The Brain-Behavior-Resilience Connection

Using the Intersection of Genetics, Prenatal Drug/Alcohol Exposure, & Traumatic Stress to Build Resiliency-focused, Brain-based, Trauma-informed, Connected Systems for Challenging Children and Families

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Kalamazoo, MI
Slides at
www.wmich.edu/traumacenter
Paradigm Shift

“We must move from viewing the individual as failing if s/he does not do well in a program to viewing the program as not providing what the individual needs in order to succeed.”

—Dubovsky, 2000
Trauma
Prenatal Alcohol Exposure
Genetics
Genetics Lens

Must Be Bipolar

Trauma
Prenatal Alcohol Exposure
Genetics
Must Be FASD

Prenatal Lens

Trauma

Prenatal Alcohol Exposure

Genetics
Must Be Complex Trauma

Trauma Lens

Trauma
Prenatal Alcohol Exposure
Genetics
ALL of These Must be Considered and Addressed
What is Trauma?

• *Overwhelming* event or events that render a child helpless, powerless, creating a threat of harm and/or loss.

• *Internalization* of the experience that continues to impact perception of self, others, world, and development.
Events

Traumatic Impact
The Real Game of Life: Risk Version

Prenatal Exposure to Alcohol and Drugs; Maternal Stress

Infancy: Unresponsive Caregiver Insecure attachment

Toddler: Physical Maltreatment

Emotionally dysregulated and Aggressive Child Behavior

Child as Bully Child being Bullied

Attention deficits at school Falling behind in school

Child: DSM Label ODD, RAD, Bipolar

Entering Juvenile Justice System

Behavior problems at school; grade retention/ Suspensions

Detention/ Residential placement
16 year-old teen male with long history of trauma and residential placement

- “I can’t look forward to nothing because I can’t do anything about it.”

- “I stay in a mellow state of nothing. I don’t feel nothing.
16 year-old teen male with long history of trauma and residential placement

• “If I think about my life, it would drive me crazy. I consider treatment as a punishment and distrust others because they have not been honest with me.”
What is complex trauma?

• Traumatic exposure: experiences of multiple traumatic events that occur within relational system
  • Sequential occurrences of child maltreatment
  • Often chronic and early in childhood
SYMPTOMS OF CHILD ABUSE

LOSS OF MEMORY

BLOCKAGE

LIPS ARE SEALED

HELPLESS

PENT UP ANGER

DEAD ZONE

LOSS OF MOBILITY
Attachment Continuum

Healthy

Secure

Insecure

Disorganized

Secure

RAD
Calvin & Hobbes

IM IN A VERY CRABBY MOOD. SO EVERYBODY JUST LEAVE ME ALONE! I HATE EVERYONE!!

NOBODY RECOGNIZES MY HINTS TO SMOTHER ME WITH AFFECTION.

CALVIN AND HOBBES © Watterson. Dist. by UNIVERSAL PRESS SYNDICATE. Reprinted with permission. All rights reserved.
I DESERVED TO BE BEATEN

IT'S ALL MY FAULT
I SHOULD HAVE
I'M BAD

IF ONLY I HAD

I DID IT

I COULD HAVE

I LET THEM RAPE ME

GUILT
Harry: “I just feel so angry all the time . . . What if after everything I’ve been through, something’s gone wrong inside me? What if I’m becoming bad?”

Sirius: “I want you to listen to me very carefully, Harry. You’re not a bad person. You’re a very good person who bad things have happened to.”

From *Harry Potter and the Order of the Phoenix* (Warner Brothers, 2007)
Urgency of Screening
Common Barriers to ‘Talking About” (Assessing) Trauma

1. Wanting to “wait” until you get to know the child better or until you build rapport
2. Fear of hurting your relationship by bringing it up once rapport is established
3. Trying to get the information without having to “say” the words
4. Fear of getting an inconsistent story from multiple reporters
5. Fear of upsetting / triggering / retraumatizing the client
What screening communicates to the child and family

1. That you see them as unique individuals
2. That you see their needs as important
3. That you are interested in promoting the child’s health and resilience
4. That what they might be experiencing are common and normal reactions
The value of screening

- Identification of potential traumatic events
- Creates connection between trauma and functioning
- Provides a threshold for the need for trauma assessment
- Provides information about the child to families, resource parents, court, school
- Progress monitoring
Screening is a tool

It is how we use it that makes it valuable... not whether we used it
Child Well Being:

- Sustaining “Positive” Personal Relationships
- Self Efficacy Developing Competencies
- Managing Emotions & Regaining Equilibrium When Upset
- Positive Self Image
Resiliency contextualizes a child’s strengths (individual, familial, community) against her/his adverse experiences (Zolkoski & Bullock, 2012)
Resiliency Factors

Traumatic Event/Events

Traumatic Impact
Do you have what it takes to be a boxing coach?
Empathy is Essential

• Empathy is the foundation of relationship and relatedness.

• The ability to understand cognitively and affectively what someone else is going through.

• “I can see the world from their perspective.”
What did the boxing coaches teach us about resiliency?

• Established that the youth had personal value (foundation of relatedness)
  • “I have no idea what you have been through, but I believe you can be successful.
  • “I don’t expect you to trust me. I will be honest with you. Hopefully with time you can come to believe that.”
  • “Somebody believes in me, even when I don’t there is anything worth caring about”
What did the boxing coaches teach us about resiliency?

• Believed in the youth that they could succeed (mastery/competency)
  • Experiencing success changes us
  • Motivation is dependent on being successful at some point
  • Failure is a reality for everyone. How we handle failure determines whether we are successful.
• We are not cheerleaders, we are not naysayers, we see the potential in kids and build on that.
What did the boxing coaches teach us about resiliency?

- Help him/her to regulate with the physical controlled release of emotion (affect regulation)
  - Our kids do not have the skills of regulation. It is not anger management it is emotional regulation.
  - To learn regulation it must be modeled for you
  - You must practice the skill so it can wire into the brain.
Traumatic Event/Events → Resiliency Factors → Traumatic Impact
Real World Resiliency

<table>
<thead>
<tr>
<th>Relatedness</th>
<th>Mastery</th>
<th>Affect Regulation</th>
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<tbody>
<tr>
<td>Strong</td>
<td></td>
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<tr>
<td>Good enough</td>
<td></td>
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<tr>
<td>Some</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td></td>
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</tr>
</tbody>
</table>
Resiliency: Child Profile

- Relatedness
  - Strong
  - Good enough
  - Some
  - None

- Mastery

- Affect Regulation

- Strong
- Good enough
- Some
- None
A Resilience Vision for Children and Families
A Resiliency / Well Being Vision for Children Everywhere
Brain – Behavior Functional Model: Building integration one level at a time

- Neurodevelopmental Core Base (IQ, Language, Learning Style, Attachment potential, etc)
  - Sensory Processing / MSI
    - Brakes vs Accelerator
      - Complex Affect Regulation
        - Social Communication
          - Behavioral Choice / Free Will
Brain – Behavior Functional Model: Building integration one level at a time

Neurodevelopmental Core Base
(IQ, Language, Learning Style, Attachment Potential, etc)

Sensory Processing / MSI

Brakes-Accelerator Balance

Complex Affect Regulation

Social Communication

Behavioral Choice / Free Will
Inspecting the Foundation: Core Neurodevelopmental Building Blocks

("Hard wiring" of the brain from the "baby factory")

- Cognition / IQ
- Learning Preferences / Patterns / Differences
- Language
- Memory
- Neuromotor processing / control
- Visual-Spatial Processing
- Tempero-sequential processing
- Temperament / Personality
- Attachment potential
Brain – Behavior Functional Model: Building resiliency one level at a time

Behavioral Choice / Free Will
Social Communication
Complex Affect Regulation
Brakes-Accelerator Balance
Sensory Processing / MSI
Neurodevelopmental Core Base
(IQ, Language, Learning Style, Attachment Potential, etc)
Sensory Processing
Multi-Sensory Integration

• Poorly understood yet absolutely essential
• Brain-based research from Lucy Miller’s international *SPD Research Network* (Stanford 2013)
• Critical for complex affect regulation
• Fundamental trauma / FASD connection
• Need for *translational research* to drive effective sensory-based treatment in traumatized / FASD children (WMU BRAIN Lab)
Brain – Behavior Functional Model: Building resiliency one level at a time

- Neurodevelopmental Core Base (IQ, Language, Learning Style, Attachment Potential, etc)
- Sensory Processing / MSI
- Brakes-Accelerator Balance
- Complex Affect Regulation
- Social Communication
- Behavioral Choice / Free Will
Delicate Balance of Behavioral Regulation: Coarse control of brain energy / behavior

Top-Down "Brakes" (Prefrontal Cortex)

Bottom-Up "Accelerator" (Brainstem/Limbic System)
Initial Point of Clinical Contact

Accelerator vs Brakes

• Clinical “traction” opportunities early in Tx
• Huge impact on regulation & *all behavior*
• Assessment here is critical
• Many *physiological treatments* impact here:
  - Psycho-active medication
  - Physical exercise / complex movement
  - Sensory-focused occupational therapy
  - Music / art / dance therapy
• Let’s examine this level in some detail…
Accelerator Function:
Core of our energy/emotional being

- “RPM” of the brain
- Intrinsic Energy Levels
  - Role of mitochondrial function
- Intrinsic Motivation / Reward
- Circadian Variations
Accelerator: ("RPM" of the brain) 

**Increasing** Brain Energy

- Physical activity
- Conscious effort ("Willing it" to happen)
- Risk-taking behavior (devel. pre-teen function)
- Motivation (Intrinsic / Extrinsic)
- Sensory inputs (vestibular, auditory, tactile...)
- Anxiety / Panic (accel. ‘remote control’)
- Anger / Explosiveness ("redline" tachometer)
- Drugs (legal / illicit) (stimulants)
- Mania / Hypomania ("stuck-on-high" accelerator)
Accelerator: (“RPM” of the brain) **Decreasing** Brain Energy

- Depression / sadness / grief
- Conscious effort (relaxation, meditation)
- Drugs (legal / illicit) (opiates, cannabis, sedatives, anesthesia)
- Sensory input / strategies
“Remote Control” of the Accelerator
The Confusing Picture of Anxiety
Fight-Flight-Freeze in the JJ / CMH / DHS system

- Anxiety / Panic as source & fuel for reactive anger ➔ aggression
- Anxiety – Attention – Language interplay in kids/teens w/ aggression
- *False machismo* in anxious teen boys/adults
Reactive Anger / Explosiveness: Critical Link to Reactive Aggression

Many faces of anger!

- Anger as normal coping skill
- ("Just anger" as clinical progress)
- "Tigger" aggression (no anger)
- Reactive / emotive aggression = Anger plus "bad" / faulty brakes
The Prefrontal Cortex: The home of Executive Function

Executive Function:
The “brakes” of the brain
• Working memory / memory recall
• Focusing (locking, shifting & sustaining)
• Planning / organizing
• Self-monitoring of behavior/action
  – Impulse control
  – Key role in interoception
• Major role in Regulation

right prefrontal lobe
left prefrontal lobe
Acceleration vs Brakes: Real World Impact

Way too wound-up / “wild” (“Tigger - on crack”)

Too wound-up (Tigger)

Optimal “Goldilocks” Arousal

“Goldilocks” Comfort Zone
“Just Right” Energy Level

Bored / Low energy / Tired & sleepy (Ee-yore)

Total shut-down (via parasympathetics) “Ee-yore on Quaaludes”
Brake-Accelerator Functioning
Trauma Correlates / Realities

Accelerator Issues:
• Panic / Worry↑
  - Trauma Triggers
• Anger / Explosive↑
• Mania / Hypomania↑
• Depression ↓
10↑ in Drug Craving
• Drug withdrawal
  - Meth↓ / Opiates↑

Brakes Issues
10↓ Working memory
10↓ Emotional processing
10↓ Impulse control
  - Genetic ADHD
  - Trauma impact
  - FASD impact
Brain – Behavior Functional Model: Building integration one level at a time

- **Neurodevelopmental Core Base**
  - (IQ, Language, Learning Style, Attachment Potential, etc)

- **Sensory Processing / MSI**

- **Brakes-Accelerator Balance**

- **Complex Affect Regulation**

- **Social Communication**

- **Behavioral Choice / Free Will**
Searching for Goldilocks
When regulation turns into integration

Optimal Complex Affect Regulation =

Optimal Learning, Behavior, Attention, Memory
Brain – Behavior Functional Model: Building integration one level at a time

Neurodevelopmental Core Base

Sensory Processing / MSI

Brakes-Accelerator Balance

Complex Affect Regulation

Social Communication

Behavioral Choice / Free Will
Hyter-Sloane Model (2013) of Social Communication

- Language/Pragmatic Language
- Working Memory
- Social Cognition
- Complex Affect Regulation
Hyter-Sloane Model (2013) of Social Communication

All components are impacted by prenatal alcohol exposure and traumatic stress.
Brain – Behavior Functional Model: Building integration one level at a time

- Neurodevelopmental Core Base
  - (IQ, Language, Learning Style, Attachment Potential, etc)
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Neurodevelopmental Core Base
(IQ, Language, Learning Style, Attachment Potential, etc)
What about behavior / choice / free will / willfulness, etc???
Don’t Forget About the Steering

• Conscious control of behavior
• Importance of **tight structure** for optimal behavior management
• Willfulness misconceptions
  - It’s not *all* willful!
  - But some *is* willful!
  - And some *looks* willful!
• Behavioral “curve balls” in homes, schools, detention…
Final Thoughts:
Regulation / Willfulness:
Power Steering vs Manual Steering

• **Regulated** steering = *power* steering!
  - Easier to make appropriate motor / behavioral / emotional decisions while regulated

• **Dysregulated** steering = *manual* steering
  - Tougher to keep the behavioral “car” on the road
A Resiliency / Well Being Vision for Children Everywhere
The Brain-Behavior connection: Seamless mesh of all 3 components

• **Genetics / Epigenetics**
  – What you inherit from both parents

• **Intrauterine environment**
  – During pregnancy

• **Extrauterine environment**
  – After pregnancy
The Brain-Behavior Connection: Complexities & Realities

• Genetics / Epigenetics ➔

- Neurodevelopmental strengths / weaknesses
- Temperament / Personality
- Family history of:
  • Attentional disorders (ADHD)
  • Learning disorders (e.g., Dyslexia)
  • Mood disorders (Depression / Bipolar)
  • Anxiety Disorders
  • Neuropsychiatric disorders (Tourette Disorder)
Behavioral Epigenetics: The future is now!

- Epigenetics: chemical alterations to DNA after conception
- Epigenetics is the ultimate link between nature & nature
- Some evidence that (on occasion) these epigenetic alterations may be passed on to the next generation
- Can we assess this in the primary care setting?
GeneMarkers, LLC
Anna Langerveld, MSW, PhD

• Kalamazoo company that does genetic / epigenetic testing

• New collaboration with WMU CTAC

• Ultimate goal I: Develop genetic screening panel for primary care providers:
  – Bipolar risk
  – Anxiety/depression risk
  – ADHD risk
  – Prenatal epigenetic factors (drugs/alcohol/stress)
GeneMarkers, LLC
Anna Langerveld, MSW, PhD

• Ultimate Goal II: Bring TherapyGenetics to Kalamazoo County and beyond

• TherapyGenetics: a new field of study in its infancy
  - Involves predicting treatment (psychotx, meds, OT?, MT) response for children and adults with MH/BH issues (including traumatic stress) via genetic testing
  - Personalized trauma medicine is likely possible!
  - Research possibilities are endless!!!
The Brain-Behavior Connection: Complexities & Realities

• Intrauterine environment
  - Exposure to drugs (legal / illegal)
  - Maternal stress
  - Maternal nutrition
  - Exposure to alcohol
The Brain-Behavior Connection: Complexities & Realities

• Intrauterine Drug Exposure:
  - The “Myth” of Meth (& crack / cocaine)
  - “Mixing and matching” drugs while pregnant
  - Multiple drug use in pregnancy overwhelms even ultra-fast research computers!
  - Nicotine use *increases* ADHD risk 4-fold
  - Cannabis use in pregnancy remains controversial
  - The need for animal models to *clarify*
  - Opiate use during pregnancy (Neonatal Abstinence Syndrome)
Prenatal Meth / Cocaine Exposure
True ND Impact being revealed slowly

• “Crack babies are doomed” (1980’s)
• 2002 *JAMA* article implicates ETOH / Preemies
• Meth use is rampant now (Michigan is leader)
• Meth > cocaine (re neurotoxicity)
  - Meth has longer T½
  - Meth has more complex MOA: ↑DA/NE release in multiple locations (Think Adderall vs Concerta)
• Both ↓ utero-placental blood flow / ↑ fetal hypoxia
Prenatal Meth / Cocaine Exposure
Infant Development, Environment, & Lifestyle Study

• IDEAL Study (Smith, Lester, et al 2006) at 4 centers
• 13,808 screened, 1618 eligible, 84 Meth exposed during pregnancy

↑ SGA births

• Length thru 3 years
• Poor qual. of movement/poor grasp at 1 & 3 y

↓ Arousal

↑ Stress reactivity in neonatal period
Prenatal Meth / Cocaine Exposure

CBCL data on meth-exposed children  LaGasse (2012)

- CBCL data at Ages 3y & 5y (N=166/164)
- Meth group had more externalizing symptoms (vs controls):
  - ↑Emotional reactivity (3 & 5 y)
  - ↑Anxious / depressed (3 & 5 y)
  - ↑ADHD symptoms (5 y)
The Brain-Behavior Connection: Complexities & Realities

• Chronic and Severe Prenatal Stress:
  - Growing appreciation of negative impact on fetus
  - What is the safe fetal stress threshold?
  - Placenta buffers mild-mod. stress: protects fetus
  - By **12 weeks** gestation, the limbic system and PFC are susceptible to chronic toxic stress (via cortisol)
  - Prenatal stress can **lower** birth weight
  - Prenatal stress can impact **adult health** (ACES)
  - Solid early life parenting / attachment can be protective (and can **reverse** some negative impact)
Child Traumatic Stress & the Developing Brain
“Trauma Trumps Everything”

Sandra Bloom, MD

• Trauma – Substance Abuse connection
• Trauma – Mental Health connection
• Trauma – Juvenile Justice connection
• Trauma – School failure connection

• Cycle of trauma is pervasive... but can be addressed, treated, & prevented
Types of Stress

**Positive**
Brief increases in heart rate, mild elevations in stress hormone levels.

**Tolerable**
Serious, temporary stress responses, buffered by supportive relationships.

**Toxic**
Prolonged activation of stress response systems in the absence of protective relationships.
Traumatic Stress & the Child’s Developing Brain

• Early and ongoing childhood toxic traumatic stress to the developing brain results in:
  - *Physical neuroplastic brain changes that*:
    • Cause abnormal functioning (including memory)
    • Contribute to problematic behaviors
    • Contribute to developmental delays
    • Result in child being unable to realize potential
Neglect: The **Worst** Offender

![Brain scans of 3-year-old children: Normal vs. Extreme Neglect](image-url)
Toxic Traumatic Stress & the Child’s Developing Brain

• Research reveals a strong link between all types of child abuse / neglect and the subsequent development of psychiatric illness in adulthood

• Key findings (ACES) link child traumatic stress with variety of child/adult medical illness

VJ Felitti, MD
Linking Childhood Experiences and Adult Outcomes

- Parent Engagement
  - Quality Childcare
  - Play

Childhood Experience → 

Healthy Lifestyles
- Academic Success
- Economic Stability

Adult Outcomes

- Poor Health
- Academic Failure
- Economic Hardship

ACEs
- Poverty
- Violence

?
The Origin of ACES: Back to the future

• Vince Felitti, MD Internist in San Diego
• Kaiser-Permanente HMO physician
• Was developing wellness programs to improve outcomes for chronic conditions...obesity
• Noted that program failures had an abnormally high % of adverse childhood conditions (based on a screening psycho-social questionnaire required by K-P)
The Origin of ACES: Back to the future

• He then hired Robert Anda, MD (CDC psychiatrist) to help him with the data analysis and the processing of all of these data

• They developed a more extensive mail questionnaire that evolved into the ACES

• n=17,000+
The Origin of ACES:
Back to the future

• **ACE Score**: Think of it like a cholesterol level for childhood trauma
• Range: 0-10
• 1 point for each **type** of adverse childhood experience
# ACE Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Women (n=9,367)</th>
<th>Men (n=7,970)</th>
<th>Total (17,337)</th>
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<tbody>
<tr>
<td><strong>Abuse</strong></td>
<td></td>
<td></td>
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<tr>
<td>- Emotional</td>
<td>13.1%</td>
<td>7.6%</td>
<td>10.6%</td>
</tr>
<tr>
<td>- Physical</td>
<td>27.0%</td>
<td>29.9%</td>
<td>28.3% 1:4!</td>
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<tr>
<td>- Sexual</td>
<td>24.7%</td>
<td>16.0%</td>
<td>20.7%</td>
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<td><strong>Household Dysfunction</strong></td>
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<td>- Mother Treated Violently</td>
<td>13.7%</td>
<td>11.5%</td>
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<td>- Household Substance Abuse</td>
<td>29.5%</td>
<td>23.8%</td>
<td>26.9% 1:4!</td>
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<tr>
<td>- Household Mental Illness</td>
<td>23.3%</td>
<td>14.8%</td>
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<tr>
<td>- Parental Separation or Divorce</td>
<td>24.5%</td>
<td>21.8%</td>
<td>23.3%</td>
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<tr>
<td>- Incarcerated Household Member</td>
<td>5.2%</td>
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<tr>
<td><strong>Neglect</strong></td>
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<td>9.2%</td>
<td>10.7%</td>
<td>9.9%</td>
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* Wave 2 data only (n=8,667)  
Data from [www.cdc.gov/nccdphp/ace/demographics](http://www.cdc.gov/nccdphp/ace/demographics)
ACEs Impact Multiple Outcomes

**ACEs**
- Smoking
- Alcoholism
- Promiscuity
- High Perceived Risk of HIV
- Poor Perceived Health
- Illicit Drugs
- IV Drugs
- Multiple Somatic Symptoms
- Sexually Transmitted Diseases
- Cancer
- Liver Disease
- Skeletal Fractures
- Ischemic Heart Disease

**Risk Factors for Common Diseases**
- Difficulty in job performance
- High perceived stress
- Married to an Alcoholic

**General Health and Social Functioning**
- Hallucinations
- Poor Self-Rated Health
- High perceived stress
- Difficulty in job performance

**Mental Health**
- Depression
- Sleep Disturbances
- Memory Disturbances
- Anxiety
- Panic Reactions
- Poor Anger Control

**Sexual Health**
- Teen Paternity
- Fetal Death
- Unintended Pregnancy
- Early Age of First Intercourse

**Prevalent Diseases**
- Ischemic Heart Disease
- Chronic Lung Disease
- Teen Pregnancy
- Sexual Dissatisfaction
Adverse Childhood Experiences Study (ACES)

Pyramid of Doom!

Felitti et al. 1998;
The Origin of ACES: Back to the future

• An ACE score of 4 means:

  - 2X smoking risk
  - 12X suicide attempt risk
  - 7X alcoholic risk
  - 10X injected street drug risk
Exploring ACES brain impact?
Traumatic Stress

• Stress and the tiger
  – Our bodies are designed to respond to stress
  – Adrenalin and cortisol help us *run* from tiger or *hide*
  – Threat of short duration
BUT...when the tiger lives in your home, neighborhood, or life...
Impact of chronic toxic stress on immune system function

• ...The developing Fight-Flight-Freeze system is chronically pressed into action:
  • Too much cortisol suppresses immune system, increasing risk of infection
  • Inflammatory response persists after it is no longer needed
Physical impact of trauma

• Physical health effects on children
  – Somatic perception gets impaired
    • Headache, stomachache
  – Elevated cortisol impacts inflammation
    • Asthma – inflammatory component
    • Metabolic syndrome – obesity, insulin resistance, diabetes, cardiovascular disease
    • Cancer risk elevated
  – Infection fighting function impaired
    • Higher risk of infection
    • Autoimmune disorders
Tracking the Physical Impact: The Telomere Story
DNA link to aging, illness, trauma

- Exciting new development
- Imprint of your life journey on your DNA
- Critical **trauma link** for:
  - Prenatal
  - Infants
  - Children
  - Adolescents
  - Adults (including caregivers / professionals)
The Telomere Story
The Telomere Story

• Aging **shortens** telomeres leading to general breakdown of multiple body systems
• Trauma also shortens telomeres
• Growing literature demonstrating telomere lengthening with various interventions
• Does trauma **healing** lengthen telomeres?
• Role of **telomerase** in this dynamic process
A Resiliency / Well Being Vision for Children Everywhere
New CTAC Horizons

• Transformational healthcare project in Van Buren (MI) County

• WK Kellogg Foundation / WMU Health Equity Planning / Implementation Grant
  – Michelle Suarez, PhD, OTR/L NAS project
  – MAS *Early Intervention Program* project
Baby Steps: Building Relationships to Facilitate Maternal-Infant Co-regulation

- Michelle Suarez, PhD, OTR/L / Caitlyn Bodine, MT-BC
- Victory Clinic (methadone) in Kalamazoo
- NAS babies and opiate-addicted moms
- Physiologic monitoring of mom and baby
- Using music therapy and occupational therapy to improve co-regulation
- Improved attachment expected
- Anticipate reduced maternal substance use
Early Intervention Program
Project at WMU
Keeping Promises in Kalamazoo: Improving Health Equity through trauma-informed connected systems

• WK Kellogg Foundation grant
• Using OT / MT to improve regulatory function in 3-6 year old at-risk children
• OT/MT as alternative to medication provided in safe & familiar MH setting
• Functional impact on regulation & behavior in all settings is being observed
  – Improved family function
  – Reduced substance use in parents?
Keeping Promises in Kalamazoo: Improving Health Equity through trauma-informed connected systems

• Community Connection component

• Extend impact of OT and MT to the home, school, and community

• Training home-based therapy staff, school paraeducators, and parents to implement

• Primary Care to play larger role
Van Buren Transformational Health Initiative project

• MDCH/MDE-funded county-wide trauma-informed project to increase capacity and strengthen connections between Van Buren primary healthcare and:
  – Schools
  – Private/Public Mental Health
  – Health Department
Van Buren Transformational Health Initiative project

• Trauma screening and assessment
• TARGET (group stress reduction) groups in all PC and school settings
• ACTIVATE (www.c8sciences.com) in the school setting
  – WMU-Yale Child Study Center partnership
  – Yoga + Aerobic exercise
  – Web-based executive function training
  – Examining impact in classroom now
Connecting Systems
Current Conceptual Models:
3 Levels / Tiers of Service
Inconsistent Intra-/Inter-Connections

Education

Mental Health Care

Healthcare
Current Situation: Three silos
Not enough connection

SCHOOLS

MEDICAL

MENTAL HEALTH
## Current Models: Healthcare / MH Care / Education

<table>
<thead>
<tr>
<th>Tier</th>
<th>Medical</th>
<th>Mental Health</th>
<th>Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier III (5%)</td>
<td>Child Psychiatry (Outpt/ Inpt)</td>
<td>Wraparound MST Residential</td>
<td>Restrictive Special Education</td>
</tr>
<tr>
<td>Tier II (15%)</td>
<td>Developmental-Behavioral Pediatrics</td>
<td>Home-Based Therapy Intensive Outpt</td>
<td>Inclusive Special Education Self-Contained Sp Ed</td>
</tr>
<tr>
<td>Tier I (80%)</td>
<td>Primary Care</td>
<td>Outpatient Therapy</td>
<td>General Education</td>
</tr>
</tbody>
</table>
Current mandate from Lansing & Washington, DC:

- Integrated Primary Healthcare
  - Integrated behavioral / mental health services inside the primary care office

- Medical home model (healthcare team approach to primary care)

- Conspicuous absence of education in this model
Tiered “2-D” Model of Integrated Healthcare

- Tier I: 80%
- Tier II: 15%
- Tier III: 5%
“2-D”
Integrated Healthcare

“The Unfinished Symphony”
Changing to Transformational Healthcare

Trauma-infuser

Courts

Mental Health

Child Welfare

Medical

Child / Family

Schools

Trauma Champion

SCHOOLS
Trauma-informed Transformational Healthcare

Tier II
- Med: D/B Pediatrics
- MH: Home-based Tx
- Sch: Inclusive Sp Ed

Trauma-infuser
- Courts
- Medical
- Mental Health
- Child Welfare
- Child / Family
- Schools
- Trauma Champion
Tier III
Med: Child Psychiatry
MH: Wraparound/Res.
Sch: Restrictive Sp Ed

Trauma-informed Transformational Healthcare

Trauma-infuser

Courts

Mental Health

Child Welfare

Medical

Child / Family

Schools

Trauma Champion
Truly Integrated *Trauma-informed* Transformational Healthcare

- **Tier I**: 80%
- **Tier II**: 15%
- **Tier III**: 5%

“Trauma I”
From Individual Pillars ...
... to a Network of Pilings!

T-I Interdisciplinary Treatment

T-I Case Planning

T-I Prevention / Screening / Assessment / Triage

DHS / CPS
Juvenile Justice
Medical Home
Education system
Court
Faith Community
CMH
Rec. Leagues
CASA / advocacy
Education

Challenges to Trauma Informed Systems

• “How am I suppose to know the stories (prenatal exposure/trauma) of all the kids in my class?”

• “We are here to teach, not provide social and emotional skill building.”

• “If a student can do it sometimes, he should be able to do it all the time.”

• STS
Mental & Behavioral Health
Challenges to Trauma Informed Systems

• Diagnosis Determines Treatment

• “We are in the business of changing behaviors, not resolving past history due to prenatal exposure or potential trauma.”

• “To get our service, children have to be severely emotionally disturbed.”

• STS
Juvenile Justice

Challenges to Trauma Informed Systems

- “We deal with the crime, not the past including prenatal exposure or trauma.”
- “It’s what the kid has done that matters, not what happened to them.”
- The stricter the consequences the greater the youth will learn that they not to be a criminal.”
- STS
Child Welfare

Challenges to Trauma Informed Systems

• “It’s the physical event we deal with, not the psychological impact of prenatal exposure or trauma.”

• “We know that all our kids are traumatized.”

• “The focus is on returning kids back home, not resolution of their trauma.”

• STS


Medicine

Challenges to Trauma Informed Systems

• “It is not my role to inquire about prenatal alcohol exposure and trauma.”

• “What am going to do if they start talking to me. My time is limited.”

• “I have no one to refer to?”

• STS
Courts

Challenges to Trauma Informed Systems

• “The focus is on adjudication and disposition, not trauma recovery.”

• “Safety and permanence trumps child well being.”

• “Parents choose to maltreat their children, it doesn’t matter if it is prenatal exposure or trauma reenactment it is the act that counts”

• STS
Parents

Challenges to Trauma Informed Systems

• “He is fine as long as I don’t say no. What does prenatal exposure or trauma have to do with behavior”

• “They just want their way. They are trying to manipulate me.”

• “They need to be responsible for their actions. Don’t enable them by telling him he is traumatized. He needs to get over it”

• STS
Trauma informed systems demand organizational, personal and professional change.

- How committed to is your system to change?
Thank you for your attention!