HEALTH PLANS
UNIVERSITY OF UTAH

Administration Policy

Noncovered Behavioral Health-Related Services

Policy Admin-020

Origination Date: 2/24/2021

Reviewed/Revised Date: 03/08/2021

Next Review Date: 03/08/2022

Current Effective Date: 05/08/2021

Disclaimer:

1. Policies are subject to change in accordance with State and Federal notice requirements.
2. Policies outline coverage determinations for U of U Health Plans Commercial, and Healthy U (Medicaid) plans. Refer to the "Policy" section for more information.

Description:

Behavioral Health has several approaches to diagnosis and treatment which have not demonstrated adequate evidence to show efficacy and/or safety or have been show to not be effective or safe in the management of behavioral health services. These services are considered unproven and thus meet the plan definition of investigational and are therefore not covered. In addition, the American Psychiatric and American Psychological Associations have evaluated many of these Services and are not supported by scientific evidence and the medical necessity criteria.

Policy Statement and Criteria

1. Commercial Plans

U of U Health Plans does NOT cover the following behavioral health services as they are either considered investigational or have been proven to not be effective or safe therapies.

Diagnostic Testing:

A. Quantitative EEG in the Diagnosis of ADHD

B. Pharmacogenetic/genomic Testing for Behavioral Health Conditions *(See MP-030 Pharmacogenomic Testing for Behavioral Health Disorders)*

Therapeutic Services/Modalities:

A. Acupressure

B. Art Therapy

C. Biofeedback
D. Biomagnetic/Magnet Therapy (other than transcranial magnetic stimulation for treatment of Depression *per* *MP-001 Transcranial Magnetic Stimulation*)
E. Certain Therapies in the treatment of Autism Spectrum Disorder:
    - Nutritional supplements such as high doses of vitamin B6 and magnesium
    - Immune globulin therapy
    - Secretin therapy
    - Chelation therapy
    - Auditory integration training (AIT)
    - Facilitated communication
F. Dance Therapy
G. Equine (Hippotherapy) or other Animal Therapy
H. Eye Movement Desensitization and Reprocessing (EMDR) Therapy (except for PTSD as per *MP-065 Eye Movement Desensitization and Reprocessing (EMDR) Therapy*)
I. Hypnotherapy
J. Laughter Therapy
K. Light Therapy for Treatment of Season Affective Disorder
L. Primal Therapy
M. Sensory Integration Therapy
N. Sodium Amobarbital Interview
O. Wilderness Programs/Adventure Therapy

2. Medicaid Plans

Coverage is determined by the State of Utah Medicaid program; if Utah State Medicaid has no published coverage position and InterQual criteria are not available, the U of U Health Plans Commercial criteria will apply. For the most up-to-date Medicaid policies and coverage, please visit their website at http://health.utah.gov/medicaid/manuals/directory.php or the Utah Medicaid code Look-Up tool

3. Medicare Plans

Coverage is determined by the Centers for Medicare and Medicaid Services (CMS); if a coverage determination has not been adopted by CMS, and InterQual criteria are not available, U of U Health Plans' commercial policies would apply. For the most up-to-date Medicare policies and coverage, please visit their search website at: http://www.cms.gov/medicare-coverage-database/overview-and-quick-search.aspx?from2=search1.asp& or the manual website.

Clinical Rationale

Multiple non mainstream therapies have been suggested to have benefit in treating various behavioral health disorders despite a lack of strong prospective randomized multicenter trial to support their efficacy and/or safety. Evidence related to these therapies is of low quality in general and often times insufficient in reaching conclusions as to the safety and effectiveness of these therapies. In some instances published evidence has refuted any alleged benefit and shown potential harm to patients.

Acupressure

In a review on "Effects of acupressure on anxiety", Au and co-workers (2015) stated that "Acupressure seems to be effective in providing immediate relief of pretreatment anxiety among adults, and has a medium effect size. However, conflicting results were found for the improvements on physiological indicators. More rigorous reporting, including allocation concealment procedure, is needed to strengthen the results".

In a review on "Acupuncture or acupressure for anxiety", Kwon and Lee (2018) concluded that "Acupuncture or acupressure on EX-HN 3 was used mainly to reduce the anxiety of preoperative participants. The simplicity and economics of this intervention suggest the need for future rigorous clinical trials or systematic reviews on this topic. In addition, more experimental studies should be conducted to identify the underlying mechanisms of this anxiolytic effect".

Acupuncture

Alcohol Withdrawal Syndrome: Liu and co-workers (2018) noted that acupuncture has been used as a potential therapy for alcohol withdrawal syndrome (AWS), but evidence for its effects on this condition is limited. These researchers examined the safety and effectiveness of acupuncture for AWS. Central Register of Controlled Trials (CENTRAL), PubMed, Embase, the Cochrane Library, PsycINFO, Chinese Biomedicine Literature (CBM), China National Knowledge Infrastructure (CNKI) and Wan-Fang Database were searched from their inception to August 2016; RCTs of drug plus acupuncture or acupuncture alone for the treatment of AWS were included. Continuous data were expressed as MD with 95% CI. Dichotomous data were expressed as RR with 95% CI. A total of 11 RCTs with 875 participants were included. In the acute phase, 2 trials reported no difference between drug plus acupuncture and drug plus sham acupuncture in the reduction of craving for alcohol; however, 2 positive trials reported that drug plus acupuncture was superior to drug alone in the alleviation of psychological symptoms. In the protracted phase, 1 trial reported acupuncture was superior to sham acupuncture in reducing the craving for alcohol, 1 trial reported no difference between acupuncture and drug (disulfiram), and 1 trial reported acupuncture was superior to sham acupuncture for the alleviation of psychological symptoms; adverse effects were tolerable and not severe. The authors concluded that there was no significant difference between acupuncture (plus drug) and sham acupuncture (plus drug) with respect to the primary outcome measure of craving for alcohol among participants with AWS, and no difference in completion rates (pooled results). There was limited evidence from individual trials that acupuncture may reduce alcohol craving in the protracted phase and help alleviate psychological symptoms; however, given concerns about the quantity and quality of included studies, further large-scale and well-conducted RCTs are needed.

Autism:

In a Cochrane review, Cheuk et al (2011) examined the effectiveness of acupuncture for people with autism spectrum disorders (ASD) in improving core autistic features, as well as communication, cognition, overall functioning and quality of life, and established if it has any adverse effects. These investigators searched the following databases on September 30, 2010: CENTRAL (The Cochrane Library, 2010, Issue 3), MEDLINE (1950 to September 2010 Week 2), EMBASE (1980 to 2010 Week 38), PsycINFO,

CINAHL, China Journal Full-text Database, China Master Theses Full-text Database, China Doctor Dissertation Full-text Database, China Proceedings of Conference Database, Index to Taiwan Periodical Literature System, metaRegister of Controlled Trials and the Chinese Clinical Trials Registry. They also searched AMED (February 26, 2009) and Dissertation Abstracts International (March 3, 2009), but these were no longer available to the authors or editorial base at the date of the most recent search. TCMLARS (Traditional Chinese Medical Literature Analysis and Retrieval System) was last searched on March 3, 2009. These researchers included RCTs and quasi-RCTs. They included studies comparing an acupuncture group with at least one control group that used no treatment, placebo or sham acupuncture treatment in people with ASD. They excluded trials that compared different forms of acupuncture or compared acupuncture with another treatment. Two review authors independently extracted trial data and assessed the risk of bias in the trials. They used relative risk (RR) for dichotomous data and mean difference (MD) for continuous data. The authors included 10 trials that involved 390 children with ASD. The age range was 3 to 18 years and the treatment duration ranged from 4 weeks to 9 months. The studies were carried out in Hong Kong, mainland China and Egypt. Two trials compared needle acupuncture with sham acupuncture and found no difference in the primary outcome of core autistic features (RFRLRS total score: MD 0.09; 95% CI: -0.03 to 0.21, p = 0.16), although results suggested needle acupuncture might be associated with improvement in some aspects of the secondary outcomes of communication and linguistic ability, cognitive function and global functioning. Six trials compared needle acupuncture plus conventional treatment with conventional treatment alone. The trials used different primary outcome measures and most could not demonstrate effectiveness of acupuncture in improving core autistic features in general, though 1 trial reported patients in the acupuncture group were more likely to have improvement on the Autism Behavior Checklist (RR 1.53; 95% CI: 1.09 to 2.16, p = 0.02) and had slightly better post-treatment total scores (MD -5.53; 95% CI: -10.76 to -0.31, p = 0.04). There was no evidence that acupuncture was effective for the secondary outcome of communication and linguistic ability, though there seemed to be some benefit for the secondary outcomes of cognitive function and global functioning. Two trials compared acupressure plus conventional treatment with conventional treatment alone and did not report on the primary outcome. Individual study results suggested there may be some benefit from acupressure for certain aspects of the secondary outcomes of communication and linguistic ability, cognitive function and global functioning. Four trials reported some adverse effects, though there was little quantitative information, and at times both intervention and control groups experienced them. Adverse effects included bleeding, crying due to fear or pain, irritability, sleep disturbance and increased hyperactivity. None of the trials reported on quality of life. There are a number of problems with the evidence base: the trials were few in number and included only children; 6 of the trials were at high-risk of bias; they were heterogeneous in terms of participants and intervention; they were of short duration and follow-up; they reported inconsistent and imprecise results, and, due to carrying out large numbers of analyses, they were at risk of false positivity. The authors concluded that current evidence does not support the use of acupuncture for treatment of ASD. There is no conclusive evidence that acupuncture is effective for treatment of ASD in children and no RCTs have been carried out with adults. They stated that further high quality trials of larger size and longer follow-up are needed.

PTSD:

Kim et al (2013) evaluated the current evidence on the effectiveness of acupuncture for post-traumatic stress disorder (PTSD) in the form of a systematic review. These researchers performed a systematic literature search in 23 electronic databases. Grey literature was also searched. The key search terms were "acupuncture" and "PTSD". No language restrictions were imposed. They included all RCTs or prospective clinical trials that evaluated acupuncture and its variants against a wait-list, sham acupuncture, conventional therapy control for PTSD, or without control. A total of 4 RCTs and 2

uncontrolled clinical trials (UCTs) out of 136 articles in total were systematically reviewed. One high-quality RCT reported that acupuncture was superior to wait-list control and therapeutic effects of acupuncture and cognitive-behavioral therapy (CBT) were similar based on the effect sizes. One RCT showed no statistical difference between acupuncture and selective serotonin reuptake inhibitors (SSRIs); 1 RCT reported a favorable effect of acupoint stimulation plus CBT against CBT alone. A meta-analysis of acupuncture plus moxibustion versus SSRI favored acupuncture plus moxibustion in 3 outcomes. The authors concluded that this systematic review and meta-analysis suggested that the evidence of effectiveness of acupuncture for PTSD is encouraging but not cogent. They stated that further qualified trials are needed to confirm whether acupuncture is effective for PTSD.

Schizophrenia:

In a Cochrane review, Shen et al (2014) examined the effects of acupuncture, alone or in combination treatments compared with placebo (or no treatment) or any other treatments for people with schizophrenia or related psychoses. These investigators searched Cochrane Schizophrenia Group's Trials Register (February 2012), which was based on regular searches of CINAHL, BIOSIS, AMED, EMBASE, PubMed, MEDLINE, PsycINFO and clinical trials registries. They also inspected references of identified studies and contacted relevant authors for additional information. They included all relevant RCTs involving people with schizophrenia-like illnesses, comparing acupuncture added to standard dose anti-psychotics with standard dose anti-psychotics alone, acupuncture added to low dose anti-psychotics with standard dose anti-psychotics, acupuncture with anti-psychotics, acupuncture added to Traditional Chinese Medicine (TCM) drug with TCM drug, acupuncture with TCM drug, electric acupuncture convulsive therapy with electroconvulsive therapy. These researchers reliably extracted data from all included studies, discussed any disagreement, documented decisions and contacted authors of studies when necessary. They analyzed binary outcomes using a standard estimation of RR and its 95% CI. For continuous data, they calculated MDs with 95% CI. For homogeneous data they used fixed-effect model. They assessed risk of bias for included studies and created “Summary of findings” tables using Grading of Recommendations, Assessment, Development and Evaluation (GRADE). After an update search in 2012 the review included 30 studies testing different forms of acupuncture across 6 different comparisons. All studies were at moderate risk of bias. When acupuncture plus standard anti-psychotic treatment was compared with standard anti-psychotic treatment alone, people were at less risk of being “not improved” (n = 244, 3 RCTs, medium-term RR 0.40 CI: 0.28 to 0.57, very low quality evidence). Mental state findings were mostly consistent with this finding as was time in hospital (n = 120, 1 RCT, days MD -16.00 CI: -19.54 to -12.46, moderate quality evidence). If anything, adverse effects were less for the acupuncture group (e.g., central nervous system, insomnia, short-term, n = 202, 3 RCTs, RR 0.30 CI: 0.11 to 0.83, low quality evidence). When acupuncture was added to low dose anti-psychotics and this was compared with standard dose anti-psychotic drugs, relapse was less in the experimental group (n = 170, 1 RCT, long-term RR 0.57 CI: 0.37 to 0.89, very low quality evidence) but there was no difference for the outcome of “not improved”. Again, mental state findings were mostly consistent with the latter. Incidences of extra-pyramidal symptoms were less for those in the acupuncture added to low dose anti-psychotics group (n = 180, 1 RCT, short-term RR 0.03 CI: 0.00 to 0.49, low quality evidence). When acupuncture was compared with anti-psychotic drugs of known efficacy in standard doses, there were equivocal data for outcomes such as “not improved” using different global state criteria. Traditional acupuncture added to TCM drug had benefit over use of TCM drug alone (n = 360, 2 RCTs, RR no clinically important change 0.11 CI: 0.02 to 0.59, low quality evidence), but when traditional acupuncture was compared with TCM drug directly there was no significant difference in the short-term. However, these researchers found that participants given electroacupuncture were significantly less likely to experience a worsening in global state (n = 88, 1 RCT, short-term RR 0.52 CI: 0.34 to 0.80, low quality evidence). In the 1 study that compared electric acupuncture convulsive therapy with

electroconvulsive therapy there were significantly different rates of spinal fracture between the groups (n = 68, 1 RCT, short-term RR 0.33 CI: 0.14 to 0.81, low quality evidence). Attrition in all studies was minimal. No studies reported death, engagement with services, satisfaction with treatment, quality of life, or economic outcomes. The authors concluded that limited evidence suggested that acupuncture may have some anti-psychotic effects as measured on global and mental state with few adverse effects. They stated that better designed large studies are needed to fully and fairly test the effects of acupuncture for people with schizophrenia.

Art Therapy

Art therapy is a creative process utilizing art as a healing and life-affirming technique. The term typically applies to the use of the visual arts in psychotherapy to improve a feeling of emotional well-being. Art therapy is used in mental health therapy and other settings to help focus on an individual's creative process, and to enhance their use of leisure as a stress reduction activity.

Schouten et al. (2015) conducted a systematic review of the effectiveness of art therapy in trauma treatment for adults. Six controlled, comparative studies (n=223) (one randomized controlled trial) met inclusion criteria. Subjects had to be traumatized adults (independent of type of trauma or type of trauma population), and the design of the included studies had to be a comparison outcome trial with a control group. Type of trauma included posttraumatic stress disorder (PTSD), sexual assault and traumatized incarcerated women. Some of the included studies reported a significant decrease in psychological trauma symptoms in the treatment group and one study reported a significant decrease in depression. Outcomes were conflicting with studies reporting a decrease in symptom severity (some significant and some not) and no significant decrease in symptoms. The most statistically significant decrease in trauma symptom severity was found when art therapy was used with psychotherapy. Author-noted limitations of the studies included: small patient populations; methodological weakness with moderate quality at best; heterogeneity of art therapy interventions (type and duration of the interventions), control conditions, follow-up assessments, and characteristics of the study population; and patient age primarily less than 22 years. No firm conclusions can be made for the use of art therapy for this patient population.

Uttley et al. (2015) conducted a systematic review of randomized controlled trials investigating art therapy for people with non-psychotic (e.g., depression, anxiety, and phobias) mental health disorders. Eleven randomized controlled trials (n=533 patients) met inclusion criteria. Subjects included children or adolescents with asthma, sickle cell disease or post-traumatic stress disorder and adults with Alzheimer's disease, dementia, cancer, or depression and incarcerated males. Follow-ups occurred from four weeks to 12 months. Control groups included: no treatment/wait-list, attention placebo controls and psychological therapy comparators. Primary outcomes included treatment effectiveness, response as determine by changes in mental health rating scales and a variety of scales and questionnaires. There was a high risk of bias. Some studies reported significant positive effects compared to controls. Meta-analysis was not possible due to clinical heterogeneity and insufficient comparable data on outcome. Due to the small patient populations (n=18–111) and the low quality of the studies a definitive statement regarding the clinical effectiveness of art therapy could not be made for people with non-psychotic disorders.

Wood et al. (2011) conducted a systematic review to assess the available evidence on the effectiveness of art therapy for symptomatic control of patients with cancer. Twelve randomized controlled trials and case series (n=402) met inclusion criteria. The studies showed that art therapy is most frequently used by women with breast cancer. Due to the heterogeneity of the studies, variations in the model and content of the interventions, and various outcome measures no overall effect was determined.

Autism Spectrum Disorder (*certain therapies for treatment)*

In a review on autism, Levy and colleagues (2009) stated that popular biologically based treatments include anti-infectives, chelation medications, gastrointestinal medications, hyperbaric oxygen therapy, and intravenous immunoglobulins. Non-biologically based treatments include auditory integration therapy, chiropractic therapy, craniosacral manipulation, facilitated communication, interactive metronome, and transcranial stimulation. However, few studies have addressed the safety and effectiveness of most of these treatments.

Biofeedback (BFB)/Neurofeedback (NF)

Biofeedback (BFB) can be defined as a training technique that utilizes monitoring instruments to detect and amplify internal physiological processes, and presents this ordinarily unavailable information by audio and/or visual means to patients. This information is usually displayed in a quantitative manner and used by the patients to learn specific tasks.

ADHD:

Biofeedback and/or relaxation training have been used to reduce hyperactivity and impulsiveness as well as to increase attention to task in patients with ADHD. The rationale proceeds from the belief that muscular tension and inability to relax not only contribute to but also exacerbate symptoms of hyper-activity. The assumption is that when hyperactive patients learn how to maintain muscular tension at low levels, a reduction in hyperactivity will ensure. Many forms of biofeedback have been utilized including EMG, electroencephalogram (EEG), galvanic skin resistance, and skin (surface) temperature.

In a research update on "Clinical utility of EEG in attention-deficit/hyperactivity disorder", Loo and Makeig (2012) stated that "In recent years, the number and the scientific quality of research reports on EEG-based neurofeedback (NF) for ADHD have grown considerably, although the studies reviewed here do not yet support NF training as a first-line, stand-alone treatment modality. In particular, more research is needed comparing NF to placebo control and other effective treatments for ADHD. Currently, after a long period of relative stasis, the neurophysiological specificity of measures used in EEG research is rapidly increasing. It is likely, therefore, that new EEG studies of ADHD using higher density recordings and new measures drawn from viewing EEG as a 3-dimensional functional imaging modality, as well as intensive re-analyses of existing EEG study data, can better characterize the neurophysiological differences between and within ADHD and non-ADHD subjects, and lead to more precise diagnostic measures and effective NF approaches".

Furthermore, the Institute for Clinical Systems Improvement (ICSI)'s clinical guideline on "Diagnosis and management of attention deficit hyperactivity disorder in primary care for school-age children and adolescents" (Dobie et al, 2012) states that "Neurofeedback has been demonstrated in one randomized, controlled clinical trial [High Quality Evidence] to be significantly better than a computerized attention skills training control. ADHD symptoms were moderately improved. Long-term benefits have not been definitively proven. The cost and time involved in treatment need to be taken into account. Neuro-feedback for ADHD lacks sufficient research support. Treatment response rates have not reached the level shown with psychostimulant medications; therefore neurofeedback cannot be recommended as an alternative to medication use in ADHD".

Generalized Anxiety Disorder (GAD):

The 3 most common types of biofeedback in the treatment of GAD are EMG, EEG, and heart rate (HR). Many investigators have claimed that biofeedback alone or in combination with other therapies was effective in treating anxiety disorders. In contrast, others have reported that this method was not effective or not any better than other behavioral techniques in controlling GAD. Very few studies actually used biofeedback independently of other treatment techniques. The majority of the studies

reported the use of biofeedback in combination of relaxation training in treating this disorder. To determine the effectiveness of biofeedback alone in treating generalized anxiety disorder, studies should include separate treatment groups of biofeedback and relaxation training (or other techniques) as well as a placebo control group. Additionally, it is unclear whether biofeedback/relaxation skills learned in the laboratory setting can be transferred to social situations. More importantly, few studies have shown that the initial treatment successes would result in lasting benefits after the treatment ended.

Banerjee and Argaez (2017) stated that 2 previous Canadian Agency for Drugs and Technologies in Health (CADTH)'s Rapid Response reviews reported on neurofeedback and BFB for mood and anxiety disorders. The review published in 2012 reported that evidence from mostly preliminary analyses suggested that neurofeedback and BFB may have potential for the treatment of PTSD, GAD, or depression. The review published in 2014, assessed evidence identified since the publication of the review of 2012 and reported that limited evidence suggested that BFB may decrease the symptoms of PTSD or depression. Both the reviews reported that no relevant evidence-based guidelines on neuro-feedback or BFB were identified. These investigators evaluated the more recent evidence regarding the clinical effectiveness of neurofeedback or BFB compared with other modalities for the treatment of mood and anxiety disorders (PTSD, GAD, or depression) in adults. Additionally, they reviewed recent evidence-based guidelines regarding the use of neurofeedback or BFB for the treatment of mood and anxiety disorders (PTSD, GAD, or depression) in adults. A total of 5 relevant RCTs comparing neuro-feedback or BFB with other psychological treatments or no treatments for managing patients with PTSD, GAD or MDD were identified. Of these 5 RCTs, 2 were on neurofeedback provided by health professionals, and 3 were on BFB provided by health professionals. No relevant studies on the clinical effectiveness of BFB using home equipment for treatment of PTSD, GAD, or depression without continued support from health professionals were identified. No relevant evidence based guidelines regarding the use of neurofeedback or BFB for the treatment of PTSD, GAD, or depression were identified. The results from 2 RCTs (1 study per condition) suggested that neurofeedback may be effective for the treatment of PTSD or GAD compared with no treatment. Some evidence was identified to suggest that adding BFB to treatment as usual (TAU) may be more effective than TAU alone. For patients with PTSD, 1 RCT showed that adding BFB to trauma-focused CBT was associated with faster improvements in symptoms than CBT alone, while another RCT found no significant differences between BFB and mindfulness-based therapies. For patients with major depressive disorder, 1 RCT found that patients who received HRV-BFB in addition to psychotherapy showed significant improvements in symptoms after treatment, while significant improvements were not achieved with psychotherapy alone. The authors concluded that these findings need to be interpreted in the light of the limitations (e.g., small sample size, limited number of relevant studies, lack of randomization details, lack of reporting of AEs, and lack of long-term data).

Obsessive Compulsive and Related Disorders:
Ferreira and colleagues (2019) noted that biofeedback has been employed in psychiatric disorders, including obsessive-compulsive disorder (OCD), mainly by using neural signals and neurofeedback. Recently, OCD has been integrated into the obsessive-compulsive and related disorders (OCD&RD) category (e.g., body dysmorphic disorder, excoriation/skin-picking disorder, hair-pulling/ trichotillomania, and hoarding). The efficacy of biofeedback for OCD&RD is still unknown. These investigators provided a complete overview of publications assessing the therapeutic efficacy of bio-feedback in OCD&RD with a systematic review and meta-analysis. They found 10 studies involving 102 OCD participants (3 RCTs) mostly applying neurofeedback (1 publication used thermal biofeedback); 5 neurofeedback studies were selected for meta-analysis (89 patients; 2 RCTs). The overall effect size

within the treatment group varied between medium to large, but high heterogeneity and inconsistency values were found. The methodological quality was low indicating a high risk of bias. The authors concluded that a beneficial effect of neurofeedback for OCD patients was found but also critical limitations on methodology, high heterogeneity among studies, and a putative reporting bias. These researchers stated that future research following high-quality guidelines should be conducted to address the efficacy of biofeedback for the treatment of OCD&RD.

Post-Traumatic Stress Disorder (PTSD):
Chrapusta et al (2015) evaluated the effectiveness of neurofeedback in reducing the symptoms of post-trauma stress disorder (PTSD), which had developed as a result of a high-voltage electric burn to the head. Quantitative EEG (qEEG) and event related potentials (ERPs) were utilized in the evaluation. These investigators presented the case of a 21-year old patient who experienced 4th degree burns to his head as a result of a high-voltage electric burn. The patient was repeatedly operated on and despite the severity of the injuries was able to recover. However the patient complained of flashbacks, difficulties with sleeping as well as an inability to continue work in his given profession. Special tests showed the presence of PTSD. As a result, the patient was treated with neurofeedback therapy. The effectiveness of this therapy in the reduction of the symptoms of PTSD were evaluated through the utilization of qEEG and ERPs. It was found that in the first examination that ERPs displayed the most significant deviations from the reference in the 2 components: the one component was generated within the cingulate cortex. The pattern of its deviation from the norms was similar to that found in a group of obsessive-compulsive disorder patients. In contrast to healthy subjects the component repeated itself twice; the second component was generated in the medial prefrontal cortex. Its pattern was similar to that found in PTSD patients. The one component was generated within the cingulate cortex. The pattern of its deviation from the norms was similar to that found in a group of obsessive-compulsive disorder patients. In contrast to healthy subjects the component repeated itself twice; the second component was generated in the medial prefrontal cortex. Its pattern was similar to that found in PTSD patients. There was a delay in the late part of the component, which probably reflected the flashbacks. In the second examination, after neurofeedback training, the ERPs were similar to the norm. The patient returned to work. The authors concluded that chronic PTSD developed within the patient as a result of a high-voltage electric burn. The application of neurofeedback resulted in the withdrawal of the syndrome symptoms.

Reiter et al (2016) stated that neurofeedback is an alternative, non-invasive approach used in the treatment of a wide range of neuropsychiatric disorders, including PTSD. Many different neurofeedback protocols and methods exist. Likewise, PTSD is a heterogeneous disorder. These investigators reviewed the evidence on effectiveness and preferred protocol when using neurofeedback treatment on PTSD. They performed a systematic search of PubMed, PsychInfo, Embase, and Cochrane databases. A total of 5 studies were included in this review; neurofeedback had a statistically significant effect in 3 studies. Neurobiological changes were reported in 3 studies. The authors noted that interpretation of results was, however, limited by differences between the studies and several issues regarding design. They stated that these optimistic results qualify neurofeedback as probably effective for PTSD treatment.

Criswell and colleagues (2018) tested the effectiveness of a mental health therapy designed to reduce noncombat-related persistent PTSD symptoms in 30 adult out-patients with a diagnosis of PTSD. The individual treatment offered modules to address PTSD nightmare distress, dissociation, general core skills, alterations in arousal and reactivity, avoidance, intrusion, and negative alternations in cognitions and mood. The therapeutic approach centered on CBT and HRV-BFB. The study had 2 components: The quality improvement project that performed the treatment within a standard care environment, and a retrospective medical chart review process that analyzed the results. The Clinician-Administered PTSD Scale for the Diagnostic and Statistical Manual, 5th Edition, was used to confirm the initial PTSD

diagnosis and was the primary measure used to monitor change in the diagnosis following treatment. None of the patients who completed the PTSD treatment met criteria for a PTSD diagnosis in the post-treatment assessment. A 1-sample test of proportions, with a 95% CI and a significance level of $p < 0.05$, showed $p = 0.0008$, and that the proportion of patients who would not have PTSD if the study was repeated would be 86.77% to 100%. The treatment drop-out rate was 13% (4 patients). The authors concluded that these findings suggested that this intervention was an effective treatment for helping adult patients, including those with a history of childhood abuse, remit their PTSD diagnosis. However, the main drawback of this study was that it was not controlled. The organization where the treatment took place did not permit randomization to various treatments or a wait-list control group. The data analysis could not compare this study's patients with other patients treated in the same site because basic data such as diagnosis and change in PTSD symptoms were not tracked in a consistent manner. Although comparing the results of this study with similar results in other settings as was done in this study was reasonable, it was not ideal. The Hawthorne effect likely played a role in this study because the same clinician who provided treatment measured the results of the treatment. In other words, patients may have been trying to please the clinician who provided treatment by reporting better results of the treatment than they actually experienced. Further, the treating clinician was not blind to the fact that these patients had received the treatment and thus may have unintentionally slanted the results to be more positive. The study would have been strengthened if the follow-up time had been longer than 3 months to examine whether treatment gains were maintained over time. If various clinicians at multiple sites had used the treatment protocol, it would have been clearer that it was the treatment protocol rather than something related more specifically to the treating clinician or the site that created the change in patients. To test this PTSD treatment with more rigor, more patients would be needed; more measures would need to be statistically analyzed; the measures would need to be administered by someone who did not know whether the patient they were measuring had received the treatment; the groups of patients would need to be randomized and controlled; and the measures would need to be repeated over several years at several sites by several different clinicians.

Psychosis:

Clamor and colleagues (2016) stated that arousal and the way it is coped with are relevant to the emergence of psychotic symptoms; HRV stems from autonomic responses to environmental demands such as stress and is an index of physiological arousal, adaptability, and homeostatic reflexes forming autonomic balance. A randomized-controlled between-subjects trial that compared HRV-BF to an active relaxation and to a waiting control condition was conducted in a sample with attenuated sub-clinical psychotic symptoms (n = 84). A 20-min intervention was preceded and followed by repeated assessments of stress responses. Change scores of the post-stress periods were analyzed using ANOVAs for HRV, subjective stress, perceived control, and state paranoia. As expected, BF participants showed greater improvements in perceived control than waiting controls ($p = 0.006$). However, no group differences occurred in HRV, paranoid symptoms or subjective stress. In exploratory analyses in a subset of subjects who were breathing per protocol, the expected effects were found for total HRV and state paranoia. The authors concluded that the findings of this trial of HRV-BF for people with attenuated psychotic symptoms indicated that the intervention may hold potential if conducted per protocol. They stated that to reach this, longer training might be inevitable; future studies are needed to further elucidate applicability and effectiveness of HRV-BF in clinical samples.

Biomagnetic/Magnet Therapy

Randomized studies have shown no significant beneficial effects from magnetic therapy for a variety of conditions. In one such study, Cepeda and colleagues (2007) evaluated the use of magnetic therapy on postoperative pain in a randomized, double-blind, controlled trial. A total of 165 subjects were

randomized to either sham therapy or magnetic therapy upon reporting moderate to severe pain in a post anesthesia unit. Sham or commercially available magnets were placed over the surgical incision site for 2 hours. Study subjects rated their pain on a scale of 0-10. Pain was rated similarly in both groups, but the active magnet group required more morphine than the sham magnet group. The authors concluded that magnetic therapy lacks efficacy and should not be recommended for acute pain relief.

A Cochrane review (Kroeling, 2013) evaluated the effectiveness of therapies, one of which was permanent magnets (necklaces), as a treatment for neck pain. The authors noted the quality of evidence found was low and further study appeared to be needed. Conclusions included that for individuals with chronic neck pain, magnetic necklaces were no more effective in providing relief than placebo. Similarly, in a more recent Cochrane review conducted by Cheong and colleagues (2014) on nonsurgical interventional approaches to treat pelvic pain, authors concluded that, "No difference in pain levels was observed when magnetic therapy was compared with use of a control magnet." The quality of evidence for magnetic therapy as a treatment for pelvic pain was considered to be of very low quality.

The National Center for Complementary and Integrative Health provides information on magnets for pain relief (2013). The fact sheet notes, although widely marketed, the "Scientific evidence does not support the use of magnets for pain relief."

In summary, there is no scientific basis to conclude that biomagnetic therapy can relieve pain or influence the course of any disease or condition. The published literature does not validate the clinical role of this treatment methodology.

Dance Therapy

Dance movement therapy is the psychotherapeutic use of movement and dance to engage a person creatively in a process believing to further their emotional, cognitive, physical and social integration. It is founded on the principle that movement reflects an individual's patterns of thinking and feeling.

Karkou and Meekums (2017) conducted a Cochrane systematic review to assess the effects of dance movement therapy on behavioral, social, cognitive and emotional symptoms of patients with dementia. No studies met the inclusion criteria.

Equine (Hippotherapy) or other Animal Therapy

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.

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

Equestrian therapy (i.e., horseback riding or hippotherapy) is proposed to offer a person with a disability a means of physical activity that aids in improving balance, posture, coordination, the development of a positive attitude and a sense of accomplishment. Bronson et al. (2010) conducted a systematic review of the literature to evaluate the ability of hippotherapy to improve balance in multiple sclerosis patients. Three case series with less than 11 patients each met inclusion criteria. The patients engaged in a mean 7.75 hours of therapy over a mean 11.2 weeks. There is insufficient evidence to support hippotherapy for this indication.

ADHD:
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.

Oh and co-workers (2018) examined the effects of hippotherapy versus pharmacotherapy for children with ADHD. A total of 34 subjects with ADHD were randomly assigned at a 1:1 ratio to either 24 sessions of a twice-weekly hippotherapy or pharmacotherapy. To assess therapeutic effects, the ARS was used pre-treatment and post-treatment as the primary outcome measure. Secondary outcomes included the CBCL, Self-Esteem Scale (SES), PedsQL child and parent report version, Developmental Coordination Disorder Questionnaire (DCDQ), CGI-S, and quantitative electroencephalography (qEEG). Both groups showed marked improvements in ADHD symptoms, CGI-S. No significant differences between the 2 groups were detected regarding treatment outcome except thought problem subscales of CBCL; 12 weeks of hippotherapy improved attention, impulsivity/hyperactivity, and QOL. The authors concluded that the findings of this trial is promising, but further studies are needed to evaluate the long-term clinical effectiveness of hippotherapy.

Autism Spectrum Disorder (ASD):
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.

Trzmiel and colleagues (2019) noted that the multi-factorial nature of ASD is the reason why complementary and alternative methods of treatment are sought to support the classic approach. These researchers examined the effectiveness of EAAT in ASD patients based on a review of the literature. They carried out a review of the literature and a meta-analysis in accordance with PRISMA guidelines. PubMed, Cochrane Library, Web of Science, ClinicalTrials.gov and PEDro databases were searched until July 20, 2017. Only articles published in English, in a journal with a review process, after 1999, with a control group or presentation of comparative pre-/post-therapy results in ASD patients, and clear inclusion/exclusion criteria were considered. The methodological quality of the included studies was assessed using the Quality Assessment Tool for Quantitative Studies (QATQS); the meta-analysis of 3 studies was conducted. A total of 15 studies with 390 participants (aged 3 to 16 years) were included. The interaction between psychosocial functioning and EAAT was examined in most studies. Improvement was reported in the following domains: socialization, engagement, maladaptive behaviors, and shorter reaction time in problem-solving situations after EAAT. The meta-analysis revealed no statistically significant differences for the investigated effects. The authors concluded that despite the need for further, more standardized research, the results of the studies included in this review allowed the authors to conclude that EAAT may be a useful form of therapy in children with ASD. These researchers stated that it is impossible to draw universal conclusions due to the considerable discrepancies in therapeutic protocols and measurement instruments of the reviewed studies. Furthermore, longitudinal trials, with standardized EAAT protocols and representative large sample groups are necessary. Also, it is crucial to establish homogeneous tools to measure therapeutic progress and outcomes, especially with regard to social functioning. The authors stated that the 2 main drawbacks of this review were a relatively small sample size, which increased the risk of a calculation error, and differences in research methodology, which greatly hindered the comparison of the results.

Eating Disorders:
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.

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.

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.

PTSD:

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.

Shelef and colleagues (2019) noted that EAT that includes THR, grooming, horsemanship and ground level work with horses, has been studied as treatment for children with special needs and/or ASD. Preliminary evidence indicated that EAT is also effective for improving self-efficacy and self-esteem in adults with psychiatric disorders. Empowerment, bonding and building trust with the horses, may promote functioning of patients struggling with PTSD. These researchers performed a prospective, open, case-series, pilot study to examine the effect of EAT on patients with PTSD in terms of symptoms and functioning in work, family and social interaction. Patients with PTSD received EAT once-weekly for 3 consecutive hours for 6 months. The Short Post Traumatic Stress Disorder Rating Interview (SPRINT) and the Sheehan Disability Scale (SDS) were assessed at baseline, the SDS after 1 and 6 months, and the SPRINT after 6 months; and 13 of 23 subjects completed the study; 10 subjects withdrew from the study for various reasons including discomfort from horses. Total SPRINT scores showed a statistically significant improvement in PTSD symptoms (baseline versus 6 months: 24.38 ± 6.4 versus 21.54 ± 7.94 points; $p < 0.05$). SPRINT scores indicated improvement in the ability to work and perform daily tasks (p

< 0.05). A statistically significant improvement in the total SDS score was revealed following 1 month (p < 0.03) and after 6 months (p < 0.02) of EAT. There was also a significant decline in the days of inefficiency (baseline versus 6 months: 4.15 ± 2.73 versus 1.88 ± 2.18 days per week, p < 0.02). The authors concluded that the findings of this preliminary, open, case-series, pilot study suggested that EAT may be a beneficial treatment for patients suffering from PTSD. The study demonstrated improved ability to work and perform daily tasks and reduction in the number of days of inefficiency. These researchers stated that further large-scale, long-term studies are needed to substantiate their observation.

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 retractions, 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, 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.

Eye Movement Desensitization and Reprocessing (EMDR) Therapy- Please see our policy #MP-065 Eye Movement Desensitization and Reprocessing (EMDR) Therapy

Depression:
Ostacoli and colleagues (2018) in a non-inferiority, single-blind RCT examined the efficacy of EMDR in addition to anti-depressant medication (ADM) in treating recurrent depression. They compared EMDR or CBT as adjunctive treatments to ADM. A total of 82 patients were randomized with a 1:1 ratio to the EMDR group (n = 40) or CBT group (n = 42); 66 patients, 31 in the EMDR group and 35 in the CBT group, were included in the completers analysis. Participants received a total of 15 ± 3 individual sessions of EMDR or CBT, both in addition to ADM. They were followed up at 6 months. Main outcome measure was rate of depressive symptoms remission in both groups, as measured by a BDI-II score of less than 13. A total of 66 patients were analyzed as completers (31 EMDR versus 35 CBT). No significant difference between the 2 groups was found either at the end of the interventions (71% EMDR versus 48.7% CBT) or at the 6-month follow-up (54.8% EMDR versus 42.9% CBT). A RM-ANOVA on BDI-II scores showed similar reductions over time in both groups [F(6,59) = 22.501, p < 0.001] and a significant interaction effect between time and group [F(6,59) = 3.357, p = 0.006], with lower BDI-II scores in the EMDR group at T1 [mean difference = -7.309 (95% CI: -12.811 to -1.806]), p = 0.010]. The RM-ANOVA on secondary outcome measures showed similar improvement over time in both groups [F(14,51) = 8.202, p < 0.001], with no significant differences between groups [F(614,51) = 0.642, p = 0.817]. The authors concluded that although these results can be considered preliminary only, the findings of this study suggested that EMDR could be a viable and effective treatment for reducing depressive symptoms and improving the QOL of patients with recurrent depression. This study had several drawbacks. First, the number of patients treated with EMDR and CBT included in the study was not large. As this was the first study attempting to investigate the non-inferiority of EMDR compared with CBT, it was possible that

actual differences between the 2 groups were not revealed due to the design and sample size of the study; future superiority clinical trials are needed to broaden this investigation. Moreover, in this study a self-report measure (BDI-II) was used as the primary outcome measure. Future studies should also include a clinician report measure administered by an independent rater in order to overcome this limitation. Second, the 6-month follow-up evaluation was not long enough to examine the recurrence rate of subsequent depressive episodes. Thus, longer follow-ups (e.g., at 1 year or longer) are needed in order to identify possible differences between the 2 interventions in reducing the risk of recurrence of depressive episodes. The final limitation was the inclusion of intention-to-treat analysis for the primary outcome only.

In an experimental, case-series study, Wood and associates (2018) tested the feasibility of EMDR for the treatment of patients with long-term depression. A total of 13 people with recurrent and/or long-term depression were recruited from primary care mental health services and given standard protocol EMDR for a maximum of 20 sessions. Levels of depression were measured before and after treatment and at follow-up, clients also rated their mood each day; 8 people engaged with the treatment; 7 of these had clinically significant and statistically reliable improvement on the Hamilton Rating Scale for Depression. Daily mood ratings were highly variable both during baseline and intervention. The authors concluded that EMDR is a feasible treatment for depression; it has the potential to be a treatment for long-term depression. Moreover, they stated that research on treatment efficacy and effectiveness is now needed. This study had several drawbacks. First, this was a feasibility study involving a case series (n = 8 who received EMDR) without a control group and therefore did not aim to establish efficacy. Second, as all the participants received EMDR, the evaluators were not blind to treatment. Finally, the use of a predictive baseline and continuous measurement sought to partially control for the passage of time. The length of the baseline period was determined by how quickly a therapist became available and was not randomized. This meant it was not a true experimental design, but it was considered clinically more appropriate.

In a randomized study, Jahanfar and colleagues (2020) examined the efficacy of eye EMDR on the QOL in patients with MDD. Subjects were patients who suffered from psychological trauma and were currently in a major depressive episode and had a history of depression. A total of 70 patients with MDD were selected through convenience sampling. Patients were then assigned to 2 groups of intervention and control (35 patients in each group). The assignment was performed randomly. For the intervention group, EMDR were performed in eight 90-min sessions over 3 weeks. For the control group, no intervention was considered. Data on the QOL were collected using the WHO Quality of Life-BREF instrument before and after the treatment, and analyzed using descriptive tests, paired t-test, independent t-test, and chi-square with SPSS v19. This study showed that the QOL in all its domains (physical health, psychological health, social relationships and environments) was significantly improved in patients with MDD in the intervention group after 8 sessions of EMDR. The post-treatment effect for the EMDR condition was 2.11, with a CI of 1.3 to 2.7. Another finding of this study was that there was a statistically significant difference in the QOL scores in patients in the control group before and after the treatment; however, the mean difference in the intervention group was more than the control. The authors concluded that the findings of this study showed that EMDR was effective on the QOL in patients with MDD, and improved individuals' QOL and all its domains. These researchers stated that treatment team members may use this technique as an effective and supportive one to improve the QOL in patients. The authors stated that one main drawback of this study was that all patients used drug therapy that might have influenced the results of the study, which was not under the researcher’s control. Another limitation was that they could not evaluate affective/trauma symptoms.

Pain:

In a case series from 2008, Schneider et al) assessed EMDR therapy for patients with chronic phantom limb pain (PLP). A total of 5 subjects with PLP ranging from 1 to 16 years were included in this study. All patients were on extensive medication regimens prior to EMDR therapy; 3 to 15 sessions of EMDR were used to treat the pain and the psychological ramifications. Patients were measured for continued use of medications, pain intensity/frequency, psychological trauma, and depression. Treatment with EMDR resulted in a significant decrease or elimination of PLP, reduction in depression and PTSD symptoms to sub-clinical levels, and significant reduction or elimination of medications related to the PLP and nociceptive pain at long-term follow-up. The authors concluded that the overview and long-term follow-up indicate that EMDR therapy was successful in the treatment of both PLP and the psychological consequences of amputation. The latter include issues of personal loss, grief, self-image, and social adjustment. These results suggest that a significant aspect of PLP is the physiological memory storage of the nociceptive pain sensations experienced at the time of the event, and these memories can be successfully reprocessed. They stated that further research is needed to explore the theoretical and treatment implications of this information-processing approach.

de Roos et al in 2010 examined if a psychological treatment directed at processing the emotional and somatosensory memories associated with amputation reduces PLP. A total of 10 consecutive participants (6 men and 4 women) with chronic PLP after leg amputation were treated with EMDR. Pain intensity was assessed during a 2-week period before and after treatment (mean number of sessions = 5.9), and at short-term (3 months) and long-term (mean of 2.8 years) follow-up. Multi-variate ANOVA for repeated measures revealed an overall time effect ($F[2, 8] = 6.7$; $p < 0.02$) for pain intensity. Pair-wise comparison showed a significant decrease in mean pain score before and after treatment ($p = 0.00$), which was maintained 3 months later. All but 2 subjects improved and 4 were considered to be completely pain-free at 3 months follow-up. Of the 6 subjects available at long-term follow-up (mean of 2.8 years), 3 were pain-free and 2 had reduced pain intensity. The authors concluded that these preliminary results suggested that, following a psychological intervention focused on trauma or pain-related memories, substantial long-term reduction of chronic PLP can be achieved. However, they stated that larger outcome studies are needed.

Tesarz and colleagues in 2014 systematically reviewed the evidence regarding the effects of EMDR therapy for treating chronic pain. All studies using EMDR for treating chronic pain were eligible for inclusion in the present study. The main outcomes were pain intensity, disability, and negative mood (depression and anxiety). The effects were described as standardized mean differences. A total of 2 controlled trials with a total of 80 subjects and 10 observational studies with 116 subjects met the inclusion criteria. All of these studies assessed pain intensity. In addition, 5 studies measured disability, 8 studies depression, and 5 studies anxiety. Controlled trials demonstrated significant improvements in pain intensity with high effect sizes (Hedges' g: -6.87 [95% confidence interval (CI95): -8.51 to -5.23] and -1.12 [CI95 : -1.82 to -0.42]). The pre-treatment/post-treatment effect size calculations of the observational studies revealed that the effect sizes varied considerably, ranging from Hedges' g values of -0.24 (CI95 : -0.88 to 0.40) to -5.86 (CI95 : -10.12 to -1.60) for reductions in pain intensity, -0.34 (CI95 : -1.27 to 0.59) to -3.69 (CI95 : -24.66 to 17.28) for improvements in disability, -0.57 (CI95 : -1.47 to 0.32) to -1.47 (CI95 : -3.18 to 0.25) for improvements in depressive symptoms, and -0.59 (CI95 : -1.05 to 0.13) to -1.10 (CI95 : -2.68 to 0.48) for anxiety. Follow-up assessments showed maintained improvements; no adverse events were reported. The authors concluded that although these findings suggested that EMDR may be a safe and promising treatment option in chronic pain conditions, the small number of high-quality studies led to insufficient evidence for definite treatment recommendations.

In a RCT from 2016, Maroufi et al (2016) examined the effectiveness of EMDR for post-operative pain management in adolescents. A total of 56 adolescent surgical patients aged between 12 to 18 years were allocated to gender-balanced EMDR (treatment) or non-EMDR (control) groups. Pain was measured using the Wong-Baker FACES Pain Rating Scale (WBFS) before and after the intervention (or non-intervention for the control group). A Wilcoxon signed-rank test demonstrated that the EMDR group experienced a significant reduction in pain intensity after treatment intervention, whereas the control group did not. Additionally, a Mann-Whitney U-test showed that, while there was no significant difference between the 2 groups at time 1, there was a significant difference in pain intensity between the 2 groups at time 2, with the EMDR group experiencing lower levels of pain. The authors concluded that these findings suggested that EMDR may be an effective treatment modality for post-operative pain. These preliminary findings need to be validated by well-designed studies.

In 2016, a randomized, controlled pilot study Gerhardt and colleagues estimated preliminary effectiveness of a pain-focused EMDR intervention for the treatment of non-specific CBP. A total of 40 non-specific CBP (nsCBP) patients reporting previous experiences of psychological trauma were consecutively recruited from outpatient tertiary care pain centers. The intervention group received 10 sessions standardized pain-focused EMDR in addition to TAU. The control group received TAU alone. The primary outcome was preliminary effectiveness, measured by pain intensity, disability, and treatment satisfaction from the patients' perspective. Clinical relevance of changes was determined according to the established recommendations. Evaluation on individual patient basis showed that about 50% of the patients in the intervention group improved clinically relevant and also rated their situation as clinically satisfactory improved, compared to 0 patients in the control group. The authors concluded that there is preliminary evidence that pain-focused EMDR might be useful for nsCBP patients with previous experiences of psychological trauma, with benefits for pain intensity maintained over 6 months. They stated that these findings are promising because the treatment appeared to meet patients' success criteria and clinically relevant changes were suggested for 50% of the treated patients. However, they noted that due to the pilot study design, results should be interpreted with caution. In the next step, a methodologically more stringent RCT on EMDR in nsCBP-t with an appropriate sample size and a psychosocial comparator intervention is needed to confirm these findings. This study had several drawbacks, as common for pilot studies, the study was not sufficiently powered for confirmatory decisions about the effectiveness of EMDR in nsCBP-t patients. Moreover, EMDR was not compared to other psychotherapeutic treatments. However, these drawbacks were accepted fitting with the proof-of-concept pilot RCT design that was not confirmatory; but aimed at a first impression of potential effects of EMDR in nsCBP-t. Thus, these preliminary findings considering EMDR in nsCBP-t have to be replicated with larger, methodological, and more stringent trials.

Nia and colleagues in 2018 stated that previous studies reported the reduction of pain following EMDR and guided imagery; however, the effectiveness of these modalities was not compared. In a RCT, these researchers compared the effects of EMDR and guided imagery on pain severity in patients with rheumatoid arthritis (RA). A total of 75 patients were selected using non-random method, and then allocated into 2 intervention groups and 1 control group. Interventions were conducted individually in 6 consecutive sessions for the intervention groups. A significant difference was observed in the mean pain score between EMDR and guided imagery groups, and also between each intervention group and the control group ($p = 0.001$). The authors concluded that guided imagery and EMDR could reduce pain in RA, but pain reduction was more following the EMDR than guided imagery. These researchers stated that given that the simplicity, cost-effectiveness, and non-aggressiveness of such interventions, healthcare workers might consider these interventions once the approval of their effectiveness is provided. The authors stated that although the findings of this study indicated pain reduction in patients

with RA following EMDR and guided imagery interventions, this study was associated with several drawbacks that should be considered in the generalization of finding. First, the severity of pain in patients with RA in remission phase may be less than in patients with RA in the relapsing phase of the disease. Thus, it was recommended to examine the effect of these interventions on the severity of pain in patients with RA in the relapsing phase. Second, subjects of this study were selected using non-random sampling or convenience method due to the limited study population, so random sampling method was impossible, and the sample size of this study was small (n = 75). These investigators stated that further investigation with larger sample size and random sampling method was suggested to examine the effects of these interventions.

Psychosis:

Adams and colleagues in 2020 examined the evidence for EMDR as a treatment for psychosis, focusing on the safety, effectiveness and acceptability of this intervention for this population. A total of 6 studies met the inclusion criteria (1 RCT, 2 pilot studies, 2 case series and 1 case report). Across the studies EMDR was associated with reductions in delusional and negative symptoms, mental health service and medication use. Evidence for reductions in auditory hallucinations and paranoid thinking was mixed. No AEs were reported, although initial increases in psychotic symptoms were observed in 2 studies. Average drop-out rates across the studies were comparable to other trauma-focused treatments for PTSD. The acceptability of EMDR was not adequately measured or reported. The authors concluded that EMDR appeared a safe and feasible intervention for people with psychosis. The evidence is currently insufficient to determine the effectiveness and acceptability of the intervention for this population. These researchers stated that larger confirmative trials are needed to form more robust conclusions. The authors stated that this study had several drawbacks. This was the 1st systematic review that examined the evidence of EMDR as a treatment for psychosis. It was important to note that the populations and focus of EMDR varied amongst the studies; 4 of the studies focused on assessing the safety of using EMDR when treating PTSD in people with a psychotic disorder. For these studies, it was difficult to determine if EMDR was directly responsible for the reduction in psychotic symptoms, or if it was the reduction in PTSD symptoms that caused subsequent reductions in psychotic symptoms. Furthermore, the 2 studies evaluating EMDR for the treatment of individuals with psychosis without a co-morbid PTSD were able to provide preliminary results that EMDR could be a useful treatment for psychosis, but these studies were of lower quality.

Schizophrenia:

In 2018 Yasar and colleagues stated that being exposed to traumatic experiences is rather common in patients with schizophrenia. Adverse experiences may induce the onset of psychotic symptoms or trigger current symptoms to be exacerbated. In this single-case study, these investigators discussed EMDR treatment process and course of psychiatric state in a patient with history of child hood abuse and forced psychiatric residency. The patient had a diagnosis of schizophrenia for 8 years and was treated with anti-psychotic treatment as well as 2 sessions of EMDR, and as a result, a positive change was observed in her general clinical course. The authors concluded that their thoughts on this phenomenon were that EMDR treatment was a safe, effective, and short-term intervention in the co-morbidity of PTSD and psychotic disorders. However, the literature regarding the place of EMDR in the treatment of schizophrenia is rather limited and much more research is needed.

Tinnitus:

Rikkert and associates examined the effectiveness of EMDR in reducing tinnitus distress in a 2018 study. This study consisted of 35 adults with high levels of chronic tinnitus distress from 5 general hospitals in the Netherlands; subjects served as their own controls. After pre-assessment (T1), subjects waited for a period of 3 months, after which they were assessed again (T2) before they received six 90-min

manualized EMDR treatment sessions in which tinnitus-related traumatic or stressful events were the focus of treatment. Repeated measures analysis of variance revealed significant improvement after EMDR treatment on the primary outcome, Tinnitus Functional Index (TFI). Compared to the waiting-list condition, scores significantly decreased in EMDR treatment [$t(34) = -4.25$, $p < 0.001$, Cohen's $dz = 0.72$]. Secondary outcomes, Mini-TQ and SCL-90, also decreased significantly. The treatment effects remained stable at 3 months' follow-up. No adverse events (AEs) or side effects were noted in this trial. The authors concluded that this was the first study to suggest that EMDR was effective in reducing tinnitus distress; they stated that RCTs are needed.

A prospective, single-site, interventional clinical trial, Phillips and colleagues in 2019 examined the effectiveness of EMDR for the treatment of tinnitus. Subjects were provided with tEMDR, which was a bespoke EMDR protocol that was developed specifically to treat individuals with tinnitus. Subjects received a maximum of 10 sessions of tEMDR. Outcome measures including tinnitus questionnaires and mood questionnaires were recorded at baseline, discharge, and at 6 months post-discharge. Tinnitus Handicap Inventory (THI) and Beck Depression Inventory (BDI) scores demonstrated a statistically significant improvement at discharge following EMDR intervention ($p = 0.0005$ and $p = 0.0098$, respectively); this improvement was maintained at 6 months post-discharge. There was also a moderate but not significant ($p = 0.0625$) improvement in Beck Anxiety Inventory (BAI) scores. The authors concluded that this study has demonstrated that the provision of tEMDR has resulted in a clinically and statistically significant improvement in tinnitus symptoms in the majority of subjects who participated. Furthermore, the treatment effect was maintained at 6 months after treatment ceased. This study was of particular interest, as the study protocol was designed to be purposefully inclusive of a diverse range of tinnitus patients. However, as a small uncontrolled study, these results did not consider the significant effects of placebo and therapist interaction. These researchers stated that larger high-quality studies are needed to validate these preliminary findings.

Hypnotherapy

There are few, if any, carefully designed studies on the use of hypnotherapy in the treatment of mental health problems (Kirsch et al, 1995; Mamtani and Cimino, 2002). Based on the current research literature, there is insufficient evidence to support the use of hypnosis in the treatment of psychiatric and psychological disorders, such as depression and anxiety. Furthermore, there also has been no experimental validation of the effectiveness of hypnosis in controlling the symptoms of attention deficit disorder (Baumgartel, 1999).

Laughter Therapy

Mora-Ripoll (2011) noted that scientific research has shown that laughter may have both preventive and therapeutic values. Health-related benefits of laughter are mainly reported from spontaneous laughter interventional studies. While the human mind can make a distinction between simulated and spontaneous laughter, the human body cannot. Either way health-related outcomes are deemed to be produced. Simulated laughter is thus a relatively under-researched treatment modality with potential health benefits. The aim of this review was firstly to identify, critically evaluate and summarize the laughter literature; secondly to assess to which extent simulated laughter health-related benefits are currently sustained by empirical evidence; and lastly to provide recommendations and future directions for further research. A comprehensive laughter literature search was performed. A list of inclusion and exclusion criteria was identified. Thematic analysis was applied to summarize laughter health-related outcomes, relationships, and general robustness. Laughter has shown different physiological and psychological benefits. Adverse effects are very limited and laughter is practically lacking in counter-indications. Despite the limited number of publications, there is some evidence to suggest that simulated laughter has also some effects on certain aspects of health, though further well-designed

research is warranted. The author concluded that simulated laughter techniques can be easily implemented in traditional clinical settings for health and patient care. Their effective use for therapeutic purposes needs to be learned, practiced, and developed as any other medical strategy. They stated that practical guidelines and further research are needed to help health care professionals (and others) implement laughter techniques in their health care portfolio.

Light Therapy

There is a lack of evidence for bright light therapy for indications many behavioral-related conditions. Systematic evidence reviews have failed to identify reliable evidence of LT for post-natal depression (Corral et al, 2000; Craig and Howard, 2008), pre-menstrual syndrome (Krasnik, 2005; Kwan and Onwude, 2006), non-seasonal depression (Tuunainen et al, 2004), sleep disorders in children (Montgomery and Dunne, 2006), sleep disorders in the elderly (Montgomery and Dennis, 2002), and sleep or behavioral disorders in dementia (Cohen-Mansfield, 2001; Forbes et al, 2014).

The American Psychiatric Association's Task Force reviewed the literature with regard to efficacy in major depressive disorder (MDD), as well as risk and benefits (Freeman et al, 2010). Literature searches included MEDLINE and PsycINFO reviews and manual reference searches; electronic searches were limited to English-language publications from 1965 to January 2010 (but manual searches were not restricted by language). Treatments were selected for this review on the basis of, published randomized controlled trials in MDD and widespread use with important clinical safety or public health significance relevant to psychiatric practice. The authors concluded that more rigorous and larger studies are recommended.

In a review on bright-light therapy (BLT) for the treatment of mood disorders, there is preliminary evidence for its effectiveness in chronic depression, antepartum depression, pre-menstrual depression, bipolar depression and disturbances of the sleep-wake cycle. However, the authors noted that data on the usefulness of BLT in non-seasonal depression are promising; further systematic studies are still needed.

Khan et al (2011) evaluated the current therapeutic options in the management of sleep disorders in visually impaired children to identify knowledge gaps and guide future research. Randomized and quasi-randomized clinical trials of therapeutic options (behavioral treatment, LT, melatonin, or hypnosedatives) used in participants aged 3 months to 18 years who had both a visual impairment and a sleep disorder were included. Independent extraction of articles was performed by 2 authors using pre-defined data fields, including quality of the therapeutic options, based on the Strength of Recommendation Taxonomy evidence-rating system. Two RCTs were retrieved for melatonin, with improved effect on sleep latency ($p = 0.019$ and $p < 0.05$, respectively). However, separate analysis for visual impairment was not conducted. No RCTs were retrieved for behavioral intervention, LT, or hypnosedatives. Three studies using behavioral therapy (2 case reports and 1 case series) anecdotally showed improvement in sleep habit. No improvement in sleep rhythm was observed with a case series applying LT as an intervention. The authors concluded that children with visual impairment and sleep disorders are a heterogeneous patient group, making diagnosis and treatment difficult. Randomized controlled trials on treatment options remain in their infancy, with a lack of evidence for appropriate therapeutic strategies. Trials across a range of selected diagnoses need to be conducted with adequate sample populations to differentiate the effectiveness of 4 different treatment modalities (namely, behavioral therapy, LT, melatonin, and hypnosedatives) as agents for improving sleep.

Janas-Kozik et al (2011) evaluated the effect of short time (6 weeks) BLT on depressive symptoms in female patients with the restrictive type of anorexia nervosa (AN-R). A total of 24 girls, aged 15 to 20 (mean of 17.4 +/- 1) years, diagnosed as AN-R, with concomitant depressive symptoms greater than or

equal to 17 points on the 21-item Hamilton Depression Rating Scale (HDRS) were studied. All girls received cognitive behavioral therapy. Among them, 12 were randomly assigned to additional treatment with BLT for 6 weeks (10,000 lux, 30 minutes daily). Both groups did not differ on baseline demographic and clinical parameters. The assessments of depression by means of HDRS and measuring of body mass index (BMI) were done weekly throughout the treatment. Improvement of depression was significantly greater in the group receiving BLT, with a significant difference between groups in depression intensity after 5 and 6 weeks. There was no difference in the increase of BMI between groups after 6 weeks, although such increase started earlier in patients treated with BLT. The authors concluded that these findings may suggest that BLT could be an effective non-pharmacological modality for the treatment of depression in patients with AN-R. Drawbacks of this study included: small sample size and 6 weeks of treatment may be an insufficient duration to draw the conclusion about the effectiveness of BLT.

Small sample size, and 6 weeks of treatment may be an insufficient duration to draw the conclusion about the effectiveness of BLT. Well-designed studies with longer follow-up are needed validate these findings.

Poon and colleagues (2012) stated that many patients diagnosed with bipolar disorder (BD) respond incompletely or unsatisfactorily to available treatments. Given the potentially devastating nature of this prevalent disorder, there is a pressing need to improve clinical care of such patients. These researchers performed a literature review of the research findings related to treatment-resistant BD reported through February 2012. Therapeutic trials for treatment-resistant bipolar mania are uncommon, and provided few promising leads other than the use of clozapine. Far more pressing challenges are the depressive-dysthymic-dysphoric-mixed phases of BD and long-term prophylaxis. Therapeutic trials for treatment-resistant bipolar depression have assessed anti-convulsants, modern anti-psychotics, glutamate [N-methyl-D-aspartate (NMDA)] antagonists, dopamine agonists, calcium-channel blockers, and thyroid hormones, as well as behavioral therapy, sleep deprivation, light therapy, electroconvulsive therapy (ECT), transcranial magnetic stimulation, and deep brain stimulation; all of which are promising but limited in effectiveness. Several innovative pharmacological treatments (an anti-cholinesterase, a glutamine antagonist, a calcium-channel blocker, triiodothyronine, olanzapine and topiramate), ECT, and cognitive-behavior therapy have some support for long-term treatment of resistant BD patients, but most of trials of these treatments have been methodologically limited. The authors concluded that most studies identified were small, involved supplementation of typically complex ongoing treatments, varied in controls, randomization, and blinding, usually involved brief follow-up, and lacked replication. Moreover, they stated that clearer criteria for defining and predicting treatment resistance in BD are needed, as well as improved trial design with better controls, assessment of specific clinical subgroups, and longer follow-up.

Dauphinais et al (2012) stated that treatment of BD often results in patients taking several drugs in an attempt to alleviate residual depressive symptoms, which can lead to an accumulation of side effects. New treatments for bipolar depression that do not increase the side effect burden are needed. One non-pharmacological treatment with few side effects, BLT, has been shown to be an effective therapy for seasonal affective disorder, yet has not been extensively studied for other forms of depression. In this study, a total of 44 adults with BD (depressed phase) were randomized to treatment with BLT, low-density or high-density negative ion generator for 8 weeks. The primary measure of effectiveness was the Structured Interview Guide for the Hamilton Depression Rating Scale with Atypical Depression Supplement (SIGH-ADS). The results showed no statistically significant differences between groups in any outcome measures at study end-point; adverse events, including switches into hypomania, were rare. The authors concluded that further research is needed to determine the effectiveness of BLT in this population.

In a Cochrane review, Forbes and colleagues (2014) examined the effectiveness of light therapy in improving cognition, activities of daily living (ADLs), sleep, challenging behavior, and psychiatric symptoms associated with dementia. All relevant RCTs were included in which light therapy, at any intensity and duration, was compared with a control group for the effect of improving cognition, ADLs, sleep, challenging behavior, and psychiatric symptoms associated with dementia (as well as institutionalization rates or cost of care). Included were people with dementia of any type and degree of severity. Statistically significant differences in outcomes between the treatment and control groups at the end of treatment and follow-up were examined. A total of 11 trials (13 articles) met the inclusion criteria. However, 3 of the studies could not be included in the analyses either because the reported data could not be used in the meta-analysis or these researchers were unable to retrieve the required data from the authors. This updated review found no effect of light therapy on cognitive function, sleep, challenging behavior (e.g., agitation), or psychiatric symptoms associated with dementia. Reduction in the development of ADL limitations was reported in 1 study, at 3 of 5 time points, and light therapy was found to have an effect after 6 weeks and 2 years but not after 1 year. The authors concluded that there is insufficient evidence to justify the use of bright light therapy in dementia. Moreover, they stated that further research should concentrate on replicating the suggested effect on ADLs, and establishing the biological mechanism for how light therapy improves these important outcomes.

Knapen et al (2014) examined retrospectively whether a single week of LT is as effective as 2 weeks, whether males and females respond differently, and whether there is an effect of expectations as assessed before treatment. A total of 83 women, and 25 men received either 1-week (n = 42) or 2 weeks (n = 66) of LT were included in 3 studies. Before LT, patients' expectations on therapy response were assessed. Depression severity was similar in both groups before treatment ($F(1,106) = 0.19$, non-significant) and decreased significantly during treatment (main effect "time" $F(2,105) = 176.7$, $p < 0.001$). The speed of therapy response differs significantly in treatment duration, in favor of 1 week ($F(2,105) = 3.2$, $p = 0.046$). A significant positive correlation between expectations and therapy response was found in women ($\rho = 0.243$, $p = 0.027$) and not in men ($\rho = -0.154$, non-significant). When expectation was added as a co-variate in the repeated-measures analysis it showed a positive effect of the level of expectation on the speed of therapy response ($F(2,104) = 4.1$, $p = 0.018$). The authors concluded that there is no difference between 1 and 2 weeks of LT in overall therapy outcome, but the speed of therapy response differed between 1 week LT and 2 weeks LT. Together with the significant correlation between expectations and therapy response in women, these investigators hypothesized that expectations play a role in the speed of therapy response.

Martensson et al (2015) stated that light therapy is an accepted treatment option, at least for SAD. These investigators evaluated treatment effects of bright white light (BWL) on the depressive symptoms in both SAD and non-seasonal depression. A total of 8 studies of SAD and 2 studies of non-seasonal depression met inclusion and quality criteria. Effects on SAD were estimated in 2 meta-analyses. In the first, week-by-week, BWL reached statistical significance only at 2 and 3 weeks of treatment (Standardized Mean Difference, SMD: -0.50 (confidence interval [CI]: 0.94 to -0.05); -0.31 (-0.59 to -0.03) respectively). The second meta-analysis, of end-point data only, showed a SMD of -0.54 (CI: -0.95 to -0.13), which indicated an advantage for BWL. No meta-analysis was performed for non-seasonal depression due to heterogeneity between studies. The authors concluded that most studies of BWL had considerable methodological problems, and the results of published meta-analyses were highly dependent on the study selection. They stated that even though quality criteria were introduced in the selection procedures of studies, when the results were carefully scrutinized, the evidence was not unequivocal.

Danilenko and Ivanova (2015) noted that studies comparing the effectiveness of dawn simulation to conventional bright light for the treatment of SAD (in parallel groups) have yielded conflicting results. This cross-over study investigated treatment outcomes and long-term treatment preference. A total of 40 winter depressives were treated for 1 week with bright light (4.300 lx for 30 to 45 mins shortly after awakening) or dawn simulation (gradually increasing light during the last 30 mins of sleep achieving 100 lx before alarm beep, with the dawn simulator placed closer to the open eyes for a further 15 mins: 250 lx). The depression level was self-rated using SIGH-SAD-SR. Depression scores reduced similarly following bright light and dawn simulation: for 43.8% and 42.2% (medians), respectively; effectiveness ratio was 23:17. The preference was also similar (21:19). Among those who preferred bright light, the most common reason was that they perceived the bright light to be more effective (19/21; it was more effective, p = 0.0096; this subgroup tended to have more severe depression) and ease of use (6/21). Among those who preferred the dawn simulator, the reasons were a more "natural" action (9/19), device compactness and/or time-saving (10/19) and in 4 cases where bright light caused eye-strain. The authors concluded that dawn simulation was similarly effective to bright light in the treatment of winter depression. They stated that patients with more severe depression tended to report greater improvement with bright light; in such cases, this would out-weigh the non-clinical advantages of dawn simulation.

Primal Therapy

The beginnings of Primal Therapy trace back to Charcot and follows the development of regressive therapy to the 70's when Janov's "Primal Scream" brought to lay people an awareness of past events that influence their "here and now lives". As people moved back to childhood experiences, some were finding their root traumas in the birth stages. Stanislov Grof's "Realms of the Human Unconscious" advances his concept of the four stages of birth (BPM I-IV), in which he describes the traumas in these stages and their spiritual counterpart as an important intersection between psychology and religion, culminating in release from guilt, permitting true forgiveness. Finally, the importance of the therapist being sensitive to all facets of the person when working with them and continuing work on their own growth and awareness emphasized.

In two legal findings, the courts had to decide whether medical insurance would pay for so-called primal therapy. The courts requested an evaluation as to whether primal therapy is recognized as a scientific therapeutic process. Ehebald et al examined the available literature and then came to the conclusion that primal therapy is not a valid therapeutic technique. They further emphasized that primal therapy is not a type of psychoanalytic therapy. In point of fact, primal therapy has seldom been discussed in the scientific psychotherapeutic literature. That is to say, there are no on-going reports of primal therapy's therapeutic results, no statistical studies and no follow-up studies. Most psychotherapists in the Federal Republic of Germany do not utilize so-called primal therapeutic processes, perceiving it as based on questionable theoretical premises and dangerous in practice. In conclusion, the authors questioned the efficacy of primal therapy and especially its use by laymen.

Sensory Integration Therapy (SIT)

Sensory integration refers to the process by which the brain organizes and interprets external stimuli such as touch, movement, body awareness, sight, sound and gravity. It has been postulated that certain behavioral and emotional problems result from the malfunctioning of this process. Sensory integration therapy (SIT) is a type of treatment usually performed by occupational therapists or physical therapists who provide various sensory stimulation to the patient, often in combination with and within the context of purposeful muscle activities, to improve how the brain processes and organizes sensory information. This type of therapy requires activities that consist of full body movements employing different kinds of equipment such as textured mitts, carpet squares, scooter boards, ramps, swings, and

bounce pads. It is believed that SIT does not teach higher level skills, but enhances the sensory processing abilities of the subject to acquire them.

Parham et al (2007) evaluated the validity of sensory integration outcomes research in relation to fidelity (faithfulness of intervention to underlying therapeutic principles). These investigators identified core sensory integration intervention elements through expert review and nominal group process. Elements were classified into structural (e.g., equipment used, therapist training) and therapeutic process categories. They analyzed 34 sensory integration intervention studies for consistency of intervention descriptions with these elements. They reported that most studies described structural elements related to therapeutic equipment and interveners' profession. Of the 10 process elements, only 1 (presentation of sensory opportunities) was addressed in all studies. Most studies described fewer than half of the process elements. Intervention descriptions in 35% of the studies were inconsistent with one process element, therapist-child collaboration. The authors concluded that the validity of sensory integration outcomes studies is threatened by weak fidelity in regard to therapeutic process. They stated that inferences regarding sensory integration effectiveness cannot be drawn with confidence until fidelity is adequately addressed in outcomes research.

Fazlioglu and Baran (2008) examined the effect of a SIT program on sensory problems of children with autism (according to DSM-IV criteria). Subjects were separated into 2 groups, each comprising 15 children aged 7 to 11 years. They were assessed initially on a checklist, Sensory Evaluation Form for Children with Autism, developed to evaluate sensory characteristics of children with autism, and at the end of the study, participants were assessed again on the checklist. Statistically significant differences between groups indicated that the sensory integration therapy program positively affected treated children. It is unclear whether these effects are clinically significant. The findings of this study need to be validated by more research.

In a systematic review, May-Benson and colleagues (2010) evaluated the literature on the effectiveness of SIT on the ability of children with difficulty processing and integrating sensory information to engage in desired occupations and applied these findings to occupational therapy practice. Results suggested the SIT may result in positive outcomes in sensory-motor skills and motor planning; socialization, attention, and behavioral regulation; reading-related skills; participation in active play; and achievement of individualized goals. Gross motor skills, self-esteem, and reading gains may be sustained from 3 months to 2 years. Findings may be limited by type II error because of small sample sizes, variable intervention dosage, lack of fidelity to intervention, and selection of outcomes that may not be meaningful to clients and families or may not change with amount of treatment provided. The authors stated that replication of findings with methodologically and theoretically sound studies is needed to support current findings.

Leong and colleagues (2015) noted that SIT is a controversial intervention that is widely used for people with disabilities. Systematic analysis was conducted on the outcomes of 17 single-case design studies on SIT for people with, or at-risk of, a developmental or learning disability, disorder or delay. An assessment of the quality of methodology of the studies found most used weak designs and poor methodology, with a tendency for higher quality studies to produce negative results. Based on limited comparative evidence, functional analysis-based interventions for challenging behavior were more effective than SIT. Overall, the studies did not provide convincing evidence for the effectiveness of SIT. Given the findings of the present review and other recent analyses it is advised that the use of SIT be limited to experimental contexts. Issues with the studies and possible improvements for future research were discussed including the need to employ designs that allow for adequate demonstration of experimental control.

Furthermore, a 2019 UpToDate review on “Evaluation and treatment of speech and language disorders in children” indicates that “Facilitated communication, auditory integration training (AIT), sensory integration (SI) therapy, and Fast ForWord® are examples of controversial practices that have not been validated in large, controlled trials”. “The research supporting the effectiveness of SI therapy in children with language-learning disorders is limited and inconclusive at best.”

Sodium Amobarbital Interview

Dysken et al reported on a double-blind, randomized, placebo-controlled study utilizing a within-subjects design on 20 hospitalized, psychiatric patients who participated in sodium amobarbital interviews to determine if the drug has a specific effect in eliciting clinically useful information. The patients selected had difficulty communicating with their primary therapists during the post-admission, diagnostic interviews. Two raters completed a Hamilton Depression Scale, a New Haven Schizophrenia Index, and a Brief Psychiatric Rating Scale after each interview. Although both the amobarbital and saline interviews were moderately useful in obtaining new information, we found no significant difference in the primary therapists' assessments of clinical usefulness. In addition, the drug interview did not uncover material that would aid in the differential diagnosis between depression and schizophrenia. There was, however, a significant negative correlation between the assessment of general usefulness and the time interval between admission and interviewing. We report our only exception, a case of catatonic schizophrenia, in which the patient responded specifically to the drug.

In 1999, Kavirajan revisited the amobarbital interview that has been a diagnostic and therapeutic tool for almost 70 years. Because safer alternatives, namely benzodiazepines, have become available over the past 30 years, its clinical use merits reexamination. Toward this end, the psychiatric literature on the amobarbital interview is reviewed. A Most of the literature demonstrating utility of the amobarbital interview consists of uncontrolled case series or case reports on a variety of clinical applications. One controlled study in patients with catatonia demonstrated clear superiority of amobarbital over placebo in promoting verbalization and alertness, but six other controlled studies using various doses in heterogeneous patient groups failed to find differences between this drug and placebo. Additional rigorous, controlled studies comparing amobarbital with placebo and with possible alternatives such as benzodiazepines in specific patient populations are needed to define the place of this agent in the psychiatric armamentarium.

The sodium amobarbital (amytal) (SA) interview is a technique that has been utilized in the treatment of a variety of disorders since its introduction in 1929. In 2012, Nichols et al, reviewed the history of SA, as well as summarized the literature published over the past two decades on the clinical applications of SA to provide readers with a foundation for the utility of this agent, as well as the sodium amytal interview (SAI) in neurorehabilitation clinical practice. Special emphasis was placed on the use of the SAI in individuals with functional disorders that may be seen in the neurorehabilitation setting, as well as various classes of pain disorders. Since that time, there has been an assortment of research conducted showing its value in both differential diagnosis and treatment of multiple conditions. Notwithstanding the substantive amount of experience with the technique and its application to a myriad number of clinical conditions, it remains a seldom used procedure in clinical practice and certainly in neuro-rehabilitation.

Wilderness Programs/Adventure Therapy

Mutz and Muller (2016) examined potential mental health benefits of outdoor and adventure education programs. It is argued that experiences made in successful programs can increase self-efficacy, mindfulness and subjective well-being. Furthermore, programs may reduce feelings of time pressure and mental stress amongst participants. Evidence comes from 2 pilot studies: In the school project

"Crossing the Alps" (Study 1), 14-year old participants reported an increase in life satisfaction, mindfulness and a decrease in the Pediatric Sleep Questionnaire (PSQ) Subscale “demand” after a successful 9-day hike through the German, Austrian, and Italian Alps. In the university project "Friluftsliv" (Study 2) participants scored higher in life satisfaction, happiness, mindfulness, and self-efficacy and lower in perceived stress after having spent 8 days in the wilderness of the Norwegian Hardangervidda region, miles away from the next locality. The authors concluded that the findings suggested that outdoor education and wilderness programs can foster mental health in youths and young adults.

Applicable Coding

CPT Codes

90875	Individual psychophysiological therapy incorporating biofeedback training by any modality (face-to-face with the patient), with psychotherapy (eg, insight oriented, behavior modifying or supportive psychotherapy); 30 minutes
90876	Individual psychophysiological therapy incorporating biofeedback training by any modality (face-to-face with the patient), with psychotherapy (eg, insight oriented, behavior modifying or supportive psychotherapy); 45 minutes
90880	Hypnotherapy
90901	Biofeedback training by any modality
97014	Application of a modality to 1 or more areas; electrical stimulation (unattended)
97032	Application of a modality to 1 or more areas; electrical stimulation (manual), each 15 minutes
97039	Unlisted modality (specify type and time if constant attendance)
90899	Unlisted psychiatric service or procedure
97533	Sensory integrative techniques to enhance sensory processing and promote adaptive responses to environmental demands, direct (one-on-one) patient contact, each 15 minutes

HCPCS Codes

G0176	Activity therapy, such as music, dance, art or play therapies not for recreation, related to the care and treatment of patient's disabling mental health problems, per session (45 minutes or more)
S8940	Equestrian/hippotherapy, per session
T2036	Therapeutic camping, overnight, waiver; each session
T2037	Therapeutic camping, day, waiver; each session
E0746	Electromyography (EMG), biofeedback device

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