

Let's Have a Look See - Alternatives to Health Care for Children with Disabilities

Michael Ching, MD, MPH, FAAP
Jeffrey Okamoto, MD, FAAP

October 17, 2020

Disclaimer

- We have no financial relationships to disclose
- We will be discussing the off-label use of medications in this talk

Objectives

- Discuss non-medical/alternative treatments that the parents of children with disabilities are considering using to address their child's symptoms
- Be more aware of evidence regarding the efficacy of certain alternatives to traditional medical care, including CBD oil, neurofeedback, special diets, supplements, etc.

Objectives

- Get tips on evaluating whether alternative approaches are potentially harmful, helpful, or a waste of money.
- Know of at least one source for more evidence about the effectiveness of commonly used alternative treatments.

What Is Complementary and Alternative Medicine?

"group of diverse medical and health care systems, practices, and products that are not presently considered to be part of conventional medicine"

(www.nccam.nih.gov/health/whatiscam)

CAM Encompasses Many Practices

- Mind-body interventions
- Biologically based therapies
- Manipulative and Body-based practices
- Energy therapies
- Alternative medical systems

(NCCAM)

CAM Also Includes Western Medical Therapies

- Pharmaceutical (e.g., antifungals, secretin)
- Non-pharmaceutical (e.g., hyperbaric oxygen)

CAM Use is Common in Autism

- Estimates range from 39-95%
- Most common is Biologically Based Therapies (54%)
 - Modified diet (38%)
 - Vitamins/minerals (30%)
- Mind-Body (30%)
- Manipulation/body based methods (25%)
- Energy therapies 8%

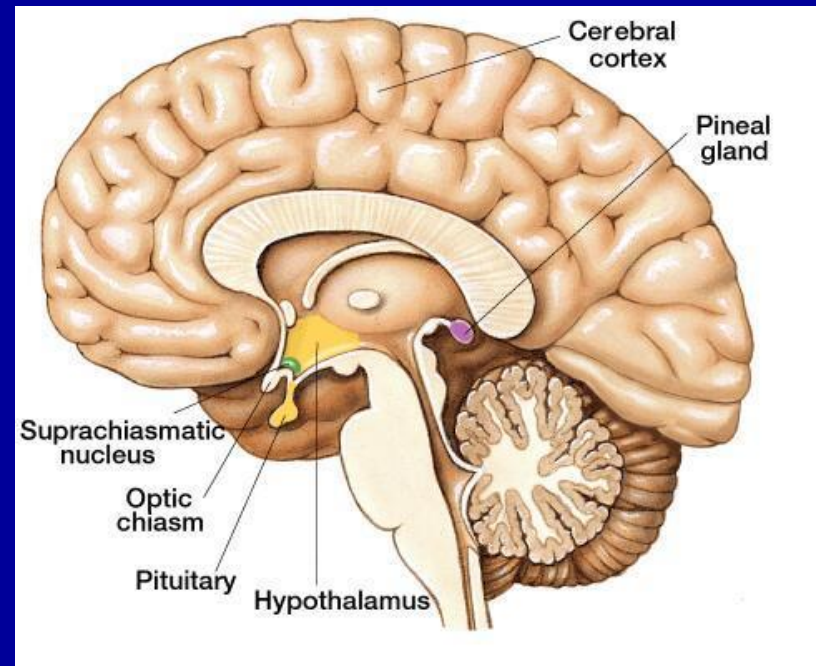
(Hanson et al., 2007, Akins et al., 2014)

Model for Evaluating CAM Therapy

	<i>Evidence for Efficacy</i>	<i>Conflicting or No Evidence</i>
<i>Safe</i>	Encourage	Tolerate, encourage objective monitoring
<i>Unsafe or Safety Unknown</i>	Monitor closely or discourage	Discourage

Melatonin

- Melatonin regulates circadian rhythms



Melatonin

- Children with ASD have abnormal sleep architecture
- Several small RCTs have shown efficacy of melatonin
- Melatonin improves:
 - Sleep onset latency (47 mins)
 - Total sleep (52 mins) (Wright 2011)

Melatonin

- Mild side effects including enuresis, morning somnolence
- Considered safe up to 7.5 mg with short and extended release forms (Shamseer 2009)
- **Safe, effective: Encourage where indicated by symptoms**

Vitamin C

- No recent studies investigating vitamin C as supplement
- Unproven suggestion that vitamin C might impact dopamine receptors
- 1993 double blind RCT (n=18) reported decreased stereotypy (Dolske)

Vitamin C

- Recent NEJM Clinical Case Record of 9 yo boy with autism who developed scurvy: "for the past month or two had consumed only toaster pastries and cola drinks, neither of which contain vitamin C" (Duggan 2007)
- Consider multivitamin if history indicates vitamin C deficiency
- **Safe, unknown efficacy: tolerate and monitor**

Multivitamin

- Case reports of vitamin deficiencies including vitamin A and D
- From a child with vitamin A deficiency who required corneal grafting:
- "...he was a picky eater who would eat only bacon and an occasional blueberry muffin and would drink only Kool Aid."
(Steinemann 1998)

Multivitamin

- Toxicity can result from combining supplements
- Office of Dietary Supplement fact sheets at <http://go.usa.gov/KHPR>
- iOS/Android “app”: <https://myds.nih.gov/>
- **Safe, unknown efficacy: tolerate and monitor**

Gluten and Casein Free Diet

- Opioid hypothesis--incomplete breakdown of gluten and casein leads to opioid-like peptides that cross blood brain barrier
- Studies examining gut permeability not conclusive
- Many studies but controlled studies limited; at least one trial underway (www.clinicaltrials.gov)

Gluten and Casein Free Diet

- Difficult to implement, risks may be financial and possibly medical (decreased bone density, Hediger 2008)
- **Safe, unknown efficacy: tolerate and monitor**

Cannabidiol (CBD)

- Endo-cannabinoids
- Synthetic cannabinoids (Marinol)
- Phyto-cannabinoids
 - Epidolex oral spray
 - Sativex oral spray
 - Commercial products from supplement industry

Cannabidiol (CBD)

- Work by suppressing neurotransmitter release
- Appetite
- Pain
- Cognition
- Neuro-excitability
- Reward
- Thermoregulation

Cannabidiol (CBD)

- Substantial evidence of effect in adults
 - Chronic pain in adults (cannabis)
 - Nausea and vomiting in chemo (oral)
 - Multiple sclerosis spasticity (oral)
- Moderate evidence
 - Sleep outcomes in sleep apnea, fibromyalgia, chronic pain, multiple sclerosis

Cannabidiol (CBD)

- FDA considers CBD a drug
 - It is illegal to market CBD as a dietary supplement ([2020](#))
 - FDA is beginning enforcement on health claims ([2020](#))
- It is unclear how “legal” CBD is in states with legalized recreational marijuana

Cannabidiol (CBD)

- Edibles
- Topicals
- Tinctures
- Vaping
- Dabbing

Cannabidiol (CBD)

- Edibles
- Topicals
- Tinctures
- Vaping
- Dabbing

Cannabidiol (CBD)

- How do the sourcing companies test for reliability?
- How do they test for contaminants?
- Can I have the phone number to call?
- Has it been tested by ConsumerLab.com?

Cannabidiol (CBD)

- Liver toxicity
- May increase or decrease effects of other medications
- Decrease in testicular size, sperm growth, testosterone

Cannabidiol (CBD)

- **Unknown safety, unknown efficacy:
tolerate and monitor**

Chelation

- Theory based on children with autism having sensitivity or impairment in elimination of certain heavy metals
- No association found between thimerosal or environmental mercury and autism (Thompson 2007, Gerber 2009, Hertz-Picciotto 2010, Ng 2007)

Chelation Evidence

- Chelation does not lead to recovery of neurocognitive function in lead ingestion (Rogan 2001)
- Rodent trials halted after no improvement seen in neurocognitive outcome (Mitka 2008)

Chelation Risks

- Industrial chemicals being marketed
- Stevens-Johnson, liver and kidney dysfunction, neutropenia, headache, paresthesias, neuralgia
- Three deaths between 2003-2005
- **Definitely Unsafe: Discourage**

Anti-fungal Agents

- Two brothers with urinary Krebs cycle metabolites (Shaw 1995)
- Hypothesized to be from bacterial or yeast overgrowth not causally related to autism
- No evidence for treating or testing for candidal overgrowth
- Alternative laboratories charge \$\$\$

Risks of Anti-fungal Agents

- Sudden cardiac death in long QT
- Stevens-Johnson syndrome
- Liver and bone marrow toxicity
- **Unsafe, efficacy unknown:
Discourage**

Probiotics

- Found in fermented foods like yogurt, kefir, tempeh
- No studies on core autism symptoms
- May affect GI symptoms, atopy
- Case reports of overwhelming infection in severe immunocompromise
- **Likely safe, unknown efficacy: Tolerate and monitor**

Omega-3 Fatty Acids

- Several small RCTs (total n=53)
- Possible improvement in hyperactivity and stereotypy (Amminger 2007, Bent 2010)
- Improved communication/social withdrawal (Yui 2012)
- No adverse effects
- **Safe, unknown efficacy: Tolerate and monitor**

Hyperbaric Oxygen Therapy

- Not shown to be effective in numerous CNS disorders (cerebral palsy, multiple sclerosis, ischemic stroke, traumatic brain injury)

HBO2T in ASD (Rossignol 2009)

- Multisite RCT with 62 children
- 1.3 atmospheres, 24% O₂ vs 1.03 atmospheres, 21% O₂
- Reported overall improvement in functioning

HBO2T in ASD (UHMS 2009)

- Undersea and Hyperbaric Medical Society analysis
 - 1.3 atmospheres is not actually HBO2T
 - Loss of data--reinterpretation showed non-significant difference
 - Conflict of interest

HBO2T in ASD

- Complications include barotrauma in 20%, reversible myopia, seizures in as many as 12% of CP patients
- **Possible safety concerns, no evidence of efficacy: Discourage**

Vitamin B6, Magnesium

- 3 RCTs (Nye 2005)
 - 2 demonstrated no change
 - 1 showed modest change in IQ but otherwise no changes
- Dose dependent neuropathy
- **Safe, inconclusive efficacy: tolerate and monitor**

Methyl B12, folic acid

- Hypothesis that oxidative damage causes autism
- Methyl B12 given as injections every 2-3 days
- Improvement in serum levels seen
- No behavioral improvement (Bertoglio 2010)

Dimethylglycine (DMG)

- Two double blind, placebo controlled RCTs showed no treatment effects
- **Safe, inconclusive efficacy: tolerate and monitor**

N-acetylcysteine

- Antioxidant/glutaminergic modulator
- Used for Tylenol overdoses
- One small pilot RCT (Hardan 2012)
- Reduced irritability
- **Safe, inconclusive efficacy: tolerate and monitor**

Manipulative and Body Based Practice

- Chiropractic
- Craniosacral
- Massage/therapeutic touch
- Acupuncture

Chiropractic

- Rationale unknown
- No published randomized studies
- Adverse effects include subarachnoid hemorrhage, quadriplegia, vertebral dislocation, missed medical diagnoses
- **Inconclusive safety and efficacy: discourage**

Other Body Based Practice:

- Craniosacral manipulation
- Massage and therapeutic touch
 - Thai massage (Piravej 2009)
 - Qigong massage (Silva 2011)
- Acupuncture
- **Safe, inconclusive efficacy: tolerate and monitor**

Music Therapy

- Individual therapy 1-4 weeks
- 3 Randomized, Placebo Controlled Trials
- Songs were based on a social story addressing a central problem behavior of the particular individual in treatment (Brownell 2002)
- They contained signs and words to be learned (Buday 1995)

Music Therapy

- They were used to build a relationship and to provide a safe and understandable structure (Farmer 2003)
 - Placebo typically spoken scripts of the stories or songs
- Cochrane 2006 review: superior to placebo for verbal and gestural communication skills (total n=24)
- **Safe, unknown efficacy: tolerate and monitor**

Yoga

- Only one study in PubMed, from *International Journal of Yoga* (Radhakrishna 2010)
 - 6 mothers and children
 - Five 45 minutes sessions per week for 10 months.
- Improved imitation behaviors
- Safety of yoga in other developmental conditions (e.g., ADHD)
- **Safe, unknown efficacy: tolerate and monitor**

Making CAM Choices

- Personal decision
- Nonjudgmental
- Facilitate discussion about evidence and risks
- Encourage families to use objective monitoring techniques
- Consider time, effort, finances

CAM Resources

- NIH-National Center for Complementary and Alternative Medicine (NCCAM)
- Autism Speaks CAM website:
 - <http://bit.ly/1jaDs9w>

Summary

- Autism is increasing in prevalence
- Autism is a neurological disorder with primarily genetic origins
- There are evidence based treatments including behavioral and medical treatments
- Complementary and alternative medicine treatments can have a role although evidence is often limited

Resources

- My slides and reference list are available online: <http://bit.ly/1mcmac5>