy define it as follows: "Hippotherapy is a physical, occupational or speech and language therapy treatment strategy that utilizes equine movement. Hippotherapy literally means 'treatment with help of the horse' from the Greek word, 'hippos' meaning horse. Specially trained physical and occupational therapists use this treatment for clients with movement dysfunction. In hippotherapy, the movement of the horse influences the client. The client is positioned on the horse and actively responds to his movement. The therapist directs the movement of the horse; analyzes the client's responses; and adjusts the treatment accordingly. This strategy is used as part of an integrated treatment program to achieve functional outcomes." (retrieved March 21, 2014, from <http://www.childrenstheraplay.org/hippotherapy>).

Lanning, Baier, Ivey-Hatz, Krennek, and Tubbs (2014) provide the following context for understanding the relationship between the various equine-related therapies. "[Equine Assisted Activities and Therapies] EAAT is a collective term describing two main types of interventions: equine assisted activities (EAA) and equine assisted therapies (EAT). EAA includes therapeutic horseback riding (THR), vaulting, carriage driving and non-riding activities with the horse. Whereas, EAT describes therapies including equine assisted psychotherapy and hippotherapy (a physical, occupational or speech therapy treatment strategy that utilizes equine movement) (Professional Association of Therapeutic Horsemanship International 2014)." (Lanning, et al., 2014, p. 1898).

This review is only for interventions specifically defined as hippotherapy. Studies evaluating "therapeutic horseback riding" were not included in this review. Equine assisted psychotherapy is evaluated in its own separate review.

Synopsis of review

In the case of hippotherapy, please refer to the attached reference listing that details the reviewed research. The committee's conclusions regarding hippotherpay include:

The reviewers only found one article specifically evaluating hippotherapy that passed initial screening criteria and was published since the last review. A full review of the study was completed. Due to the study having no comparison group and a small sample size, it did not meet criteria to be included as evidence for an evidence based practice.

Following are the conclusions from April 2014 Determination Memo:

Our review of the extant research is that there are insufficient scientific data to support the effectiveness of hippotherapy for the treatment of individuals with autism spectrum disorder. Indeed, there are many anecdotal reports attesting to its effectiveness, but no well-designed studies on hippotherapy have been reported to date. Many of the published papers are either simply descriptive in nature or case studies with no experimental control that do now allow confidence in a causal relationship between hippotherapy and improvement in meaningful outcomes. The Horse and Humans Research Foundation (HRRF) has funded only two grant projects that focus specifically on children with ASD – one grant project is an extension of Bass et al. (2009) and the other was just initiated in January 2012. Note that we read the proposal abstract for the recently funded project. The researchers are only looking at changes within 15 children over time, without any experimental controls. Of the articles listed below, only the Taylor et al., (2009) study fits the definition of hippotherapy and none of the studies established experimental control or did not demonstrate significant results.

In sum, it is the decision of the committee that hippotherapy remains at Level 4- Insufficient Evidence for ASD.

Section Two: Rationale for Focus on Research Specific to Comprehensive Treatment Packages (CTP) or Models

In the professional literature, there are two classifications of interventions for individuals with Autism Spectrum Disorder (National Research Council, 2001; Odom et al., 2003; Rogers & Vismara, 2008):

- (a) **Focused intervention techniques** are individual practices or strategies (such as positive reinforcement) designed to produce a specific behavioral or developmental outcome, and
- (b) **Comprehensive treatment models** are “packages” or programs that consist of a set of practices or multiple techniques designed to achieve a broader learning or developmental impact.

To determine whether a treatment package is proven and effective, the Treatment Intervention Advisory Committee (TIAC) will adopt the following perspective as recommended by Odom et al. (2010):

The individual, focused intervention techniques that make up a comprehensive treatment model may be evidence-based. The research supporting the effectiveness of separate, individual components, however, does *not* constitute an evaluation of the comprehensive treatment model or “package.” The TIAC will consider and review only research that has evaluated the efficacy of implementing the comprehensive treatment *as a package*. Such packages are most often identifiable in the literature by a consistently used name or label.

National Research Council. (2001). *Educating children with autism*. Washington, DC: National Academy Press.

Odom, S. L., Brown, W. H., Frey, T., Karusu, N., Smith-Carter, L., & Strain, P. (2003) Evidence-based practices for young children with autism: Evidence from single-subject research design. *Focus on Autism and Other Developmental Disabilities, 18*, 176-181.

Odom, S. L., Boyd, B. A., Hall, L. J., & Hume, K. (2010). Evaluation of comprehensive treatment models for individuals with Autism Spectrum Disorders. *Journal of Autism and Developmental Disorders, 40*, 425-436.

Rogers, S., & Vismara, L. (2008). Evidence-based comprehensive treatments for early autism. *Journal of Clinical Child and Adolescent Psychology, 37*, 8-38.

Section Three: DLTC-TIAC Treatment Review Evidence Checklist

Name of Treatment: Hippotherapy

Level 1- Well Established or Strong Evidence (DHS 107 - Proven & Effective Treatment)

- Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, National Professional Development Center) have approved of or rated the treatment package as having a strong evidence base; authorities are in agreement about the level of evidence.
- There exist ample high quality studies that demonstrate experimental control and favorable outcomes of treatment package.
 - Minimum of two group studies or five single subject studies or a combination of the two.
 - Studies were conducted across at least two independent research groups.
 - Studies were published in peer reviewed journals.
- There is a published procedures manual for the treatment, or treatment implementation is clearly defined (i.e., replicable) within the studies.
- Participants (i.e., N) are clearly identified as individuals with autism spectrum disorders or developmental disabilities.

Notes: At this level, include ages of participants and disabilities identified in body of research

Level 2 – Established or Moderate Evidence (DHS 107 - Proven & Effective Treatment)

- Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, NPDC) have approved of or rated the treatment package as having at least a minimal evidence base; authorities may not be in agreement about the level of evidence.
- There exist at least two high quality studies that demonstrate experimental control and favorable outcomes of treatment package.
 - Minimum of one group study or two single subject studies or a combination of the two.
 - Studies were conducted by someone other than the creator/provider of the treatment.
 - Studies were published in peer reviewed journals.
- Participants (i.e., N) are clearly identified as individuals with autism spectrum disorders or developmental disabilities.

Notes: At this level, include ages of participants and disabilities identified in body of research

Level 3 – Emerging Evidence (DHS 107 – Promising as a Proven & Effective Treatment)

- Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, NPDC) have recognized the treatment package as having an emerging evidence base; authorities may not be in agreement about the level of evidence.
- There exists at least one high quality study that demonstrates experimental control and favorable outcomes of treatment package.
 - May be one group study or single subject study.
 - Study was conducted by someone other than the creator/provider of the treatment.
 - Study was published in peer reviewed journal.
- Participants (i.e., N) are clearly identified as individuals with autism spectrum disorders or developmental disabilities.

Notes: At this level, include ages of participants and disabilities identified in body of research

Level 4 – Insufficient Evidence (Experimental Treatment)

- Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, NPDC) have not recognized the treatment package as having an emerging evidence base; authorities are in agreement about the level of evidence.
- There is not at least one high quality study that demonstrates experimental control and favorable outcomes of treatment package.
 - Study was conducted by the creator/provider of the treatment.
 - Study was not published in a peer reviewed journal.
- Participants (i.e., N) are not clearly identified as individuals with autism spectrum disorders or developmental disabilities.

Notes: The committee also reviewed existing reports from authoritative bodies including the National Professional Development Center (2009, 2014) and the National Standards Project (2010). Neither of these bodies have identified Hippotherapy as an evidence based practice or an emerging/promising practice. It is notable that within the literature related to this practice, there are two common terms used: Hippotherapy (as practiced by licensed professional therapists, OT, PT, SLP), and therapeutic riding (as practiced by professional horseback riding specialists). It is further notable that with the population of individuals with cerebral palsy, Hippotherapy is considered an evidence-based practice as there exists research (e.g., Sterba, J.A., Rogers, B.T., France, A.P., & Vokes, D.A., 2002) to support its success in improvement of dependent variables such as muscle tone, strength, and coordination.

Level 5 – Untested (Experimental Treatment) &/or Potentially Harmful

- Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, NPDC) have not recognized the treatment package as having an emerging evidence base; authorities are in agreement about the level of evidence.
- There are no published studies supporting the proposed treatment package.
- There exists evidence that the treatment package is potentially harmful.**
 - Authoritative bodies have expressed concern regarding safety/outcomes.
 - Professional bodies (i.e., organizations or certifying bodies) have created statements regarding safety/outcomes.

Notes: At this level, please specify if the treatment is reported to be potentially harmful, providing documentation

Date: January 30, 2015

Committee Members Completing Initial Review of Research Base: Tia Schultz, Amy Van Hecke, & Lana Collet-Klingenberg

Committee Decision on Level of Evidence to Suggest the Proposed Treatment is Proven and Effective:
Level 4- Insufficient Evidence for ASD

References Supporting Identification of Evidence Levels:

- Chambless, D.L., Hollon, S.D. (1998). Defining empirically supported therapies. *Journal of Consulting and Clinical Psychology*, 66(1) 7-18.
- Chorpita, B.F. (2003). The frontier of evidence---based practice. In A.E. Kazdin & J.R. Weisz (Eds.). *Evidence-based psychotherapies for children and adolescents* (pp. 42---59). New York: The Guilford Press.
- Odom, S. L., Collet-Klingenberg, L., Rogers, S. J., & Hatton, D. (2010). Evidence-based practices in interventions for children and youth with autism spectrum disorders. *Preventing School Failure*, 54(4), 275-282.

Section Four: Literature Review

For this re-review, the only literature published since the last review that passed screening criteria is as follows:

Ajzenman, H. F., Standeven, J. W., & Shurtleff, T. L. (2013). Effect of hippotherapy on motor control, adaptive behaviors, and participation in children with autism spectrum disorder: A pilot study. *American Journal of Occupational Therapy, 67*, 653–663.

The following article helped clarify the distinction between hippotherapy and other equine-related interventions:

Lanning, B. A., Baier, M. E. M., Ivey-Hatz, J., Krennek, N., & Tubbs, J. D. (2014). Effects of equine assisted activities on Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders, 44*, 1897-1907.

The following literature was reviewed in the April 2014 review:

Bass, M. M., Duchowny, C.A., & Llabre, M. M. (2009). The effect of therapeutic horseback riding on social functioning in children with autism. *Journal of Autism and Developmental Disorders, 39*, 1261-1267.

Gabriels, R.L., Agnew, J.A., Holt, K.D., Shoffner, A., Zhaoxing, P., Ruzzano, S., Clayton, G.H., & Mesibov, G. (2012). Pilot study measuring the effects of therapeutic horseback riding on school-age children and adolescents with autism spectrum disorders. *Research in Autism Spectrum Disorders, 6*, 578-588.

Keino, H., Funahashi, A., Keino, H., Miway, C., Hosokawa, M., Yayashi, Y, & Kawarkita, K. (2009). Psycho-education horseback riding to facilitate communication ability in children with pervasive developmental disorders. *Journal of Equine Science, 20*, 79-88 (24).

Kern, J. K., Fletcher, C. L., Garver, C. R., Mehta, J. A., Grannemann, B. D., Knox, K. R., Richardson, T. A., & Trivedi, M. H. (2011). Prospective trial of equine-assisted activities in autism spectrum disorder. *Alternative Therapies, 17*(3), 14-290.

Stoner, J. B. (2004). Riding high. *Advance for Occupational Therapy Practitioners, 20*(13).

Taylor, R. R., Kielhofner, G., Smith, C., Butler, S., Cahill, S. M., Ciukaj, M. D., & Gehman, M. (2009). Volitional change in children with autism: A single-case design study of the impact of hippotherapy on motivation. *Occupational Therapy in Mental Health, 25*, 192-200.

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Article Reference:	Ajzenman, H. F., Standeven, J. W., & Shurtleff, T. L. (2013). Effect of hippotherapy on motor control, adaptive behaviors, and participation in children with autism spectrum disorder: A pilot study. <i>American Journal of Occupational Therapy</i> , 67, 653–663. http://dx.doi.org/10.5014/ajot.2013.008383
IV Description	12 weekly, 45 minute hippotherapy sessions
DV	Motor control, postural stability, adaptive behavior, participation in daily activities
# in study	6
Age ranges	5-12 years
Diagnoses	ASD
Study Results	<ul style="list-style-type: none"> • Improvements in self-care, low-demand leisure, and social interactions • Decrease in postural sway
Reviewer Comments	Though this study showed some promising results, it was a pilot study with a small sample and no control/comparison group. The study did not meet criteria for consideration as support for an evidence based practice.

Group Design EBP Inclusion Criteria Checklist

Instructions: Read each item and check the appropriate box. If you check “NO” at any time, the article can be discarded as it will not be included as evidence for a practice.

Item	YES	NO	Rationale
Does the study have experimental and control/comparative groups?		x	This was a pilot study with a pre/post design.
Were appropriate procedures used to increase the likelihood that relevant characteristic of participants in the sample were		x	There was only one group.
Was their evidence for adequate reliability for the key outcome measures? And/or when relevant, was inter-observer reliability assessed and reported to be at an acceptable level?	x		Vineland Adaptive Behavior Scales-II (VABS-II) and Child Activity Card Sort (CACS) were two of the measures, and have adequate reliability. The third measure was the

Item	YES	NO	Rationale
Were outcomes for capturing the intervention's effect measured at appropriate times (at least pre- and post-test)?	x		Data were collected 1 week before intervention began and 1 week after
Was the intervention described and specified clearly enough that critical aspects could be understood?	x		The intervention followed the guidelines from the American Hippotherapy Association (2010)
Was the control/comparison condition(s) described?		x	There was no comparison group.
Were data analysis techniques appropriately linked to key research questions and hypotheses?	x		
Was attrition NOT a significant threat to internal validity?	x		1 of 7 original participants was not included in the final analysis (15% <20%, so
Does the research report statistically significant effects of the practice for individuals with ASD for at least one outcome variable?	x		<ul style="list-style-type: none"> • Improvements in self-care, low-demand leisure, and social
Were the measures of effect attributed to the intervention? (no obvious unaccounted confounding factors)		x	There was not comparison group.