From Moody To Manic: Childhood Mood Disorders

Scott Shannon, MD
January 30th, 2007
“I understand that by the time we’ve hit our teens we’ll have them pretty much where we want them.”
Agenda

- Introduction and Overview
- Escalating Rates in Children
- Stress-Diathesis Model
- Stress as the Trigger
- Inner Capacity and Nutrition
Agenda:

- Introduction and Overview
- Demographics
- The Mood Spectrum
- Evaluation and Diagnosis
- Treatment: Conventional and Complementary
- Controversies
- Summary and Discussion
Escalating Rates of Mental Illness in our Children

- Depression: debated existence to 25% in 25 years
- Autism: JAMA 1/1/03—10x rate of 1980’s
- Bipolar Disorder: Average of onset—32 to 19 in 30 years
- ADHD: 150,000 in 1975 to 2,500,000 now
- Suicide Rates: Tripled for young males in 40 years
The Cause of Mental Illness

- Stress-diathesis model
- Genetic Predisposition and environmental factors
- Impact of genetics, generally 20-40% or less
- Genetic influences change very little in a generation
Stress is the Trigger

- Dramatic escalation of stress, especially for children.
- Stress can be added demands (academics, social/commercial pressure, sexuality, societal tempo)
- Stress can be threats to safety and well-being (school violence, media violence, terrorism)
Stress is Half the Story

- Stress means increased demands and pressure
- We vary in how we respond to stress.
- Resilience is one aspect (psychological).
- Inner capacity is broader term.
- What enhances or erodes our ability to “digest” stress.
What Erodes Children’s Inner Capacity?

- Lack of sleep.
- Decreased emotional support—increased rate of divorce, frequent moves, loss of extended family, cultural vacuum, parental stress.
- Decreased free or downtime
- Poor nutrition.
- Obesity and lack of exercise.
- Spiritual erosion.
Enhancing Inner Capacity

- Environmental: Free time, lack of violence, harmony in the home.
- Physical: sleep, exercise, nutrition, supplementation.
- Mental: positive mental attitude, sense of control.
- Emotional: parental closeness and acceptance.
- Social: confiding, supportive friendships.
- Spiritual: intact belief system.
Childhood Depression: Demographics

- Incidence 5-8%
- Prevalence 10-20% (? 35% in young women)
- 60% of all teens contemplate suicide and 9% attempt it

Lewinsohn, J et al JAACAP 1999. 33:(6) 809-818

- “One in four kids will experience depression by age 18”
- “Earlier and more severe”

David Fassler, MD
Teenage Depression: An American Epidemic?

- WHO Study of Teen Depression 1997-98
- 29 countries
- 11 and 15 year olds studied
- Austria: lowest rates; Canada: middle
- USA highest in all categories
- USA also lead in teen headaches, stomachaches and use of meds

*WHO Report of Teen Depression 2002; 1:24-38*
Reasons for American Depression Epidemic

Speculation:

• Aggressive, sedentary, competitive culture
• Rising pessimism and poor work ethic
• Spiritual vacuum: materialism, etc.
• Family factors: moves, divorce, loss of extended family and traditions
• Nutritional issues: obesity; omega 3 oils and vitamin deficiency
The Mood Spectrum

- Grief, Sadness and Loss
- Adjustment Disorder
- Dysthymia
- Depression NOS
- Major Depression
- Bipolar Disorder
Illness versus Reaction

- Illness: intense, pervasive, sustained and debilitating
- To what extent do feelings and behavior interfere with the teen’s life and development?
- Look for significant sustained shift in many spheres
Mood Swings

- Bipolar Disorder
- Borderline PDO
- Substance Abuse
- Immature Affect Regulation = normal teen variant
- Brain Injury
Risk Factors

- Prior depression: recurrence as high as 50% in 4 years
- Family history: loading varies but clear risk (one parent = 2x risk, both parents = 4x risk)
- Gender: 0-12 boys > girls, by 18: girls = 2x boys
- Genetics-some but not most of risk (twin studies = 30-40% concordance)
Risk Factors

- Divorce
- Death of sibling
- Move
- Abuse-physical, sexual or emotional
Risk Factors

- Parental conflict
- Substance abuse in parents
- Substance abuse by the child/teen
- Poor social skills
Risk Factors

- ADHD or learning disability
- School performance problems
- Illness in family
- Inconsistent or unstable care giving
Presentation of Depression in Children

- Varies by age and cognitive development
- Internalizing disorder
- Varies by personality, temperament and situation
- Often difficult to diagnose
Presenting Symptoms

- Fall in school performance
- Sadness or hopelessness
- Low self-esteem
- Change in sleep patterns
- Loss of enjoyable activities
- Social isolation
- Fatigue or apathy
Presenting Symptoms

- Relationship struggles
- Irritability or explosive temper
- Behavior issues in school
- Lack of attention to appearance
- Morbid or suicidal thoughts
- Anti-social behavior
- Extreme sensitivity to rejection or failure
What makes depression in childhood different?

- Physiological immaturity
- Psychological and cognitive immaturity
- Neurological/neurochemical immaturity
- The variability of multiple developmental lines
- Metabolic vitality = energy level and hepatic metabolism
What makes depression in childhood different?

- Paucity of research
- Severity of diathesis (earlier = more severe)
- Incipient bipolar illness (32% per Geller)
- Disruption of developmental and educational progression
- Hidden family dynamics and abuse
Iatrogenic Causes

- Steroids
- Accutane (isotretinoin)
- Anti-convulsants
- Neuroleptics
- Stimulants
Don’t Forget Abuse

- Substance use and abuse: pot, alcohol and meth
- Sexual abuse
- Physical and emotional abuse
- Teen relationship battering
Treatment Options:

- Psychotherapy
- Medications
- Exercise
- Light
- Nutrition and Supplements
- Other
“It is difficult for me to think of a newly diagnosed case of childhood depression in which psychotherapy of some variety is not the centerpiece of care.”

Scott Shannon, MD  January, 30th, 2007
Psychotherapy Options

- **Individual**: CBT, Reflective/Dynamic, Supportive. Quality varies widely
- **Group**: Powerful in teens and greatly underutilized
- **Family**: Often crucial and missed
- **Key Techniques**: DBT (unstable mood) EMDR (trauma and anxiety)
Antidepressants and Suicide: Timing

- Suicide: 38 times more in first 9 days than 90 days later
- Suicidal behaviors: 4 times more in the first 9 days
- No differences between categories of medications
- Unclear if illness or medication risk

FDA Guidelines: Teens and Anti-Depressants

- Black Box Warning = Serous Informed Consent
- Discuss Suicidal Ideation and Akathisia
- Weekly Visits for 4 Weeks
- Then every 2 weeks for 4 visits
- More often if problems arise

www.fda.gov/cder/drug/antidepressant
Other Evidenced Based Approaches

- Saint John’s Wort
- SAMe
- Vitamin and Mineral combination
- Omega 3 EFAs
- 5 HTP
- B Vitamins
ST. JOHN’S WORT

- Common roadside plant in Colorado
- Traditional use for centuries
- Few side effects (headache, nausea, rash)
- Non-fatal in overdose
- Three to four week onset of action
- 900 mg per day in teens (600mg in am/300 mg in pm) Buy good product
ST. JOHN’S WORT

• 1996 metanalysis of 23 RCT’s in British Medical Journal: effective treatment for mild to moderate depression [Evidence level: A-RCT’s/metanalysis]

• Recent NIMH multi-site study: SJW ineffective for major depression. Zoloft also ineffective [E.L. : A-RCT]-serious flaws in design
ST. JOHN’S WORT

• SJW vs. Placebo in major depression: ineffective [E.L. : A-RCT]
• SJW vs. Paroxetine in major depression: SJW at least as effective [E.L. : A-RCT]
• SJW vs. Fluoxetine in major depression: SJW more effective [E.L. : A-RCT]
St. John’s Wort in Children

- 29 Children and adolescents: 6-16
- Major Depression by DSM-IV and scored over 40 on CDRS
- Open Label pilot study
- 4 weeks at 150 mg TID= 8 responders
- After 4 weeks dose: 300 mg TID=22 total
- Well tolerated, no variation in age response

Findling, R. Poster Session-AACAP Annual Mtg 2002
SAMe

- Naturally occurring compound
- Synthesized from methionine
- $B_{12}$ or folate deficiency equals less SAMe
- Central in methylation reactions
- Suggested efficacy in: depression, osteoarthritis, fibromyalgia, liver function and migraine headaches
SAMe in Depression

- 8 double blind studies vs. placebo
- 10 double blind studies vs. antidepressants
- Superior to placebo [Evidence level: A-RCTs]
- Comparable or more effective than antidepressants [Evidence level: A-RCTs]
- Faster (1-2 weeks)
- Better tolerated, fewer side effects
SAMe

- 200mg BID to 800mg BID
- Cost: .40 to $1.20 per pill ($24-72/month)
- Synergistic with conventional antidepressants
- Excellent for augmentation
- Avoid in patients with bipolar features or family history
Bipolar Children

- Rapid rise in rates
- Different form than found in adults
- Up to 90% comorbid with ADHD
- 80% rapid or continuous cycling
- Difficult to treat
- Severe lifelong morbidity
- Significantly increased mortality
Non Definitive Indicators: Rising Rates of PBD

- Clinical Observation and Case Loads
- Rising Public Interest
- Falling Age of Onset of adult BPD
- Increasing rates of polypharmacy in young children
- Increasing use of neuroleptics and mood stabilizers in young children
Diagnosis and PBD

- Lack of diagnostic clarity
- Lack of diagnostic appropriateness
- Expanding range of BP diagnosis - BP Spectrum
- High rates of co-morbidity
- Complex issue
The Diagnosis of Pediatric Bipolar Disorder

- Considerable controversy
- Suggestion of increased rates
- Increasingly recognized
- **Narrow** and **Broad** Phenotypes
- Most: **Broad** with no episodicity
- Most: fail to fit DSM criteria

Pavuluri, M  **PBD: Review of Past 10 Years**  2005  *JAACAP*  44(9): 846-871
Diagnostic Picture: PBD

- Marked irritability
- Rapid continuous cycling-mood lability
- Rages, explosive temper
- Impulsivity and hyperactivity
- Racing thoughts
- Aggressive behavior
- Sleep disturbance
- Hallucinations
- Hypersexuality
- Tics

Papalos and Papalos, *The Bipolar Child* 2001
At this time evidence is not sufficient to indicate that PBD is continuous with adult BD.

Harrington and Myatt, 2003
Biological Psychiatry 53: 961-969
The SAD Story

- SAD = Standard American Diet
- USDA—75% eat less than 2/3 of RDA for one or more nutrient.
- Only 1% meet food pyramid guidelines.
- Sugar and fat now account for over 65% of American’s calories.
- Combines with falling micronutrient content of foods—many minerals at 30-40% of 1930’s levels.
Vitamins and Minerals

- Many vitamins and minerals (B-1, B-6, B-12, folic acid, magnesium, zinc, etc.) are essential for neurotransmitter synthesis and neuronal function.
- Minerals can regulate membrane function (i.e. calcium channels) and neuronal excitability.
- The mineral lithium has a long tradition in psychiatry.
- Magnesium has been shown to be a mood stabilizer in high doses also.
Magnesium Status

- Magnesium deficiency is widespread
- A potential cause of many illnesses
- Over the last 70 years we have witnessed a dramatic decline in magnesium intake
- Stress and chronic sleep deprivation deplete total body stores
- Fruits and vegetables now have only a fraction of the magnesium content they did in the 1930’s

Magnesium: neurological properties

- Suppresses hippocampal kindling
- Reduces release of ACTH
- Alters access of corticosteroids across blood-brain barrier
- Dampens protein kinase C related neurological transmission
- Many functional similarities with Lithium in CNS

Feed Adjustment and Bipolar Kids

- A. Stephan—2 treatment resistant bipolar children
- 1996: animal nutrition specialist David Hardy
- Wild pigs don’t need meds they need “feed adjustment”
- Feed Adjustment—off psychiatric meds x 10 years.
- Created E.M. Power Plus
Bipolar Children

- 10 year old boy with bipolar disorder
- Symptom-free in 5 days on supplement
- 22 other bipolar patients (children, teens, adults)
- 19 improved, 10 of them markedly
- 11 stable for one year without medication

J. Clinical Psych. 62:12, Dec. 01, page 933 Charles Popper, MD
Case Series: Effective Mood Stabilization in Bipolar Disorder with Chelated Mineral Supplement

- 11 patients aged 29-46 years
- HAM-D—p<.01 improvement
- YMRS—p<.01 improvement
- BPRS—p<.05 improvement
- 2 year follow-up, effect size large (> .8)

Micronutrient Supplementation in Children—Case Studies

- 9 children—Mood/Anxiety/Disruptive Disorders
- CBCL, YMRS
- 8 weeks on EM Power Plus
- 6 scales on CBCL $p<.01$ improvement
- YMRS $p<.05$ improvement

E.M. Power Plus

- Vitamins: A, C, D, E, B1, B2, B3, B6, B9, B12
- Biotin, Pantothenic Acid, Calcium
- Iron, Phosphorous, Iodine, Magnesium
- Zinc, Selenium, Copper, Manganese
- Phenylalanine, Glutamine, Bioflavanoids
- Vanadium, Boron, Methionine, Germanium, Nickel
EFA’s and Children

- Omega-3 fats needed for EPA/DHA production
- DHA=essential building blocks of neuronal membranes
- Create stable, flexible neuronal membranes
- Brain is 60% fat
- Significant neuronal development occurs birth through early twenties.
EFA’s in Illness

Mounting evidence links Omega-3 deficiency in humans to:

- Depression
- Bipolar disorder
- Dyslexia
- ADHD—Severity of illness often proportionate to deficiency
Classification of Fats

- Saturated: all carbons have hydrogen, solid at room temperature. (animal fats, tropical oils)
- Mono unsaturated: One C-C double bond liquid, stable.
- Poly unsaturated: 2 or more double bonds.
- Omega number is location of first double bond. Linoleic=Omega-6, Linolenic=Omega-3
- Double bonds are Cis or Trans.
Omega-3 Fatty Acids
(e.g. flax seed oil, grasses, fish oils)

Alpha-Linolenic Acid (ALA)

Steridonic Acid

Eicosatraenoic Acid

EPA  DHA
(e.g. fish oils)

PGE3  LTB5
(anti-inflammatory)  (anti-inflammatory)
Reasons for EFA Imbalance

- Diet is high in Omega-6 and low in Omega-3 (previously 1:1 ratio, now 20:1)
- Hydrogenated oils
- Enzyme cofactor deficiency (B-3, B-6, Biotin, C, Zinc, Magnesium)
- Hyperinsulinism from high glycemic load diet (increase DGLA to AA)
- American breast milk low in DHA
- Genetic polymorphism (biochemical individuality)
Hydrogenated Oils

- Created in 1890.
- Increase shelf life of products.
- Prevents rancidity in liquid oils.
- Widely used in fast food, baked goods and processed foods.
- Average American now consumes many grams per day.
- 3% of typical calories.
“Hydrogenated oils represent a huge disaster. They are one of the worst things ever to happen in our food supply.”

Walter Willett, MD, Dr.P.H.
Chairman, Department of Nutrition
Professor of Medicine
Harvard Medical School
(Lecture 3/2/03)
Trans Fats

- Double bonds are scrambled (cis to trans)
- Creates new fatty acids never found in nature
- Destroys Alpha Linolenic Acid (ALA-Omega-3 precursor)
- Direct damage to endothelial function
- Increases insulin resistance
Mood Disorders and Omega-3 EFA’s

- Effective augmentation for bipolar patients
  

- Effective augmentation for major depression
  
  *(Nemets: Am. J. Psych. 2002: 159 (3) 477-9)*

- Effective Treatment for Borderline P.D.O.
  

- Inverse correlation worldwide between fish consumption and major depression
  
  *(Hibbeln: Lancet 1998; 351:1213)*

- Depressed Children Respond to Omega-3 EFAs

  Controlled, randomized DB trial: 7/10 active respond vs 0/10 control.

  *(Am J Psychiatry 2006;163:1098-0)*
“Dr. Shannon are you encouraging me to treat bipolar disorder with vitamins, minerals and EFA’s based on a few studies?”

“No, I would like you to consider that some/all of PBD may represent a nutritional deficiency syndrome and consider how your thinking and treatments might change if it did.”
Controversies

- Brain Scans
- Chemical Imbalance
Brain Scans in Child Psychiatry

- No evidence of clinical value
- Experimental for all but structural lesions
- Complexity erodes clear inferences
- Researchers consensus is clear
Researcher’s comments:

• “It has not yet happened…”
  Jay Gieldd, MD Chair of NIMH Child Psychiatry Brain Imaging. Discussing the impact of imaging on clinical practice in child psychiatry.

• “The differences observed are within the range of variation of normal populations.”
  J. Lieberman, MD Chair of Psychiatry, Columbia and Director NY Psychiatric Institute

• “The only thing that imaging can tell you right now is if you have a brain tumor.”
  P. Wolpe, MD Professor of Psychiatry, Penn

New York Times 10/18/2005
Chemical Imbalance

- Primarily a marketing ploy for SSRIs
- No clear evidence of this theory to substantiate in teens or adults
- Multiple conflicting neuro-chemical theories
- More current evidence points to intracellular and 2nd messenger theory

"Indeed, no abnormality of serotonin in depression has ever been demonstrated."

D. Healy, MD  psychiatrist and author of 120 studies and 12 books on this topic (2004)
Summary: Childhood Depression

Epidemic illness in US
Separate moodiness from illness
Look at whole child to see pattern of depression
Consider appropriate therapy for every teen
Use caution and frequent visits with antidepressants in teens
Consider other evidence based approaches if indicated by belief system
Summary

- Stress and nutrition are two of the most important variables that we can control to improve the symptoms of mental health in children.
• Essential fatty acid imbalance and vitamin/mineral deficiency may account for much of the rise in psychiatric symptoms in children over the last twenty years.
Summary

• I believe that much of what we are labeling and medicating in child psychiatry would be better served by a focus on stress reduction, enhanced coping skills, lifestyle factors, and improved nutrition.
Does it Make Sense to Supplement?

“Most people do not consume an optimal amount of vitamins by diet alone . . . it appears prudent for all adults to take vitamin supplements.”

R. Fletcher, MD and K. Fanfield, MD “Vitamins for Chronic Disease Prevention in Adults” JAMA, June 19, 2002 pgs. 3127-3129
General Supplement Recommendations—Teens

- Vitamin C—1000 mg/day
- EFA (EFA/DHA)—1,000mg capsule
- B complex 50 mg—1/day
- Calcium Citrate—500mg  Magnesium Citrate—250mg
- Zinc—20mg/day
- Vitamin E—100 units

(Double if symptomatic)
Signs of EFA Deficiency

- Dry skin and hair
- Dermatitis
- Soft, brittle nails
- PMS
- Breast tenderness
- Excessive thirst
- Psychological disturbances
- Learning difficulties
EFA’s in Supplementation

- Omega-3 supplementation has been shown to benefit
  - Depression
  - Bipolar Disorder
  - Heart disease
  - Arthritis
  - Crohn’s Disease
  - Emphysema
  - Asthma
  - Chronic fatigue
  - Hypertension
  - Psoriasis
“Forty-one children, aged 8-12 years with both specific learning difficulties (mainly dyslexia) and above average ADHD ratings were randomly allocated to HUFA supplementation (EPA 186 mg. AA 42 mg, thyme oil 8 mg) or placebo (olive oil) for 12 wks . . . HUFA supplementation appears to reduce ADHD-related symptoms in children with specific learning difficulties.”

In 1999 a NIH Workshop on “the essentiality of and recommended dietary intakes for Omega-6 and Omega-3 fatty acids” recommended the following:

- 4 to 6 grams of Omega-6 daily
- 2 to 3 grams of Omega-3 daily

Simopoulos et al, Prostaglandins Leukot Essent Fatty Acids 2000; 63(3): 119
St. John’s Wort

- *Hypericum Depression Trial Study Group: Effects of Hypericum in Major Depressive Disorder*, JAMA 2002; 287: 1807-14
References

SAMe

Resources

Seligman, M  *The Optimistic Child*  Houghton Mifflin: NY 1997
Stoll, A.,  *The Omega-3 Connection*  Simon and Schuster: NY 2001
Resources

Nordic Naturals (EPA), 1-800-662-2544 ext. 102
www.nordicnaturals.com
Omega Brite (Hi EPA), 1-800-383-2030
www.omegabrite.com
Pharmax (Frutol), 1-425-467-8054
www.pharmaxllc.com
Synergy (EM Powerplus), 1-888-878-3467
www.truehope.com