



## THEN Educational Curricula

*The evolving system-based science of  
Trauma – Health Equity - Neuroscience*

**PROPOSAL:** We propose 3 levels of trans-disciplinary education to share our knowledge and build scholarly, clinical and advocacy skills in **4 TOPIC AREAS:**

- Trauma
- Health Equity
- Neurobiology
- System Science

**PROPOSED 3 LEVELS:**

1. Introductory Lecture (one lecture; 60-90 minutes)
2. THEN Foundations (10 session longitudinal course)
3. Advanced THEN Topic (4-10 session longitudinal course)

**OUR ULTIMATE GOAL** is to build a community of scholars, practitioners, researchers, and activists who recognize the transformational potential of these foundational concepts for their own work. We aim to provide continuing education credits for attendees but not to substitute for other college, university, or post-graduate training.

*See Pages 2-5 for proposed Core Content of each Level education.*

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### BACKGROUND

#### **THEN = Center for Collaborative Study of Trauma, Health Equity, and Neurobiology**

THEN was founded in 2017 by 4 women healthcare providers as a small, independent non-profit. We established an Advisory Panel and statement of Vision & Goals. In 2018, we started curriculum development to achieve our goal of providing free education via:

- Website – including Core Concepts, on-line Bibliography of Peer-Reviewed Journal Articles, recommended Books, Glossary, and other Resources
- In-person lectures and workshops at (1) undergraduate-graduate student & residency level, (2) faculty level, (3) community level

To date, we have provided over 30 Introductory lectures to students, faculty, and community (30-90 minutes), 6 Student-Trainee Workshops (2-3 hrs), one Faculty Workshop (2.5 hrs), and one THEN Foundations Series (10 video conferences, 1.5 hrs per session). Dr. Stillerman published *Childhood Adversity and Lifelong Health*, a review article in *Journal of Family Practice* (2018). We have testified at public hearings, given media interviews, and acted as curriculum consultants for multiple universities.

Level 1: Introduction to THEN Core Concepts	
Number of Sessions	One
Time involved	60-90 minutes
Prerequisites	None
Participant Preparation	None
Cost	Free to Participant; Request Sponsor to provide Speaker Honorarium
Continuing Education Credits	As offered by Sponsoring Organization

Core Concepts - <i>Trauma-Health Equity-Neurobiology</i>	
<b>PREFACE:</b> Impact of Trauma on Scientists and Healthcare Providers; Self Care	<u>Primary and Secondary (Vicarious) Trauma</u> Persons choosing human services as a profession likely to have experienced adversity; patient stories can trigger prior personal trauma; Recommendations for Self-Care
<b>CONTENT NOTICE</b> Trigger Warning	Alert participants that trauma education includes description of abuse, discrimination, genocide – may be triggering or cause Secondary Trauma; advise Self-Care
<b>REFLECTIVE PRACTICE</b>	Introduction to process of personal reflection about how learning new concepts and skills can change long-held beliefs and practices > causing “Cognitive Vertigo”
<b>NEUROREGULATION</b>	Classroom practice of one Neuro Regulatory Exercise [ex: Deep Breathing]
<b>SYSTEM SCIENCE AND HUMAN HEALTH</b> <b>SYSTEMS BIOLOGY</b> <b>EARLY DEVELOPMENT</b>	Human body as a complex, fully integrated, multi-level system; Signaling <u>Neurodevelopment</u> occurs in Sequence > brainstem > limbic-midbrain > cortex <u>Attachment-Attunement, Co-Regulation, Neuroplasticity</u> <u>Health and Disease can be seen as Patterns that emerge</u> from continuously changing inter-connected Brain-Body System; physiologic Life Course
<b>BRAIN-BODY INBORN REGULATORY MECHANISMS AND STRESS RESPONSE</b>	<u>Neuro Regulation</u> <u>Sleep</u> – the most powerful inborn Neuro Regulation <u>Stress Response</u>
<b>HEALTH IMPACT OF ADVERSITY &amp; CHRONIC ILLNESS</b>	Impact of Adversity (Neglect and Trauma) > on development; triggering brain-body dysregulation > trigger neuro-inflammation [disease] PATHWAY: Trauma > Dysregulated Physiology > Immune Dysfunction > Disease
<b>HEALTH EQUITY AND DISPARITY</b> Increased suffering by marginalized populations yields increased disease	<u>Experience of Discrimination is a chronic &amp; severe Trauma</u> (generates Toxic Stress) [Everyday Discrimination; Bullying; more] Social Determinants of Health [SDoH] traumatic vs protective; Population Health <u>Increased trauma &gt; increased physiologic dysregulation &gt; increased disease = Disparity</u> Role of Structural Violence; Community Violence; Historical Violence
<b>IMPACT BEYOND HEALTH</b>	Cognition [Learning, Memory], Behavior, Addiction, Interoception, Proprioception
<b>PREVENTION</b>	Prevention in Early Childhood through support & training of mothers & families promoting optimal neurodevelopment via caregiver-infant Attachment-Attunement
<b>ASSESSMENT</b> <b>SCREENING PROTOCOLS</b>	Simple Question to open Trauma Conversation: “How was growing up for you?” ACE Questionnaire; Urban ACEs Questionnaire (Roy Wade) & others Everyday Discrimination Scale; etc. Controversies about Screening
<b>TREATMENT</b>	<u>Trauma-Informed Care</u> : Universal precautions [assume all patients-families potentially had trauma]; training of all levels of staff; modify environment & protocols; Patient-Led, Collaborative; Social Supports; Integrated Physical and Mental Health Care

Level 2: THEN FOUNDATIONS	
Number of Sessions	10-12 sessions
Time involved	90 minutes per session
Prerequisites	None
Participant Preparation	2-4 hours per week to read articles, watch videos; personal reflective practice
Cost	Free Tuition to Participant; \$50 for book purchase
Budget	Seek co-sponsors, grant, donors for cost of Faculty Honoraria, room rental, video
Continuing Education Credits	As offered by Sponsoring Organization

IN DEPTH - <i>Trauma-Health Equity-Neurobiology Concepts</i>	
<b>PREFACE:</b> Impact of Trauma on Scientists and Healthcare Providers; Self Care	Primary and Secondary (Vicarious) Trauma Persons choosing human services as a profession likely to have experienced adversity; patient stories can trigger prior personal trauma; Recommendations for Self-Care
<b>CONTENT NOTICE</b> Trigger Warning	Alert participants that trauma education includes description of abuse, discrimination, genocide – may be triggering or cause Secondary Trauma; advise Self-Care
<b>REFLECTIVE PRACTICE</b>	Each session to include group Reflective Practice. Reflection on how learning new concepts and skills can change long-held beliefs and practices > “Cognitive Vertigo”
<b>NEUROREGULATION</b>	Classroom practice of Neuro Regulatory Exercise(s) each session [ex: Deep Breathing]
<b>SCIENCE OF COMPLEX SYSTEMS</b>  <i>For Discussion &gt;&gt; These concepts provide the foundation of understanding development, neuroplasticity, brain-body communication, etc. – however, these concepts are often considered outside the scope of typical trauma training</i>	Complex system as <u>system of many parts &amp; levels</u> ; continuously interacting and adapting to change on other levels; <u>Signaling</u> ; Signal <u>Cross-talk</u>  <u>Oscillations-Rhythms</u> – ubiquitous mechanism of information transfer throughout nature; acts to synchronize within systems from micro to macro level  <u>Emergence</u> – how Chain of Complex Events in subsystems can generate unexpected change in system as a whole, generating a new system Pattern Trajectory: path of events from initial conditions  <u>Ancient Wisdom</u> [models of nature and health-healing from other cultures]  <u>Social Ecological Model</u> : Framework demonstrating that individuals – and their health outcomes - are imbedded in social-cultural context
<b>SYSTEM SCIENCE AND HUMAN HEALTH</b>  <b>SYSTEMS BIOLOGY</b>  Each session to include new Case Study	Human body as a complex, fully integrated, multi-level system <u>Neurodevelopment</u> occurs in Sequence > brainstem > limbic-midbrain > cortex <u>Attachment-Attunement</u> as foundational process of establishing and maintaining rhythm and stimulating neurodevelopment [ <u>Co-Regulation</u> ]; <u>Neuroplasticity</u>  <u>Health and Disease can be seen as Patterns that emerge</u> from continuously changing inter-connected Brain-Body System; physiologic <u>Life Course</u> Specific Disease examples: Inflammatory Vascular Disease (hypertension, cardiac), Obesity, Auto-immune Disease, Maternal Mortality  <u>Diagnosis = Pattern Recognition</u> Our nomenclature of Diagnoses [which can differ by profession] is a “scientific notation” specifying selected characteristics of recognized patterns
<b>BRAIN-BODY INBORN REGULATORY MECHANISMS AND STRESS RESPONSE</b>	<u>Neuro Regulation</u> - sensing and regulating through deep brain + autonomic nervous system [sympatho-vagal balance] + endocrine/neurotransmitters/immune systems <u>Sleep</u> – the most powerful inborn Neuro Regulation <u>Stress Response</u>

<b>HEALTH IMPACT OF ADVERSITY &amp; CHRONIC ILLNESS</b>	<p><u>Impact of Adversity (Neglect and Trauma)</u> &gt; on development; triggering brain-body dysregulation &gt; trigger neuro-inflammation [disease]</p> <p><u>ACEs</u> [Adverse Childhood Experiences] Felitti &amp; Anda 1998. Expanded definition of trauma-adversity: discrimination, war, refugees, sex trafficking, genocide &amp; more</p> <p>PATHWAY: Trauma &gt; Dysregulated Physiology &gt; Immune Dysfunction &gt; Disease</p> <p>Emotions: <u>“mental injury”</u> [versus <u>“mental illness”</u>]; addiction; core physiologic processes. Symptoms [ex: dissociation] are common, protective &amp; self-regulating</p>
<b>HEALTH EQUITY AND DISPARITY</b>  Increased suffering by marginalized populations yields increased disease	<p><u>Experience of Discrimination is a chronic &amp; severe Trauma</u> (generates Toxic Stress) [Everyday Discrimination; Bullying; more]</p> <p>Social Determinants of Health [SDoH] traumatic vs protective; Population Health</p> <p><u>Increased trauma &gt; increased physiologic dysregulation &gt; increased disease = Disparity</u>; Role of <u>Structural Violence</u>; <u>Community Violence</u>; <u>Historical Violence</u></p> <p>Specifics and prevalence rates for full scope of disadvantaged-marginalized populations: race, ethnicity, religion, gender, sexual orientation, ability-disability, body size, more</p>
<b>IMPACT BEYOND HEALTH</b>	<p>Dysregulation affects <u>Cognition</u> [Thinking, Learning, Memory], <u>Behavior</u> [ability of brain cortex to modify behavior given emotional content, intrusive memory, impulsive and compulsive urges, etc.], ability to relate to others; Interoception, Proprioception, etc.</p>
<b>PREVENTION</b>	<p><u>Perinatal and Maternal Care</u></p> <p><u>Prevention in Early Childhood</u> through support &amp; training of mothers &amp; families promoting optimal neurodevelopment via caregiver-infant Attachment-Attunement [Rhythmic processes including Breastfeeding]; doulas, centering, parent training, etc.</p> <p>Anticipate &amp; provide <u>support for children and families</u> – in general &amp; with trauma [poverty, food scarcity, intimate partner violence, family member with mental illness or addiction, incarceration, more] <u>Prevention-remediation of bullying</u> during childhood</p> <p>Anticipate and provide <u>support for first responders and caregivers</u> of persons suffering trauma: medical and mental health personnel, police, fire, EMT, foster and adoptive parents, soldiers, Red Cross, NGO disaster response, news media, judicial system</p>
<b>ASSESSMENT</b>  <b>SCREENING PROTOCOLS AND CONTROVERSIES</b>	<p><u>Comprehensive Assessment</u> including Developmental Milestones in sequence; Life Course; relational density; maternal history, physiologic function [sleep, brainstem, signaling integration – heart rate variability; more]</p> <p><u>Simple Question to open the Trauma Conversation</u>: “How was growing up for you?” <u>ACE Questionnaire</u>; <u>Urban ACEs Questionnaire</u> (Roy Wade). <u>Screening Controversies</u></p> <p><u>Other Screening Protocols</u> to identify children-adults with Dissociation, Disordered Attachment; Interpersonal Violence; Everyday Discrimination Scale; Social Needs. Etc.</p>
<b>TREATMENT</b>  <b>INDIVIDUALIZED WHOLE PERSON CARE AND CARE PLANNING</b>	<p><u>Trauma-Informed Care</u>: Universal precautions [assume all patients-families potentially had trauma]; training of all levels of staff; modify environment &amp; protocols Collaborative, integrated Physical and Mental Health Care; Social supports</p> <p><u>Patient-Provider Partnership</u> [Pace of care guided by Patient Readiness]</p> <p><u>Care Planning guided by foundational principles of Neuro Regulation</u>: patterned, repetitive, rhythmic activity within safe environment [Relate, Regulate, then Reason]</p> <p><u>Multi-modal Team Care and Care Planning</u>. Beyond pharmaceuticals, procedures, and talk therapy Begin with full array of regulatory interventions including exercise, sports, mindfulness, trauma psychotherapy, play therapy, sensorimotor integration, arts, yoga, PLUS broader modalities such as manual therapies, acupuncture, nutrition, etc.</p> <p><u>Quadruple Aim</u> [quality, patient satisfaction, cost, provider well-being] using trauma Informed principles; universal access to comprehensive healthcare.</p>

Level 3: Advanced THEN WORKSHOPS <> SPECIAL TOPICS	
Number of Sessions	4-10
Time involved	90 minutes per session
Prerequisites	THEN FOUNDATIONS
Participant Preparation	2-4 hours per week to read articles, watch videos; personal reflective practice
Cost	Free Tuition to Participant; \$50 for book purchase
Budget	Seek co-sponsors, grant, donors for cost of Faculty Honoraria, room rental, video
Continuing Education Credits	As offered by Sponsoring Organization

EXAMPLE - <i>Using “THEN Lens” to Rethink Vascular and Other Disease</i>	
EXAMPLE: Hypertension is often initiated by sympatho-vagal imbalance and deep brain hyper-stimulation and is first step of Vascular Inflammation which can progress to Cardiovascular Disease or Stroke	
<b>REVIEW:</b> Impact of Trauma on Scientists and Providers; Content Notice; Self Care	<u>Primary and Secondary (Vicarious) Trauma</u> Alert participants that trauma may be triggering
<b>REFLECTIVE PRACTICE</b>	<b>REVIEW:</b> Each session to include group Reflective Practice.
<b>NEUROREGULATION</b>	Classroom practice of Neuro Regulatory Exercise each session [ex: Deep Breathing]
<b>SYSTEM SCIENCE AND HUMAN HEALTH</b> Each session to include new Case Study	<p><b>REVIEW:</b></p> <p>(1) Human body is <u>complex system</u> with continuous interaction and adaptation</p> <p>(2) <u>Role of oscillations and rhythms</u> to transfer &amp; synchronize signals throughout the body; <u>signal cross-talk</u></p> <p>(3) Health and Disease can be seen as <u>Patterns that emerge</u> from continuously changing inter-connected Brain-Body System</p> <p>(4) <u>Diagnosis = Pattern Recognition</u>: certain features of chosen as differentiating factors</p> <p>(5) <u>Life Course</u> – role of adversity</p> <p>Example: Comparative analysis of Conventional Medical diagnoses of Vascular health and disease versus Systems Biology perspective</p> <p><u>Adding the THEN Lens</u>: role of adversity, especially Everyday Discrimination as factor in Vascular Disease putting some populations at greater risk</p>
<b>PREVENTION</b>	<u>Perinatal and Maternal Care</u> <u>Prevention in Early Childhood</u> through support & training of mothers & families promoting neurodevelopment via caregiver-infant Attachment-Attunement Community and Structural Prevention Policies
<b>ASSESSMENT SCREENING PROTOCOLS AND CONTROVERSIES</b>	<u>Comprehensive Assessment</u> including Developmental Milestones in sequence; Life Course; relational density; maternal history, physiologic function [sleep, brainstem, signaling integration – heart rate variability; more]  Since we know that Hypertension can emerge as early as Age 8, revise Screening Protocols for sensitive early identification of vulnerable youth and effective action.
<b>TREATMENT</b>  <b>INDIVIDUALIZED WHOLE PERSON CARE AND CARE PLANNING</b>	<u>Care Planning guided by foundational principles of Neuro Regulation</u> : patterned, repetitive, rhythmic activity within safe environment [Relate, Regulate, then Reason]  <u>Multi-modal Team Care and Care Planning</u> . Beyond pharmaceuticals, procedures, and talk therapy Begin with full array of regulatory interventions including exercise, sports, yoga mindfulness, trauma psychotherapy, play therapy, sensorimotor integration, arts, etc.