Facility Disclosure

Tieraona Low Dog, MD, has nothing to disclose

Learning Objectives

• Participants will be able to describe the definitional differences between conventional, integrative, complementary and alternative medicine.
• Participants will be able to discuss current recommendations for nutritional counseling by physicians.
• Participants will be able to discuss the evidence for two mind-body therapies on human health.
More Money, Shorter Lives, Poorer Health

- The five leading causes are heart disease, cancer, chronic lower respiratory diseases, stroke, and unintentional injuries
- Each year, nearly 900,000 Americans die prematurely from the five leading causes of death
- “Many of these risks are avoidable by making changes in personal behaviors.”

May 1, 2014 Centers for Disease Control

If the American public embraced a healthier lifestyle:
- Healthy nutrition
- Balance of exercise and rest
- Limited or no exposure to toxic chemicals
- No smoking, no or moderate alcohol consumption
- Stress management
- Social integration

93% of diabetes, 81% of heart attacks, 50% of strokes, and 36% of all cancers could be prevented.


The Future

- When reviewing the research in totality, it becomes increasingly clear that much of the modern burden of disease stems from lifestyle behaviors.
- Physician training must expand to incorporate more training in nutrition, exercise, environmental health, stress management, and motivational interviewing.
Children on ADHD Medication (2011-12)
Inattentive Presentation:
At least 6 of following:

• Fails to give close attention to details or makes careless mistakes.
• Has difficulty sustaining attention.
• Does not appear to listen.
• Struggles to follow through on instructions.
• Has difficulty with organization.
• Avoids or dislikes tasks requiring a lot of thinking.
• Loses things.
• Is easily distracted.
• Is forgetful in daily activities.

Hyperactive-Impulsive
At least 6 of following:

• Fidgets with hands or feet or squirms in chair.
• Has difficulty remaining seated.
• Runs about or climbs excessively in children; extreme restlessness in adults.
• Difficulty engaging in activities quietly.
• Acts as if driven by a motor; adults will often feel inside like they were driven by a motor.
• Talks excessively.
• Blurs out answers before questions have been completed.
• Difficulty waiting or taking turns.

Meds and ADHD

• 11% of school aged kids in US have ADHD diagnosis.
• 87% of children are prescribed medication, mostly methylphenidates (Ritalin) and amphetamines (such as Adderall). (15 have been approved for children)
• Meds can cause liver toxicity, weight loss, sleep problems, mood swings, and even thoughts of suicide. They can also interfere with growth.
• Between $320-$500 million spent annually in U.S. on medications for those inappropriately diagnosed ADHD.
Other Causes?

- Less effective parenting
- Everyone more stressed
- Higher demands on children
- Environmental toxins
- High carb, low nutrient diet, nutrient deficits

Children go to school after eating a bagel and orange juice, or sugary cereal, or pop-tarts—meals with no fat, no protein, and a high glycemic load.
- Blood sugar goes up and then comes crashing down. Stress hormones, poor focus, inability to concentrate result. Is this a surprise?

Iron Deficiency

- Iron deficiency remains common in young children (1-5 years) and women of reproductive age (12-49 years).
- Data from NHANES 2009-2010 showed low iron stores in 7% of children (ages 1-5) and 16% of women.
- Hispanic children greater risk for deficiency
- Iron deficiency increases risk of lead toxicity.
- DV of iron is 18 mg (pregnancy increases need)

http://www.ada.gov/individualnutrition/factsheet_nutrition.htm
Iron and Attention

- A 2010 meta-analysis in the Nutrition Journal that included 14 randomized controlled trials of children over the age of 6, adolescents, and adult women who had iron deficiency anemia found that iron supplementation improved attention, concentration, and IQ.
- Unusually low ferritin levels (mean: 18.4 ng/mL; 23% participants <7 ng/mL) in study of ADHD children in Iowa City explains the observed correlation with ADHD symptom scores.


Lead & Hyperactivity

- Low lead levels (<5 µg/dL) have been associated with inattentive and hyperactivity symptoms and learning difficulties in school-age children.


Pesticide Exposure and ADHD

- Pound for pound, children drink 2.5 times more water, eat 3-4 times more food, and breathe 2 times more air. They are exposed to more pesticide.
- Using data from NHANES - children with typical levels of pesticide exposure from eating pesticide-treated fruits/vegetables, have higher risk of developing ADHD.
- Children ages 8-15 with higher urinary levels of dimethyl alkylphosphate (DMAP), had twice the odds of ADHD when compared with children with low or undetectable levels.
- Organophosphate exposure, at levels common among US children, may contribute to ADHD prevalence.

“If we are going to live so intimately with these agricultural chemicals—eating and drinking them—taking them into the very marrow of our bones—we had better know something about their nature and their power.”

Rachel Carson
Silent Spring

• The consumption of an organic diet for one week significantly reduced OP pesticide exposure in adults as measured by urinary metabolites.
• Mean total OP metabolites in the organic phase were 89% lower than when participants were eating conventional foods.
• Similar results have been shown in children.


http://www.ewg.org/foodnews/
Meditation interventions are being increasingly implemented among youth in school, community, and clinic-based settings.

Review of 16 studies found that sitting meditation can be an effective intervention for psychosocial, and behavioral problems among children and adolescents.


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**Neurofeedback**

104 children (7-11 years) with ADHD randomly assigned to receive in school 40-session computer training intervention: neurofeedback, cognitive training, or control condition and evaluated six months post-intervention.

Neurofeedback participants made more prompt and greater improvements in ADHD symptoms, which were sustained at the 6-month follow-up. CT and control groups both had increased med dosing during follow up.


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**Nutrition Counseling**

Both Healthy People 2010 and U.S. Preventive Task Force identified the need for physicians to address nutrition with patients.

2010 objective was to increase to 75% the proportion of office visits that included ordering or providing diet counseling for patients with a diagnosis of CVD, HTN, or diabetes.

At midcourse review, the proportion actually declined from 42% to 40%.

The Questions are Endless

- Should my 4 year old eat fish? What kind?
- Should I give him cod liver oil? Will eliminating milk help eczema? What kind of probiotics should we use? Is organic produce really better? What is BPA?
- Should vegetarians take a multivitamin? How can I lose weight? Is juice okay for my 3 year old?
- How can I tell if something is “whole grain?”

Nutrition in the 21st Century

Rapid Increases in Adult Obesity in the U.S.
Reality Check

- Cutting back on processed, refined carbohydrates and sugary foods is one of the most practical and powerful things you can do to improve your dietary health.

Does Eating Fat Give You Heart Disease?

[Graph showing U.S. animal fat consumption]

Deaths from Diseases of the Heart

[Graph showing deaths from heart diseases in the United States from 1900 to 2003]

United States 1900-2003

Source: American Heart Association—CDC/NCHS
**Saturated Fat Debate**

- Three large meta analyses (21 studies, 12 studies, and 76 studies) have all failed to show any significant evidence that saturated fat increases the risk for heart disease.
- They also failed to find any significant evidence that increasing polyunsaturated fats and decreasing saturated fats lowers your heart risk.

References:

**WCRF/AICR Recommendations to Reduce Cancer Risk**

- Limit consumption of red meats (beef, pork, lamb) and avoid processed meats.
- Strive for less than 18 ounces per week of red meat.

**Meat and Dairy**

- Look for unprocessed, nitrite free, low sodium
  - Avoid lunchmeats, prepackaged smoked meats
- Look for certifications:
  - Animal Welfare Approved
  - Certified Humane
  - Global Animal Partnership
  - Food Alliance
- These certifications ensure animals were raised humanely, without growth hormones or antibiotics
HEALTHY PROTEIN SOURCES

- Soy and other legumes (lentils, beans, etc)
- Nuts and seeds
- Low mercury cold water fish
- Organic poultry
- Grass fed beef, pork, lamb
- Wild game
- Milk and dairy without hormones
- Omega 3 enriched eggs

Roughly 8 grams of protein per 20 pounds of body weight is generally recommended

Environmental Toxins Impact Us All

- 80,000 chemicals have been created since WWII; 2,800 are high production volume chemicals that exceed 1 million pounds/year.
- Less than 20% of these chemicals have been tested for their possible toxicity to children.

Unique Susceptibilities of Children

- Exploratory behavior
- Crawling
- Hand to mouth activity
- Restricted diet
- Teens – work, hobbies, high risk behaviors

Children differ physiologically:

- Still growing and developing
- Absorption, metabolism, and elimination differences
- Blood-brain barrier still forming in young infants
**Insecticides and Cancer**

- Meta-analysis of 16 studies found childhood exposure to indoor residential insecticides associated with a significant increased risk of childhood leukemia and lymphomas.
- Positive but not statistically significant association also found for childhood brain tumors.


**Integrated Pest Management**

- IPM focuses on nontoxic and less toxic methods to control pest problems.
- Benefits include: reducing number of pests, reducing number of pesticide applications, lower cost while protecting human health.
- IPM in schools has been recommended by the USDA, EPA, American Public Health Association, and National PTA.

www.epa.gov/managing-pests-schools/introduction-integrated-pest-management

**Mercury**

- Bacteria in water can transform inorganic mercury into bio-active, organic methyl mercury, which can then concentrate to very high levels in fish.
- US Geological Survey of 291 freshwater streams found 100% of larger fish positive for significant mercury levels. Walleye from lakes very high.
- Asian American and Native American women found to have higher levels of serum mercury.

Heavy Metals in Pregnancy

- Heavy metals cadmium, mercury, lead, and selenium readily cross the placental barrier.
- Inner city cohort found mercury cord RBC levels were 1.5 times greater than maternal RBC levels.
- Higher mercury levels associated with preterm births, low birth weight and lower IQ.
- Mercury exposure from both fish consumption and environmental contamination.


EWG Seafood Calculator

- Asks body weight, age, gender and if you have heart disease.
- Calculations based upon 4 ounce serving.
- Number of fish on right column is how many times you can eat per week if you eat no other seafood.

www.ewg.org/research/ewg-consumer-guide-seafood/seafood-calculator

Bisphenol A

- Bisphenol A (BPA) is a known endocrine disruptor.
- BPA associated with increases in developmental disorders of the brain and nervous system in animals.
- Associated with obesity, diabetes, and CVD in adults.
- Recent study found that higher levels of urinary BPA were associated with a higher odds of obesity (BMI >95%) and abnormal waist circumference-to-height ratio in children ages 6-18.
- There is some evidence that prenatal exposure to BPA decreases respiratory function and increases persistent wheeze in children.

Dental Sealants

- Resin-based dental sealants and composites contain a BPA derivative. Researchers examined urinary BPA measurements and oral examination data for 1,001 children aged 6 to 19 years from 2003-2004 NHANES.
- Children with 7 to 42 restorations had mean BPA concentrations 20% higher than those of children with no restorations, this did not reach statistical significance.


Canned Soup

- Researchers at the Harvard School of Public Health found that volunteers consuming one serving of canned soup each day for five days had a more than 1,000% increase in urinary BPA concentrations compared with when the same individuals consumed fresh soup daily for five days.


Ways to Limit Exposure

- Reduce use of canned foods.
- Eat fresh or frozen foods.
- Opt for glass packaging, especially for tomatoes.
- Don’t microwave plastic.
- Don’t store acidic foods in plastic. Use glass.
- Get rid of old/scratched plastic.
- Use BPA free water bottles.
- Powdered infant formula contains less BPA than liquid canned formula.
The U.S. Centers for Disease Control and Prevention (CDC) estimates that eliminating three risk factors - poor diet, inactivity, and smoking - would prevent:
- 80% of heart disease and stroke
- 80% of type 2 diabetes
- 40% of cancers

"Let food be your medicine and medicine your food" - Hippocrates

CAD is leading cause of death in US
CAD was considered primarily a lipid accumulation mediated disease; now shown to involve an ongoing inflammatory response.

Women’s Health Study: hs-CRP, Lipids, & Risk of Future CV Events

Quartile of TC: HDL-C
Quartile of hs-CRP

Source: NEJM 2000;342:836-843

Mediterranean Diet

- Lyon Diet Heart Study – there was a 72% reduction in having another heart attack during 4 years of follow-up in those who had a heart attack.
- In 2013, the PREDIMED trial showing a significant risk reduction in a low-risk population.

Exercise

- Men who run 1 hour or more per week reduce risk of heart disease by 42%.
- Studies suggest that active women have a 50% risk reduction in developing heart disease.
- Guidelines 60-90 minutes moderate exercise everyday if overweight.
A Nation on the Edge?

- According to CDC, 11% of Americans 12 and older take anti-depressant medications, a 400% increase from the 1980s, ~203 million prescriptions in 2011.
- In 2011, ~63 million prescriptions for Xanax and Ativan (Xanax #1 psychiatric medication).
- Prevalence anxiety disorders ages 9 - 17 is 13%.
- 1 in 8 adolescents suffer from depression.

NCDS Data Brief Number 76, October 2011

Drugging the Mind

- Drug companies have had remarkable success in making psychotropic drugs part of everyday life.
- In 2009, antipsychotics reigned as the top-selling class of all medications in the USA, generating $14.6 billion of revenue.
- Over-diagnosis and overtreatment of mental disorders is of particular concern because diagnostic decisions are based mostly on patient self-report, not on objective signs or laboratory tests.


Publication Bias?

- 74 FDA-registered studies, 31% not published.
- According to published literature, 94% of trials conducted were positive.
- By contrast, FDA analysis showed that only 51% were positive.

Turner, et al. NEJM 2008 Jan 17;358(3):252-60
Effectiveness Questioned

- The magnitude of benefit for antidepressant medication compared with placebo may be minimal or nonexistent, on average, in patients with mild or moderate symptoms.
- For patients with very severe depression, the benefit of medications over placebo is substantial.


Folate, B6 and B12

- In those over age 65, low levels of folate, B6 and B12 are associated with higher incidence of depression.
- 30 million Americans deficient in B6
- 18 million Americans deficient in B12
- Risk of vitamin B12 deficiency increases with age and in those:
  - Taking proton pump inhibitors or metformin
  - With gastric bypass surgery
  - With Crohn’s disease
  - Who are vegans

Psychotherapy

- 125 studies reviewed:
  - Interpersonal psychotherapy, cognitive behavior therapy, and behavior therapy are all effective for treating major depressive disorder (MDD)
  - "Psychological interventions are as efficacious as and more enduring than medications in the treatment of MDD..."
    - Hollon SD, et al. Depress Anxiety 2010; Sept 9

Exercise and Mental Health

- The relationship between physical activity and mental health has been widely investigated and has been shown to reduce the harmful effects of stressors when performed at moderate intensities.
- The overwhelming evidence present in the literature today suggests that exercise enhances successful brain functioning.
- 92 studies 4,310 participants for effect of physical activity on depression; 306 study effects with 10,735 participants for effect on anxiety concluded: physical activity reduces depression and anxiety.

Social Isolation and Health

- 148 studies on effects of social isolation on health found it is:
  - As bad as smoking 15 cigarettes a day.
  - As dangerous as being an alcoholic.
  - As harmful as never exercising.
  - Twice as dangerous as obesity.
Call it a clan, call it a network, call it a tribe, call it a family. Whatever you call it, whoever you are, you need one.

~ Jane Howard

“Only in the darkness, can we see the stars.”

~ Martin Luther King, Jr.

• In truth, there is a lot we can’t control in our lives, and there are often no easy fixes for the problems we face.
• Most of us were never given any tools to deal with the curve balls life throws at us.
• Having a purpose in life and positive affect may serve as a buffer against life challenges.


Mind Body Therapies

• Mind-body therapies are comprised of a variety of techniques with origins in Asian healing systems and Western psychological and medical therapies.
• They all are based upon a premise that inner directed experiential practice helps reduce tensions and stress originating in the mind and/or expressed in the body.
• Mind-body interventions, such as hypnosis, distraction and imagery, may be effective in managing procedure-related pain, anxiety, and distress in pediatric oncology.

Meditation practice is the deliberate self-regulation of attention in the present moment. Concentration, relaxation, altered states of consciousness, and maintenance of a self-observing attitude.

Science suggests it can be a powerful tool for attention, regulating emotion, and increasing self-awareness and the cultivation of mindfulness.

Meditation

Long-time meditators have greater activation of areas responsible for sustaining attention, processing empathy, integrating emotion and cognition, and perceiving the mental and emotional state of others.

Review of 47 trials found meditation improves:

- Anxiety
- Depression
- Pain


The Future

Chronic illness now affects more than 50% of the American population and for the first time in history, future generations of children will likely not live as long as their grandparents.

Without early intervention, the burden of chronic disease for both children and adults will continue to escalate dramatically over the coming decades.

An integrated approach is the only one that really makes sense……