

# Mandala of Integrative Health

*Health and Healing in ASD*



Lindy S. Grigel MHP, PA-C, CCH



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## THE MANDALA




**An integrated structure organized  
around a unifying center**

The word "mandala" is Sanskrit. Loosely translated it means "circle". It represents wholeness, and is a model for the organizational structure of life.

The mandala appears in celestial circles of the earth, sun, and moon and conceptual circles of family, community, medicine, school.

**THE MANDALA**



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**HISTORY**

**Cross cultural pattern**  
Aztec – Time keeping device  
Native American Indian – Medicine wheel

**Architecture**  
Native American teepee – conical shape built around an axis

**Education**  
A hub from which the interconnectedness  
of knowledge can be taught.

**THE MANDALA**



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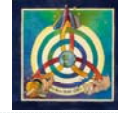
**INTENTION OF PRESENTATION**

Introduce the Pendulum Paradigm  
as metaphor for the mandala

Instill an understanding of  
Integrative Medicine

Dispel concerns and myths related to nutrition,  
sleep hygiene, digital media and  
environmental toxins

# THE MANDALA



## PENDULUM PARADIGM

### **Paradigm**

“A new way of looking or thinking about something.  
A worldview underlying the theories and  
methodology of a particular scientific subject.”

– Oxford Dictionary

“Everything we hear is an opinion, not a fact.  
Everything we see is a perspective, not the truth.”

– Marcus Aurelius

# THE MANDALA

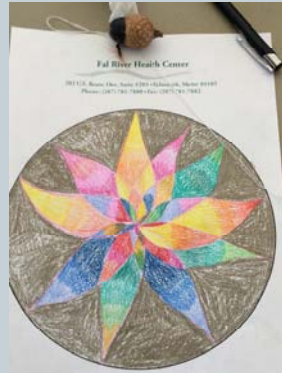


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# THE MANDALA




## CREATE A MANDALA



# NUTRITION



**NUTRITION**



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**INFLAMMATION**


Our ancestors' diets were dictated by food availability.  
The 2016 diet is often dictated by commercial manufacturing.

There is a direct correlation between diet and the body's  
production of chemicals that govern inflammation.

Autoimmune disease (allergies, asthma)  
Neurologic disorders (ADD, ASD)  
Obesity, Type 2 diabetes  
Heart disease, Cancer  
Environmental toxicity  
Anxiety and depression

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**NUTRITION**



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**GUT PSYCHOLOGY**

**MICROBIOME**


*"All disease begins in the gut." – Hippocrates*

**Gut Flora**  
100 trillion bacteria  
Imbalance leads to endotoxins  
Leakage into the body can trigger an inflammatory response

**Gut Health**  
Probiotics  
Anti-inflammatory diet  
Adequate minerals and vitamins for building blocks  
Remove stress and toxins: damage to the intestinal wall

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NUTRITION



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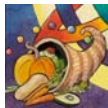
GUT PSYCHOLOGY

Poor diet can lead to microbiome imbalance  
Malabsorption of vitamins  
Imbalance of hormones  
Deficiency in enzymes

The hundred trillion bacteria that live within your gut are intimately involved in your brain.

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NUTRITION



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GUT PSYCHOLOGY


Microbiome is critical to the function of the brain-gut axis

Gut microbes modulate serotonin production  
Serotonin is the key neurotransmitter for the enteric brain  
Brain- 10% Gut- 90%  
Serotonin is a precursor for melatonin

Behaviors linked to serotonergic neurotransmission  
Appetite/ digestion  
Social behavior  
Memory  
Mood  
Sleep

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NUTRITION



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INFLAMMATION


**Acute self-limited**  
Defends the body against disease-causing microbes  
Enables the body to remodel damaged tissue

**Chronic**  
Hallmark of more serious diseases

Can we change our genetics and inflammation?  
Environmental and nutritional influences impact genetic expression.

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NUTRITION



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DIETARY FATS

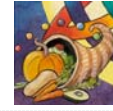
**Anti-inflammatory Fats**  
Omega-3 fatty acids decrease inflammatory mediators  
Fish, nuts, seed oils, vegetables

**Pro-inflammatory Fats**  
Omega-6 fatty acids increase inflammatory mediators  
Animal products, processed foods, vegetable oils

**Goal: 5/1**  
Decreases risk of disease  
Optimize nutrition to promote optimal health

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## NUTRITION



### ANTI-INFLAMMATORY DIET

Andrew Weil, M.D.

#### **Increase amount of Omega-3 fatty acids**

Cold Water Fish (Salmon, Sardines, Herring)

Flax seeds, Flax oil, Chia seeds,  
Walnuts, Green Leafy Vegetables

#### **Consume wholesome foods**

Whole grains, Fruits and vegetables

Legumes, Nuts, Seeds, Fiber

#### **Choose low glycemic index foods**

Minimize fluctuations in  
blood sugar and insulin levels

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## NUTRITION



### ANTI-INFLAMMATORY DIET

Andrew Weil, M.D.

#### **Reduce saturated fats**

Animal products  
(red meat, processed meat)

#### **Reduce Omega-6 fatty acids**

Soybean, Sunflower oil, Margarine,

Corn, Safflower, Sesame,

Manufactured Products with  
Trans-fatty Acids (crackers, chips, pastries)

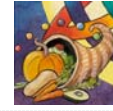
#### **Goal**

Aim for well-balanced nutrition  
Protein, quality fats, fruits, vegetables,  
complex carbohydrates and water

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# NUTRITION

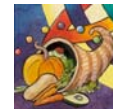


## FUN WITH FRUIT



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# NUTRITION



## VIVACIOUS VEGGIES

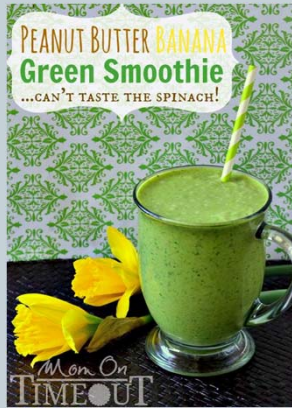


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# NUTRITION



## SMOOTHIES



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# NUTRITION

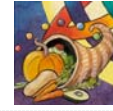


## PROTEIN POWER



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## NUTRITION



### FOOD DYES

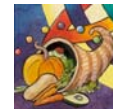
European law requires warning labels on foods containing specific artificial ingredients:

***“May give an adverse effect on activity and attention in children”***



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## NUTRITION



### MSG HIDDEN NAMES

MSG

Gelatin

Calcium Caseinate

Hydrolyzed Vegetable Protein (HVP)

Textured Protein

Hydrolyzed Plant Protein (HPP)

Monopotassium glutamate

Yeast Extract

Glutamate

Yeast food


Glutamic Acid

Sodium Caseinate

Autolyzed Yeast

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NUTRITION




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**FOOD DYES**

**Food dyes and Preservatives  
banned in UK and European Union**  
*Association with hyperkinesis in children*



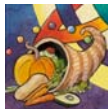
- Tartrazine (E102)
- Quinoline yellow (E104)
- Sunset yellow (E104)
- Carmoisine (E122)
- Pondeau 4R (E124)
- Allura red (E129)



**Harmful Additives**  
Sodium Benzoate  
High Fructose Corn Syrup

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NUTRITION



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**VITAMIN DEFICIENCY**

**Common symptoms**

- Food selectivity  
(texture, taste, smell)
- Fatigue
- Headache
- Memory problems
- Poor concentration
- Noise/Light sensitivity
- Anxiety
- Depression
- Irritability
- Sleep disturbance

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**NUTRITION**




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**Zinc Deficiency Syndrome**  
70% of children over two years old do not meet RDA requirement  
Decreased dietary intake  
Crucial for neural development

**At-risk population**  
ASD  
ADD  
Neurodevelopmental disorder

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**NUTRITION**



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**Zinc deficiency**  
Oral motor sensitivity syndrome  
Altered sense of taste and smell  
Delay in cognitive development  
Impairment of concentration and spatial memory tasks

**Correction of Deficiency**  
RBC lab value  
Zinc (50% of RDA)  
Do not supplement at same meal as iron  
Growth in socialization  
Decrease in hyperactivity  
Improvement of sustained attention

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## NUTRITION



### **Magnesium Deficiency**

61.6% of children over two years old do not meet RDA requirement

“Magnesium and Zinc are essential for the conversion of 18-carbon, plant derived EFA’s to long chain fatty acids, notably DHA and EPA”

–Arnold, 1999

### **Correction of Deficiency**

RBC lab value

Magnesium 80 mg (21% of RDA)

Calm Magnesium (water soluble)

Decrease of mental and physical irritability

Improvement of cognitive function

Support restorative sleep hygiene

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## NUTRITION



### **Iron Deficiency**

39% of children over two years old do not meet RDA requirement

Depression of immune function

Decrease in synthesis of dopamine

Impairment in cognitive development

Association with restless leg syndrome

### **Correction of Deficiency**

Ferritin and TIBC lab value

Do not supplement at same meal as zinc

Improvement in object permanency

Improvement in short term memory encoding

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## NUTRITION



**Omega-3 Fatty Acid Deficiency**  
**DHA docosahaenoic acid**  
**EPA eicosapentaenoic acid**  
Decrease in neuroprotective metabolites  
Decrease in cognitive function  
Alteration in mental focus  
Mood irritability  
Lack of resiliency

**Correction of deficiency**  
1-2 grams total of EPA+ DHA  
Improvement of sustained attention  
Improvement in literacy  
Decrease in oppositional behavior

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## NUTRITION SUPPLEMENT



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# SLEEP



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# SLEEP



## SLEEP ARCHITECTURE

### **The Circadian Rhythm**

Circadian in Latin means “around a day”

The circadian rhythm is set by the body’s internal biologic clock which controls wake/sleep cycles.

The clock is a suprachiasmatic nucleus, size of a pin, in the hypothalamus. It contains 20,000 neurons

### **Sleep Cycles**

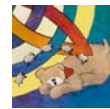
NREM (deep sleep) & REM (dream sleep)

As the night progresses there is less deep sleep and more REM sleep.

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## SLEEP



### SLEEP CYCLE

There is a predictable pattern of deep, restorative NREM sleep and more alert, dreaming REM sleep

REM and NREM are complete sleep cycles that last 90 minutes and repeat throughout the night

NREM occurs in the first half of the night.

Bedwetting  
Night terrors  
Sleep walking

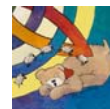


REM occurs in the later half of the night

Dreams

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## SLEEP



### SLEEP DISORDERS

#### **Sleeplessness in America**

Insufficient sleep is a public health problem.  
An estimated 50-70 million US adults have sleep or wakefulness disorder<sup>1</sup> -CDC, 2015

#### NIH RECOMMENDATIONS

School-age children: 10 hours

Teens: 9-10.5 hours

Adults: 7-8 hours.

2005-2009 National Health Interview Survey

30% of adults reported ≤6 hours of sleep.

31% of high school students reported near 8 hours of sleep

***Most sleep disorders are treatable***

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**SLEEP**



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**RESTORATIVE SLEEP**

**Effects of NREM Deep Sleep**

- Body repairs and prepares for the day ahead
- Stimulates growth and development – growth hormone
  - Repairs muscles and tissue
  - Boosts the immune system
  - Monitors health maintenance


**Improve Deep Sleep**

- Create a sleep sanctuary
- Quiet your body noise
- Avoid clock-watching

Manage nighttime wakefulness with mind-body techniques

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**SLEEP**



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**RESTORATIVE SLEEP**

**Effects of REM Sleep**

- Improves learning and memory,  
information consolidation and processing
- Strengthens memory with better neural connections
- Replenishes neurotransmitters (serotonin/ dopamine)

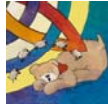
**Improving REM Sleep**

- Sleep an extra 1/2 to 1 hour in the morning  
when REM cycles are longer
- Practice conscious awareness of dreams

Awaken slowly and arise mindfully with morning intention

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**SLEEP**




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**RESTORATIVE SLEEP**


Clearer thinking  
Quicker response time  
Improved emotional balance  
Increased physical vitality  
More effective communication  
Better organization of executive function skills  
Balances the homeostatic biologic systems

***The quality of sleep affects  
the quality of waking hours***



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**SLEEP**



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**SLEEP DEBT**

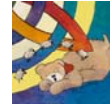
**Sleep deprivation**  
Sleep loss influences pre-frontal cortex  
Impacts executive function involved in the control of attention and emotions

**Physical effects**  
Fatigue, Difficulty with focus and attention  
Low threshold to express negative affect  
Symptoms can resemble ADD and anxiety  
Difficulty modulating impulses and emotions  
Increase in cortisol production results in stress and insulin resistance  
(pre-cursor Type 2 diabetes)

***Sleep debt is like being overdrawn at the bank.  
Pay off your sleep debt***

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# SLEEP



## SLEEP SUPPLEMENTS

### **Nervines**

Moderate the GABA/ Glutamate System

- Lemon Balm
- Passionflower
- Valerian
- Hops
- L-Theanine

### **Melatonin**

Hormone (regulates the sleep/ wake cycle)

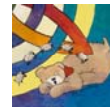
Shortens sleep transition time

Reduces number of wake cycles

Useful for short term management of sleep disorders

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# SLEEP SUPPLEMENTS



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# ACQUISITION OF KNOWLEDGE



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# ACQUISITION OF KNOWLEDGE




## AGE OF INFORMATION

Kids are at the helm  
of an information  
revolution.  
They are a connected  
generation.

*Computer's represent an encyclopedia  
of the finite and a road map to infinity*

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ACQUISITION OF KNOWLEDGE 

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**BRAIN DEVELOPMENT**

**Birth** - Around 100 billion neurons have been formed in the first few years, 700 new neural connections are formed per second  
At 8 months, an infant has around 1,000 trillion synapses


**Birth to Age 3** - Children learn at an intense rate (interact with the world)

**By Age 4** - Primary senses and basic motor skills are developed

**By Age 5** - Children have gained 90% of their critical brain development (cognitive, social, emotional, and language skills)

***Brain development is shaped by genetics, nurturing, guidance and the environment***

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ACQUISITION OF KNOWLEDGE 


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**Stage One (birth- 7 years old)**  
Development of selective attention  
Computers stimulate multi senses simultaneously  
*(children lose ability to pay attention to one activity)*

**Stage Two (7-9 years old)**  
Development of response organization  
Children learn to form a plan and act on it in an organized manner  
Most computer programs map out this stage  
*(children can lack the development of executive organization)*

**Stage Three (11 years old- adulthood)**  
Development of sustained attention  
Computers lead to multi-tasking  
*(children can lack sustained, selective focus to detail)*

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ACQUISITION OF KNOWLEDGE 

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POSITIVE EFFECTS

**Cognitive/ Academic Skill Development**  
Nonverbal Intelligence (visual information processing)  
Languages, Math and Logical Thinking

**Social Relationships**  
Geographical Boundaries Removed

**Information Access**  
Efficiency and Productivity  
Global Resources  
Health Advocacy

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ACQUISITION OF KNOWLEDGE 


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NEGATIVE EFFECTS

“Children and youth use 4-5 times the recommended amount of technology, with serious and often life threatening consequences”  
*-Kaiser Foundation 2010, Active Healthy Kids Canada 2012.*

In May 2011, the World Health Organization classified cell phones (and other hand held devices) as a category 2B risk (possible carcinogen), due to radiation emission.  
*-WHO 2011*

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ACQUISITION OF KNOWLEDGE 

NEGATIVE EFFECTS

**Physical**  
Obesity  
Sedentary lifestyle  
Delayed development  
Elevated HR, BP, stress (adrenalin)  
Photosensitive epilepsy (flicker frequency)

**Social and Psychological**  
Cyberbullying  
Desensitization to violence  
Depression and anxiety (isolation)  
Potentially stunted interpersonal relationships  
Blunted discrimination between reality and simulation

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ACQUISITION OF KNOWLEDGE 

RECCOMENDATIONS

**Guidelines**  
American Academy of Pediatrics|Canadian Society of Pediatrics

**Infants age 0-2**  
No exposure to technology

**3-5 years old**  
Restricted one hour per day

**6-18 years old**  
Restricted two hours per day  
-AAP 2013, CPS 2010

***Balance computer time with physical activity***

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## ACQUISITION OF KNOWLEDGE



### THE BRAIN BENEFITS OF EXERCISE

- Improves memory
- Lengthen attention span
- Boosts decision making skills
- Improves multi tasking and planning
- Prompts growth of new nerve cells and blood vessels

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## MANDALA of INTEGRATIVE MEDICINE



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# INTEGRATIVE MEDICINE



## PREVENTION IS THE KEY TO CURE

### **Integrative Medicine**

~ treats you, not the disease ~

*“A blend of mainstream medical therapies with complementary and alternative medical therapies that have a proven record of safety and effectiveness.”*

-The National Center for Complementary and Alternative Medicine at the National Institute of Health


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# INTEGRATIVE MEDICINE



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INTEGRATIVE MEDICINE



MINDFULNESS


The quality or state of being conscious or aware of something.

Buddhism tradition  
Carl Jung MD / Analytic Psychology  
John Kabat- Zinn/ MBSR

*“Why being kind to yourself is good for the world”*  
– Dalai Lama Translator

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INTEGRATIVE MEDICINE



MINDFULNESS

***“Between stimulus and response there is a space.  
In that space is our power to choose our response.  
In our response lies our growth and our freedom.”***

-Victor D. Frankl

Entrance/Departure in life  
4 - 7 - 8 Breath  
Buddy breathing  
Yoga  
Poi spinning

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## INTEGRATIVE MEDICINE



### MINDFULNESS Thought Bus



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## INTEGRATIVE MEDICINE



### MINDFULNESS

#### **Yoga**

Unites mind, body, breathing  
Emotional Brain- stress response  
Logical Brain- restrains emotion  
Training the logical brain rewires the nerve connections

#### **Yoga in schools**

Reduces stress  
Increases well-being  
Improves focus and attention  
Facilitates weight management  
Mitigates emotional and behavioral problems

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## INTEGRATIVE MEDICINE



### MINDFULNESS

#### **POI SPINNING**

Tethered weights held in the hands and spun around the body  
3 dimensional kinetic puzzle

Stability  
Muscle strength  
Co-ordination  
Concentration  
Self- modulation  
Social regulation  
Problem solving skills

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## INTEGRATIVE MEDICINE



### HOMEOPATHY PRINCIPLES

Time honored medicine practiced with world-wide acceptance for  
over 200 years


Founding homeopathic principle of "like cures like" evolved from  
the early teachings of Hippocrates

Central philosophy is based on the practice of using tiny doses of  
natural medicines to stimulate the body's inborn healing capacity

Well documented as a deeply effective  
means of treating a wide range of  
physical and emotional symptoms

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INTEGRATIVE MEDICINE



HOMEOPATHY PRINCIPLES


**Matrix system of medicine**  
Hierarchy of symptoms

**Nature vs. Nurture**  
Genetics, environment  
Home, school, work

**Present day pathology**  
Disease evolution  
Environment

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INTEGRATIVE MEDICINE




NATURE VS. NURTURE

**Nature**  
Genetics, Environment, Oxidative Stress  
Developmental time window in utero where there is genetic  
susceptibility to environmental stress

**Nurture**  
Home, School, Work

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INTEGRATIVE MEDICINE



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**NATURE VS. NURTURE**

**TENDR call for action**  
(Targeting Neurodevelopment Risks)

Food and water  
Home products  
Lead in the house  
House dust  
Pesticides  
Medications and Personal Products

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INTEGRATIVE MEDICINE



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**NATURE VS. NURTURE**

**TENDR call for action**

**FOOD AND WATER**

Avoid pesticide residue!

Buy organic: strawberries, apples, nectarines,  
green beans, celery, spinach

Non-organic: cantaloupe, kiwi, pineapple

Seafood high in Omega-3 and low in mercury  
(wild salmon, sardines, Atlantic mackerel, trout)

Breast feed or add lead free water to formula

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## INTEGRATIVE MEDICINE



### NATURE VS. NURTURE

#### **TENDR call for action**

#### **HOME PRODUCTS**

Lead- homes built before 1978 are at risk  
Avoid furniture with toxic flame retardants  
Minimize exposure to dangerous air pollutants  
(tobacco and wood smoke, idling car exhaust  
EPA burn wise webpage)

#### **PHTHALATES**

Found in vinyl flooring and collects in house dust  
PVC from toys, lunch boxes and school supplies

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## INTEGRATIVE MEDICINE



### NATURE VS. NURTURE

#### **TENDR call for action**

#### **HOME PRODUCTS**


Antibacterial hand soaps- triclosan, triclocarban  
Personal care products that contain fragrances- phthalates  
Lead acetate can be found in do-it -yourself hair dyes  
Mercury can be found in imported skin lighteners

#### **PESTICIDES**

Garden, tick and flea repellent  
Pesticide Action Network of America

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INTEGRATIVE MEDICINE 


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NATURE VS. NURTURE

**TENDR call for action**

**Well Child Checks**  
Ask about and educate!  
Vinyl toys  
Flooring  
Furniture, mattresses  
Lead- pipes and paint  
Home products  
Personal products  
Halloween costumes

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INTEGRATIVE MEDICINE 

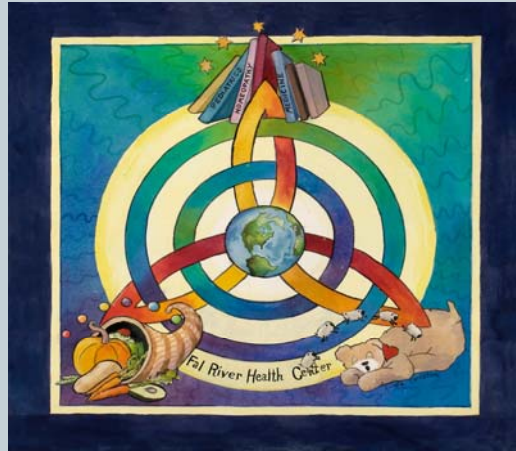
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NATURE VS. NURTURE

**Gain Knowledge**  
Integrative medicine  
Genetics/ Epigenetics  
Environmental changes  
Food  
Water  
Public policy  
Technology

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# CONCLUSION



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