Introduction to Adverse Childhood Experiences (ACEs)

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CENTER FOR YOUTH WELLNESS
health begins with hope

Center for Youth Wellness team:

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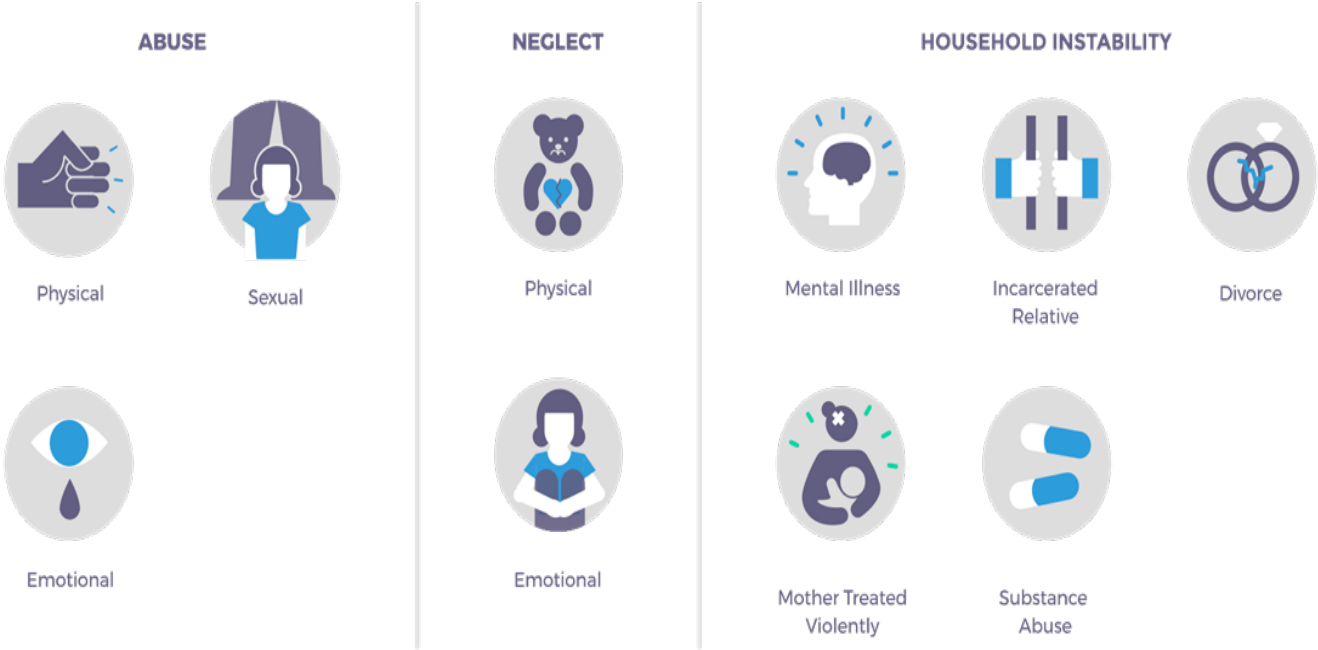
Objectives:

- Explain the current science on Adverse Childhood Experiences (ACEs) and their relationship to toxic stress
- State the rationale for early detection and screening of ACEs along with the associated barriers
- Demonstrate competence in interpreting the relationship between early life adversity and toxic stress to clinical outcomes in pediatric primary care
- Identify opportunities for expanding ACE screening in the pediatric setting

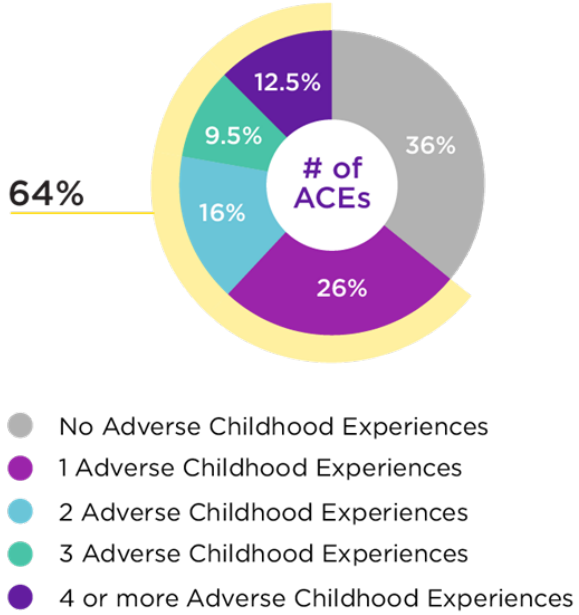
ACEs Science

Adverse Childhood Experiences (ACEs):



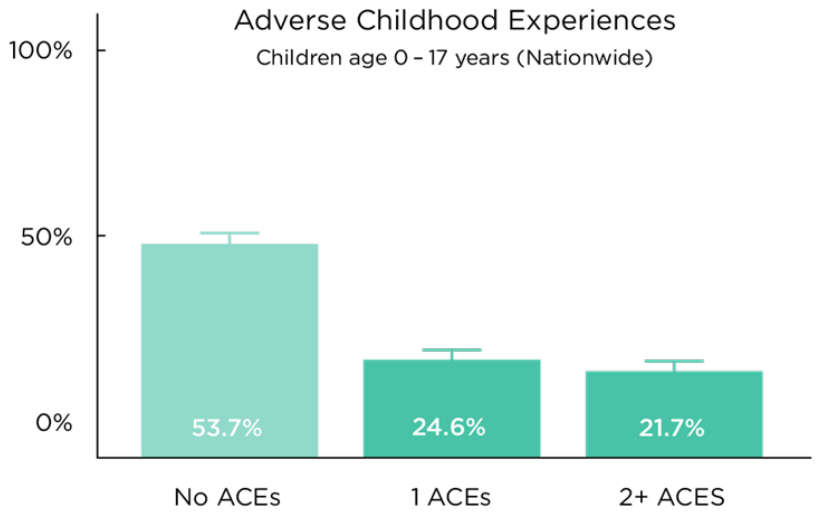
ACEs are common:

- **Nearly 2 out of 3 adults have at least one ACE**



Source: CDC-Kaiser ACE Study (1998)

- **Nearly half of children (34.8 million) have at least one ACE**



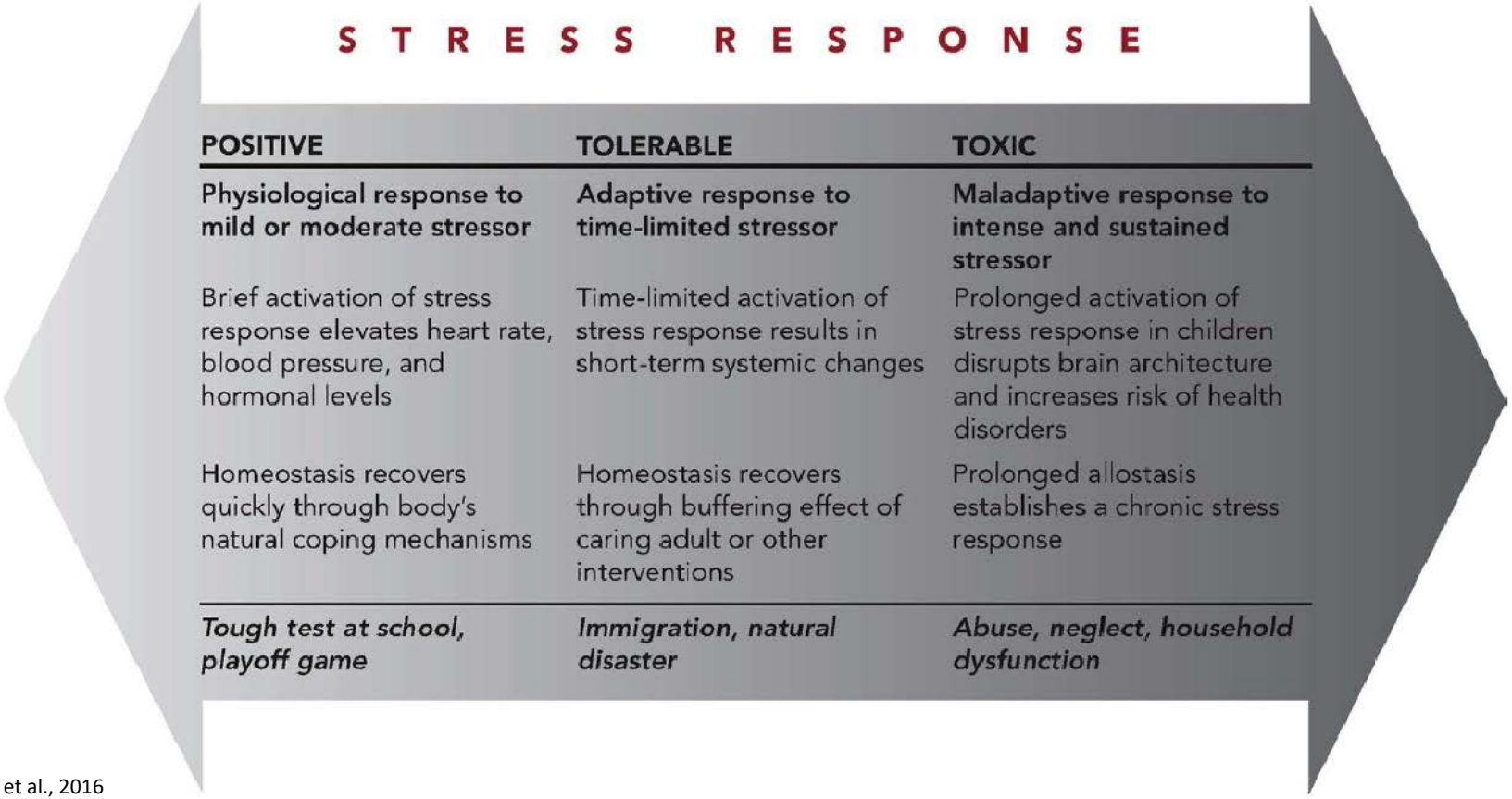
http://www.cahmi.org/wp-content/uploads/2017/10/aces_fact_sheet.pdf

ACEs have strong association with negative health outcomes in adults:

	Leading Causes of Death in US, 2013	Odds Ratio Associated with ≥ 4 ACEs
1	Heart Disease	2.1
2	Cancer	2.3
3	Chronic Lower Respiratory Diseases	3.0
4	Accidents	
5	Stroke	2.4
6	Alzheimer's	11.2
7	Diabetes	1.5
8	Influenza and Pneumonia	
9	Kidney Disease	
10	Suicide	30.1

Odds Ratio associated with ≥ 4 ACEs CDC 2015, Feletti 1998, BRFSS 2013, Hughes 2017

Not all stress is bad



STRESS RESPONSE

POSITIVE	TOLERABLE	TOXIC
Physiological response to mild or moderate stressor	**Adaptive response to time-limited stressor**	**Maladaptive response to intense and sustained stressor**
Brief activation of stress response elevates heart rate, blood pressure, and hormonal levels	Time-limited activation of stress response results in short-term systemic changes	Prolonged activation of stress response in children disrupts brain architecture and increases risk of health disorders
Homeostasis recovers quickly through body's natural coping mechanisms	Homeostasis recovers through buffering effect of caring adult or other interventions	Prolonged allostasis establishes a chronic stress response
Tough test at school, playoff game	***Immigration, natural disaster***	***Abuse, neglect, household dysfunction***

Bucci et al., 2016

The Threat Response

Perceived Threat

Fight

Flight

Think quick
Get energy
Protect

Freeze

Play dead
Prepare for pain and injury

Biological mechanism: Toxic stress

Adverse Childhood Experiences

+

- Protective Factors
- Predisposed Vulnerability

Toxic Stress

Chronic Dysregulation

NEURO

ENDOCRINE

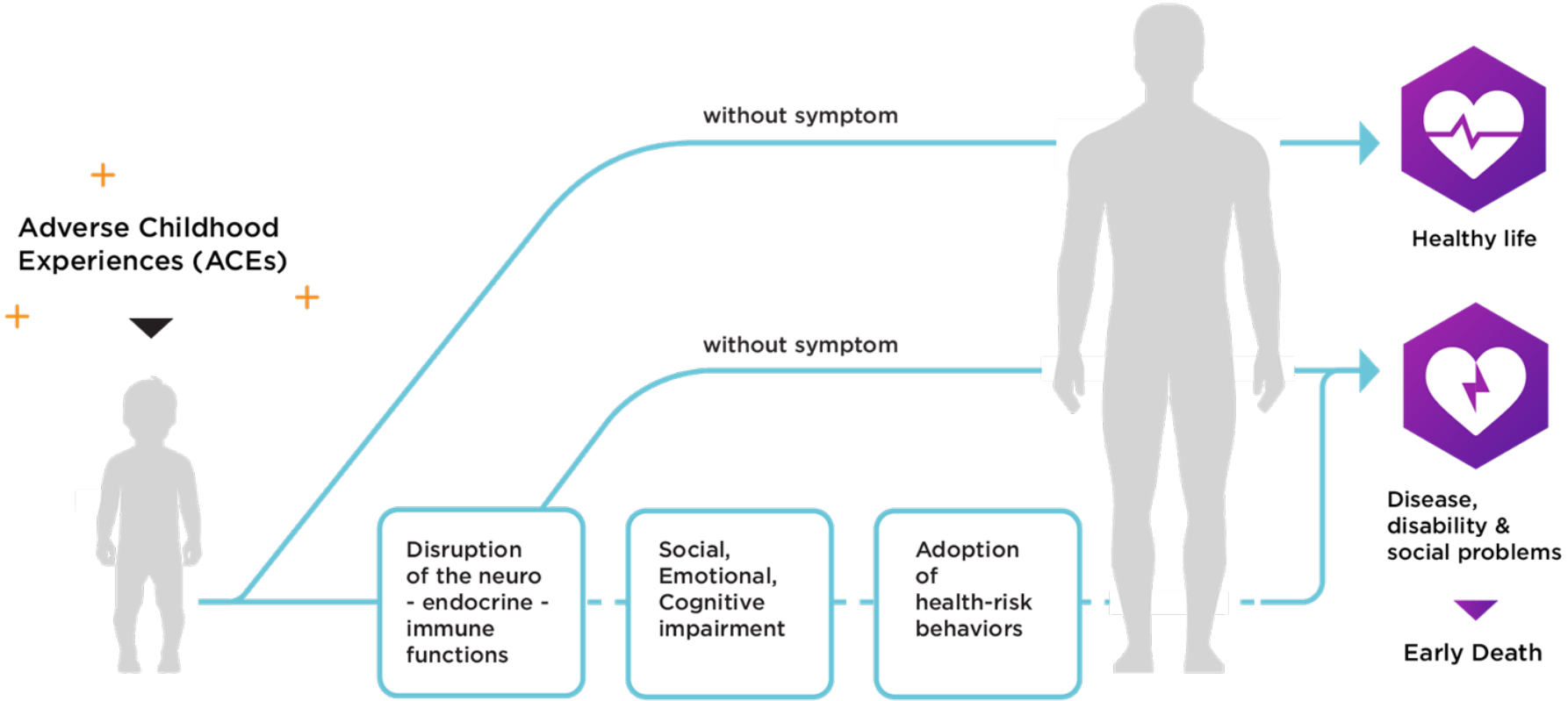
IMMUNE

Clinical Implications

Endocrine Metabolic Reproductive	Neurologic Psychiatric Behavioral	Immune Inflammatory Cardiovascular

Epigenetic

The impact: Variability in symptomatology



The cost of inaction in childhood: Health and behavioral issues

- Growth delay
- Cognitive delay
- Sleep distruption

- Asthma
- Infection
- Learning difficulties
- Behavioral problems

- Obesity
- Violence
- Bullying
- Smoking
- Teen pregnancy

Oh et al., in press, Matheson 2016, Kerker 2015, Shen 2016, Ryan 2015, Giordano 2014, Rhodes 2012, Thompson 2017, Bjorkenstam 2015

Clinical Symptoms

Inflammatory Responses

- Frequent asthma exacerbations
- Frequent eczema flaring
- Frequent colds
- Frequent infections such as ear infections or pneumonia

Endocrine System Responses

- Diabetes
- Difficulty keeping weight on
- Frequent abdominal pain
- Obesity
- Poor growth
- Constipation
- Weight gain or loss
- Difficult/irregular menses
- Early or late onset of menses/puberty

Neurological System Responses

- New onset, or recent increase in anxiety
- New onset, or recent increase in depression
- Enuresis/Encopresis
- Behavior problems- impulsivity, oppositional defiance
- Frequent headaches/migraines
- Inconsolable crying
- Difficulty sleeping or nightmares
- Disassociation/apathy
- Regular Drug, alcohol, tobacco use
- Risky sexual behavior- frequent sexual activity, multiple partners, lack of use of condoms/contraception
- Self-Harm –cutting, suicidal Ideation/attempt
- School problems- school avoidance, frequent absence, poor/failing grades
- Learning problems- increase in ADD, ADHD symptoms


ACEs Screening

Why screen for ACEs in primary care?

- It is the ideal setting for screening , health promotion, and disease prevention.
- Early detection can prevent negative health outcomes.
- The Provider/Patient relationship creates an atmosphere to discuss adverse experiences.

Challenges to Universal ACEs Screening

Lack of time

Lack of provider comfort and fear of incorrect information

Perceived negative patient reaction

Concerns regarding strength of referral system

Fear of clinic liability and increases in cases of mandated reporting

Questions about tools and scientific foundation

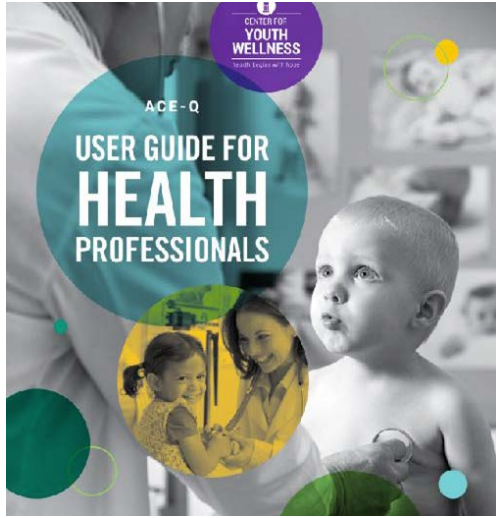
Perception that ACEs pertain to only certain populations

Perception that ACEs are outside physician core function

Source: CYW Insights Research with Pediatricians, unpublished; Kecker et al., 2016

Making screening a reality in practice

- Implement a Performance Improvement Project
- Start with a pilot population
- Incorporate into annual well-child visits
- Utilize coaching and tools provided
- Build upon shared lessons from other providers screening



What we can do...

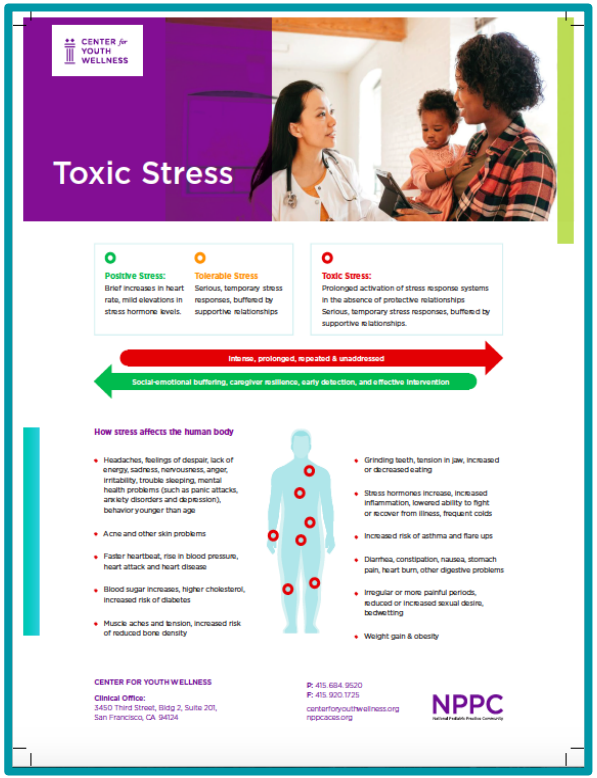
1. Universal screening & education

2. Clinical Interventions
   a. Six domains of wellness & enhancing protective family factors
   b. Disease management

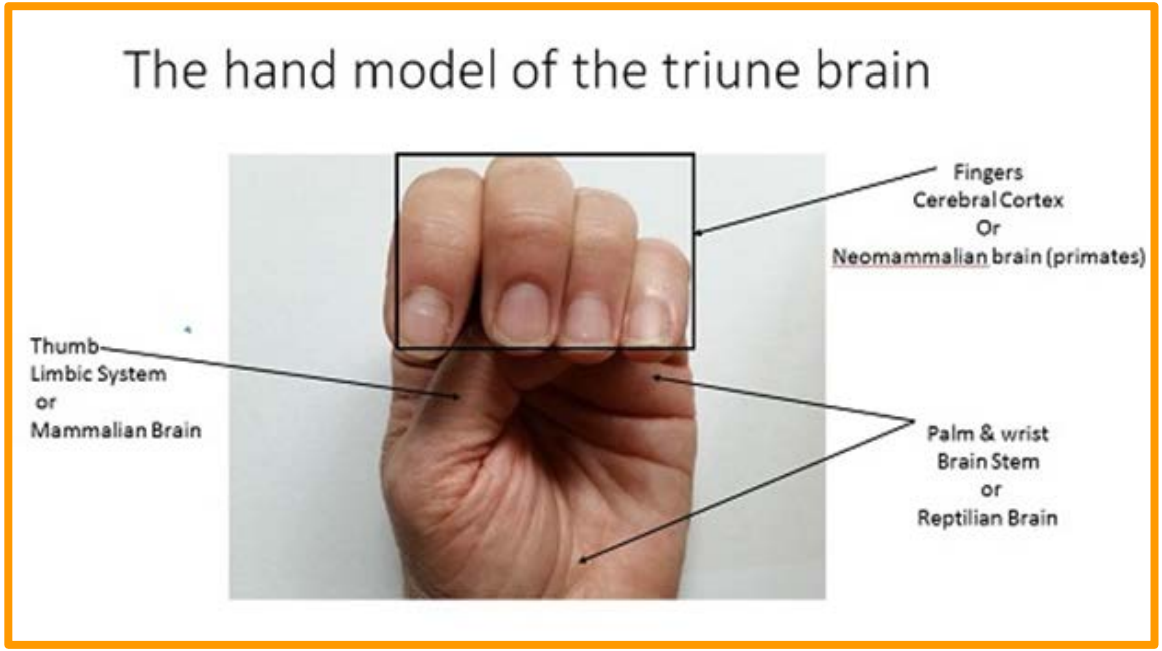
3. Referrals for therapeutic interventions

Partnering for Resilience:: Learn, Empower and Connect to Prevent Toxic Stress. AAP Section on Pediatric Trainees. 2016-2017.
Adapted from Bucci et al.Toxic Stress in children and adolescents. Advances in Pediatrics, 2016

Universal Screening & Education:
Anticipatory Guidance and Tools



Universal Screening & Education:
Anticipatory Guidance and *The Whole Brain Child*



"Name it to tame it."

"Connect then redirect"

Dan Siegel MD, Tina Payne Bryson PhD

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2. Clinical Interventions
    a. Six domains of wellness
    b. Disease management

3. Referrals for therapeutic interventions

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Clinical Interventions:
Six Domains of Wellness

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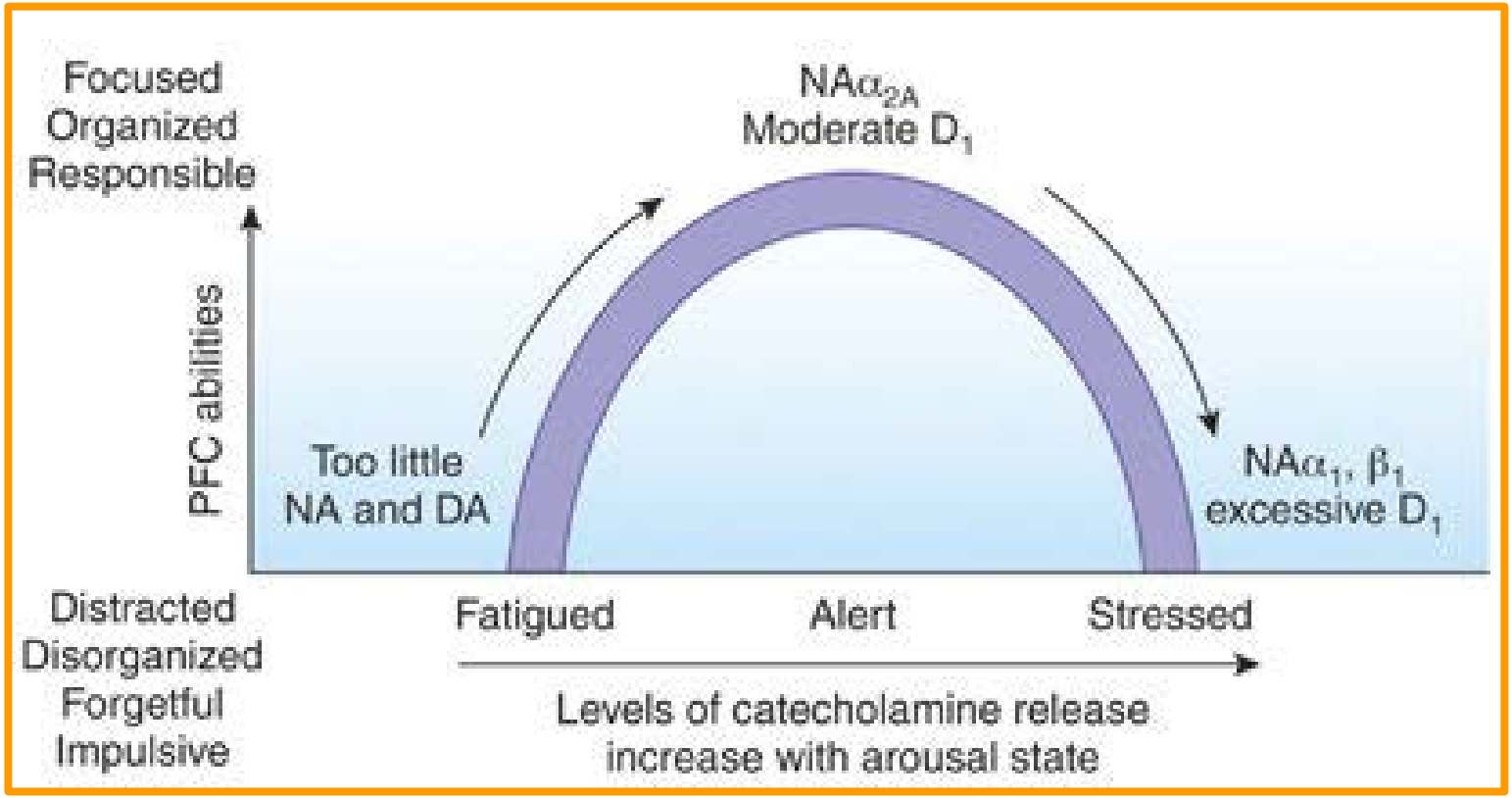
Disease Management:
PFC Activity Relative to Catecholamine



Arnsten (2009)

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Modifiable Resilience Factors to Childhood Adversity for Pediatric Practice **(Traub 2017)**

- Trauma-informed care training for staff
- Screen patients for adversities and protective factors.
- Create a medical home for children with ACEs emphasizing strong relationships.
- Integrate behavioral health care into the pediatric office.
- Offer group-based education and support for parents

Case Study

- 2 year 9 mo female presents for Well Child Exam
- Presenting concern: Growth – Patient is “small”. Previously had diarrhea when she started on cow’s milk. Symptoms went away when mom changed to almond milk.
- Otherwise well. No other complaints.

History

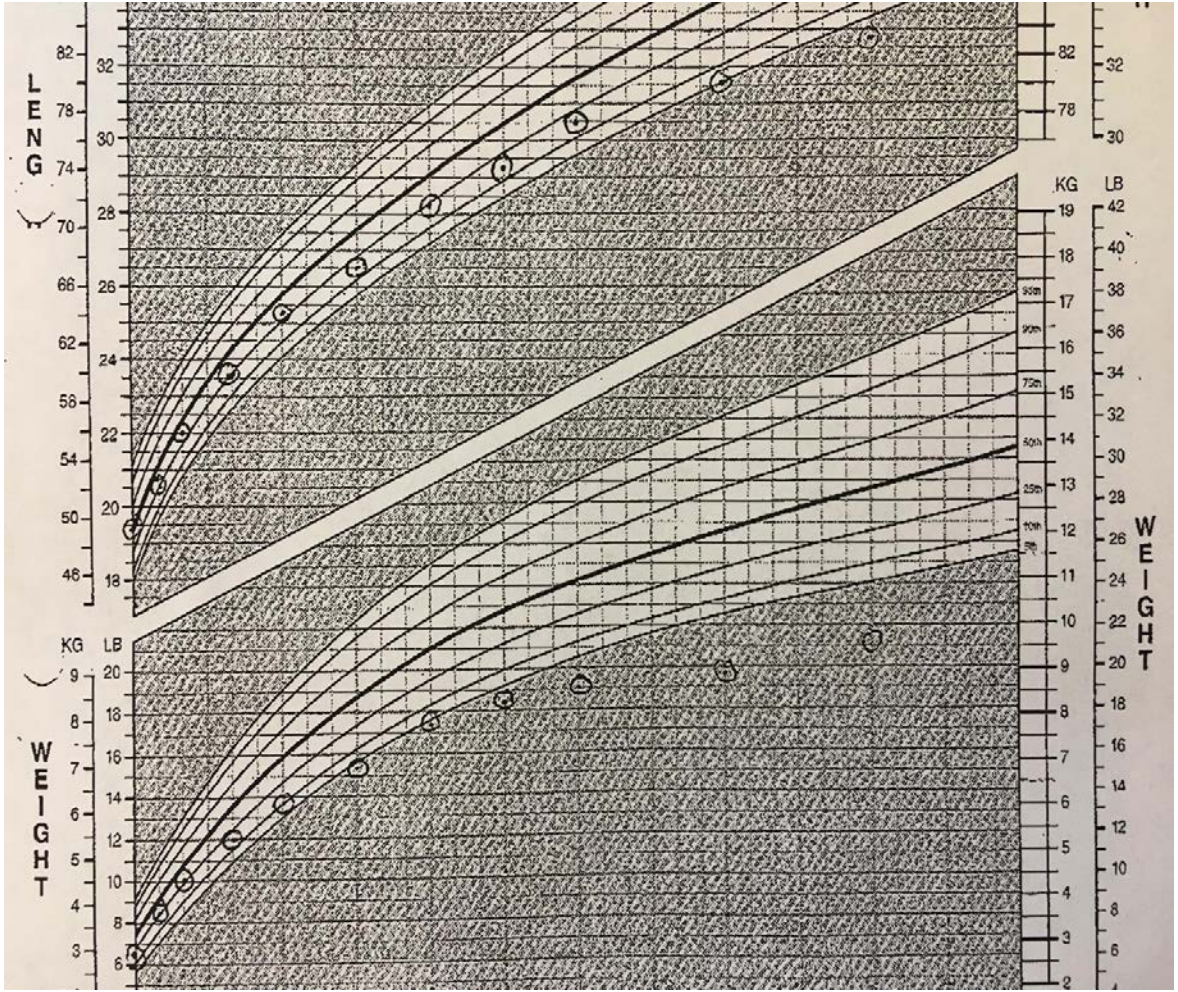
- Birth History: Full term, normal spontaneous vaginal delivery (NSVD), Birth Wieght: 6lb 8oz (25%)
- Development History: Normal gross motor, fine motor and social/emotional development per mom. Walked at 14 mo. Early language development.
- Growth History: Went from 25% height and weight to progressively decreasing until she was consistently below the 3rd percentile for height, weight and BMI.
- Previous doctor said that they need to offer her more foods and recommended Pediasure but it didn't seem to help.
- Mom's height is at 30%, dad's height is at 20%

History

- Health History: Lactose intolerant. Otherwise no significant medical history. Normal urine and stool output. No chronic conditions.

- Sleep: Normal, no concerns.

- Behavior: No concerns.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Evaluation

- Physical Exam: Small, but otherwise no abnormality
- Initial Labs:
  - Comp metabolic panel WNL,
  - CBC – WNL (borderline Hb),
  - TSH- WNL
- IgF-1, IGF-BP3, Pre-albumin – all WNL
- Normal newborn screen (no inborn errors of metabolism)
- Bone Age: Chronologic age – 3y 7m, bone age: 2 y 6m. SD 7.48m
  Conclusion: Discordant chronologic and skeletal age.

Developmental Assessments

- ASQ: WNL
- MCHAT: WNL
- Additional Assessments: ACE Score: 7+0

Assessment

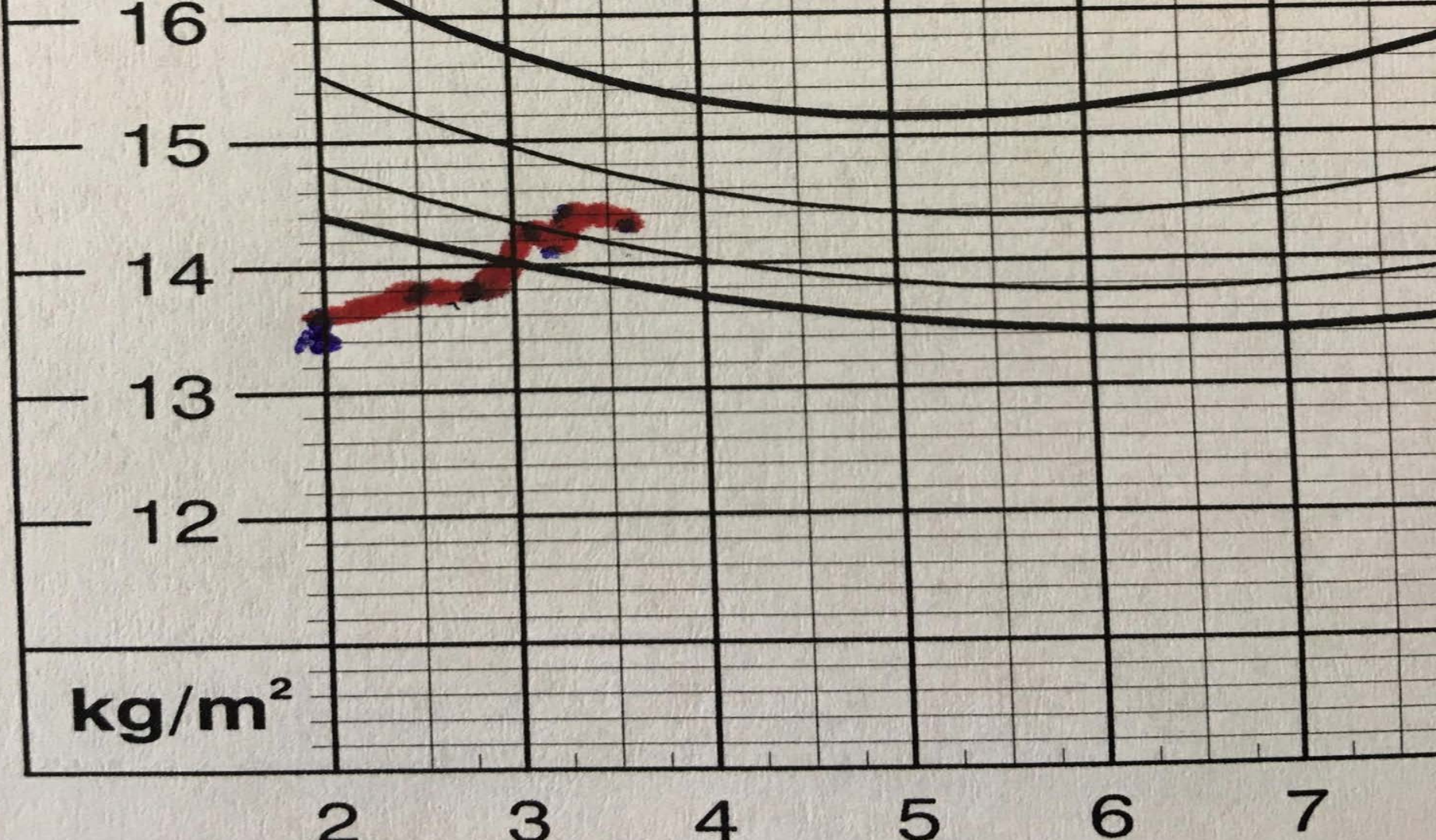
- 2 yr 9 mo. female with failure to thrive. Likely due to toxic stress physiology.

Plan

- Sleep, Exercise, **Nutrition** , Mindfulness, **Mental Health** , **Healthy Relationships**
- Pediasure, 1 can BID
- Referred to WIC
- Referred to CYW for Child Parent Psychotherapy (CPP)

Multidisciplinary Care

- Explanation to mom about the pathophysiology of toxic stress:
  - “I think that because of what your daughter has experienced, her body is making more stress hormones than it should and this may be what’s affecting her growth. I want to refer you to a specialist that help you learn how to support her and reduce the amount of stress hormones that her body is making.”
  - “We also know that a healthy caregiver is one of the most important ingredients for healthy children, so an important part of helping your daughter heal will involve managing your own stress level and practicing taking care of yourself.”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Discussion

- Toxic Stress Response:
    - Neuro-**endocrine** -immune and genetic regulatory disruption.
    - There is currently no established clinical diagnostic criteria for toxic stress. Understanding what factors put a patient at risk and how toxic stress affects physiology allows to understand how to better serve our patients.

Discussion

- Treatment strategy:
    - *Reducing the dose of adversity* – decreased activation of the HPA axis, decrease adrenaline and cortisol dysregulation.
    - *Enhancing the ability of the caregiver to provide a safe, stable and nurturing environment,* as well as regulate her own physiology so that she can biologically buffer the child's stress response is critical, especially for younger kids.
    - The 2-generation nature of the CTRP intervention was important for this age range.

Corollary

- 9 month-old brother, who was not the index patient, also had 4 ear infections and 2 pneumonias before his first year of life.
- Seemed like he was “always sick”, per mom.
- Referred to ENT for evaluation of frequent ear infection.
- After CTRP intervention started, patient had many fewer URI’s and had only one ear infection in the next year.

Not all individuals experience toxic stress as a result of negative experiences

http://www.albertafamilywellness.org/what -we-know/resilience-scale

Thank you!