Toxic Stress and the Pediatric Medical Home

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Objective

- Discuss the impact of toxic stress (psychosocial stress) on children
- Discuss evidenced-based practices to address toxic stress (psychosocial stress) in the pediatric medical home
Life Course Theory

Health And Wellness

Optimal Trajectory
Sub-optimal Trajectory

Prenatal  Birth  Childhood  Adulthood
Life Course Theory - Biomedical

- Epigenetics

EPIGENETIC MECHANISMS
- Development (in utero, childhood)
- Environmental chemicals
- Drugs/Pharmaceuticals
- Aging
- Diet

DNA methylation
Methyl group (an epigenetic factor found in some dietary sources) can tag DNA and activate or repress genes.

HEALTH ENDPOINTS
- Cancer
- Autoimmune disease
- Mental disorders
- Diabetes

Histone modification
The binding of epigenetic factors to histone “tails” alters the extent to which DNA is wrapped around histones and the availability of genes in the DNA to be activated.

Histones are proteins around which DNA can wind for compaction and gene regulation.
Life Course Theory- ACE

- Adverse Childhood Experiences Studies (ACE)
  - Felliti, Anda
  - 18,000 respondents
  - Kaiser, San Diego
## Categories of ACE

### Abuse, by Category

<table>
<thead>
<tr>
<th>Category</th>
<th>Prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological (by parents)</td>
<td>11%</td>
</tr>
<tr>
<td>Physical (by parents)</td>
<td>11%</td>
</tr>
<tr>
<td>Sexual (anyone)</td>
<td>22%</td>
</tr>
</tbody>
</table>

### Household Dysfunction, by Category

<table>
<thead>
<tr>
<th>Category</th>
<th>Prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance Abuse</td>
<td>26%</td>
</tr>
<tr>
<td>Mental Illness</td>
<td>19%</td>
</tr>
<tr>
<td>Mother Treated Violently</td>
<td>13%</td>
</tr>
<tr>
<td>Imprisoned Household Member</td>
<td>3%</td>
</tr>
</tbody>
</table>
ACE Score

Number of categories adverse childhood experiences are summed …

<table>
<thead>
<tr>
<th>ACE score</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>48%</td>
</tr>
<tr>
<td>1</td>
<td>25%</td>
</tr>
<tr>
<td>2</td>
<td>13%</td>
</tr>
<tr>
<td>3</td>
<td>7%</td>
</tr>
<tr>
<td>4 or more</td>
<td>7%</td>
</tr>
</tbody>
</table>

- More than half have at least one ACE
Adverse Childhood Experiences

% Alcoholic as Adult

ACE Score as Child

0
1
2
3
4+

18
16
14
12
10
8
6
4
2
0
### Life Course Theory- ACE Study

<table>
<thead>
<tr>
<th>Outcomes Associated with Adverse Childhood Experiences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcoholism and alcohol abuse</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease (COPD)</td>
</tr>
<tr>
<td>Depression</td>
</tr>
<tr>
<td>Diabetes</td>
</tr>
<tr>
<td>Fetal death</td>
</tr>
<tr>
<td>Health-related quality of life</td>
</tr>
<tr>
<td>Illicit drug use</td>
</tr>
<tr>
<td>Ischemic heart disease (IHD)</td>
</tr>
<tr>
<td>Liver disease</td>
</tr>
<tr>
<td>Risk for intimate partner violence</td>
</tr>
<tr>
<td>Multiple sexual partners</td>
</tr>
<tr>
<td>Obesity</td>
</tr>
<tr>
<td>Sexually transmitted diseases (STDs)</td>
</tr>
<tr>
<td>Smoking</td>
</tr>
<tr>
<td>Suicide attempts</td>
</tr>
<tr>
<td>Unintended pregnancies</td>
</tr>
<tr>
<td>Early initiation of smoking</td>
</tr>
<tr>
<td>Early initiation of sexual activity</td>
</tr>
<tr>
<td>Adolescent pregnancy</td>
</tr>
</tbody>
</table>
Disrupted Stress Response

- Suglia et al 2009, Arch Pediatr Adolesc Med
- Maternal intimate partner violence and increased asthma incidence in children: buffering effects of supportive caregiving.
ACE Study- Conceptual Model

Mechanisms by Which Adverse Childhood Experiences Influence Health and Well-being Throughout the Lifespan
Toxic Stress- Psychosocial Stress

- Are there evidence based strategies to help?
Social Ecological Model
The pediatric medical home is only as effective as its ability to reach into the real home and/or proximal environment of a child.
Caregiver Capacity

Risk and Resilience

Optimal Trajectory
- Health and Wellness
- Promote Resilience
- Reduce Risk

Sub-optimal Trajectory
- Health and Wellness

Prenatal | Birth | Childhood | Adulthood
Risk and Resilience

[Diagram showing the relationship between health and wellness across prenatal, birth, childhood, and adulthood phases, highlighting the optimal and sub-optimal trajectory to promote resilience and reduce risk.]

- Optimal Trajectory
- Sub-optimal Trajectory

Health And Wellness

Prenatal Birth Childhood Adulthood

Promote Resilience
Reduce Risk
Risk and Resilience

NCQA 2014

Health And Wellness

- Prenatal
- Birth
- Childhood
- Adulthood

Optimal Trajectory
Sub-optimal Trajectory

Promote Resilience
Reduce Risk
Risk and Resilience

NCQA 2014

SH Social Services Integration

Health And Wellness

Prenatal Birth Childhood Adulthood

Optimal Trajectory

Sub-optimal Trajectory

Promote Resilience

Reduce Risk

NCQA 2014

SH Social Services Integration

Optimal Trajectory

Sub-optimal Trajectory

Promote Resilience

Reduce Risk
Social Ecological Model
Safe Environment for Every Kid (SEEK)

- SEEK Model- Identify psychosocial risk and use team-based medical home
  - Parent Questionnaire at Well Child Visits
  - Motivational Interviewing
  - Team based care including community services
SEEK Outcomes

• SEEK I- Randomized Controlled Trial in at risk population

• Results
  ○ Fewer reports to CPS compared to regular care (nearly one half)
  ○ Fewer reports of severe or very severe physical assault compared to regular care (one third)
  ○ Decreased psychological aggression
  ○ Decreased medical neglect (non-adherence to medical care and delayed vaccines)
Dear Parent or Caregiver: Being a parent is not always easy. We want to help families have a safe environment for kids. So, we’re asking everyone these questions. They are about problems that affect many families. If there’s a problem, we’ll try to help.

Please answer the questions about your child being seen today for a checkup. If there’s more than one child, please answer “yes” if it applies to any one of them. This is voluntary. You don’t have to answer any question you prefer not to.
**Parent Questionnaire**

- **PLEASE CHECK**
  - □ Yes □ No  Do you need the phone number for Poison Control?
  - □ Yes □ No  Do you need a smoke detector for your home?
  - □ Yes □ No  Does anyone smoke tobacco at home?
Parent Questionnaire

- □ Yes □ No  In the last year, did you worry that your food would run out before you got money or Food Stamps to buy more?

- □ Yes □ No  In the last year, did the food you bought just not last and you didn’t have money to get more?
Parent Questionnaire

- □ Yes □ No  Do you often feel your child is difficult to take care of?
- □ Yes □ No  Do you sometimes find you need to hit/spank your child?
- □ Yes □ No  Do you wish you had more help with your child?
- □ Yes □ No  Do you often feel under extreme stress?
Parent Questionnaire

- □ Yes □ No  In the past month, have you often felt down, depressed, or hopeless?
- □ Yes □ No  In the past month, have you felt very little interest or pleasure in things you used to enjoy?
Parent Questionnaire

- □ Yes □ No  In the past year, have you been afraid of your partner?
- □ Yes □ No  In the past year, have you had a problem with drugs or alcohol?
- □ Yes □ No  In the past year, have you felt the need to cut back on drinking or drug use?
- □ Yes □ No  Are there any other problems you’d like help with today?
Parent Questionnaire

Medications:

Over the counter medications/vitamins:

What are you concerns?

How often does your baby feed during the day? At night?

Who cares for your baby during the day?

Is your baby sleeping on his/her back?

Does your baby sleep with stuffed animals, pillows, or heavy blankets?

Does your baby ride rear facing in the back seat in his/her car seat 100% of the time?

Is your baby passing soft, comfortable stools?

Does your baby have a predictable, very busy period each day or night?

What works well to console your baby?

Do you have specific concerns about your baby's development, learning, or behavior?

If yes, describe:

How would you describe your parenting experience so far?

Describe the tasks your baby is able to do:

Focus on your face during feeding

Hear and respond to noises

Lifts head when on Summary

Being a parent is not always easy. We want to help families have a safe environment for kids. We are asking you these voluntary questions, which affect many families. Please answer the following questions about your child being seen today, or any child in the home. Do not answer if you prefer not to.

Do you have the phone number for Poison Control, 1-800-222-1222 In your phone?

Do you have a smoke detector and fire extinguisher In your house?

Does anyone smoke tobacco at home?

In the last year, did you worry that your food would run out before you got money or Food Stamps to buy more?

In the last year, did you run out of food before you had money to get more?

Do you often feel your child is difficult to take care of?

Do you sometimes feel you need to hit/punish your child?

Do you wish you had more help with your child?

Do you often feel under extreme stress?

In the past month, have you felt feel down, depressed, or hopeless?

In the past month, have you felt little interest or pleasure in things you used to enjoy?

In the past year, have you been afraid of your partner?

In the past year, have you or anyone who cares for your child had a problem with drugs or alcohol?

Are there any other problems you would like help with today?
PARENT SCREENING QUESTIONNAIRE

Dear Parent or Caregiver: Being a parent is not always easy. We want to help families have a safe environment for kids. We are asking everyone these questions. They are about problems that affect many families. If there is a problem, we'll try to help.

Please answer the questions about your child being seen today. If there is more than one child, please answer "yes" if it applies to any of them. This is voluntary and you don't have to answer any question you prefer not to.

Do you have the phone number for Poison Control, 1-800-222-1222 in your phone? Y N
Do you have a smoke detector and fire extinguisher in your home? Y N
Does anyone smoke tobacco at home? N  Ĉ
In the last year, did you worry that your food would run out before you got money or Food Stamps to buy more? N Ĉ
In the last year, did you run out of food before you had money to get more? N  Ĉ-Almost
Do you often feel your child is difficult to take care of? N  Ĉ-Sometimes
Do you sometimes find you need to hit/spanK your child?  Ĉ  Ĉ
Do you wish you had more help with your child? N  Ĉ
Do you often feel under extreme stress? N  Ĉ
In the past month, have you often felt down, depressed, or hopeless? N  Ĉ
In the past month, have you felt little interest or pleasure in things you used to enjoy? N  Ĉ
In the past year, have you been afraid of your partner?  Ĉ  Ĉ
In the past year, have you or anyone who cares for your child had a problem with drugs or alcohol? N  Ĉ
Are there any other problems you would like help with today?  Ĉ

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PARENT SCREENING QUESTIONNAIRE

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Please answer the questions about your child being seen today. If there is more than one child, please answer "yes" if it applies to any of them. This is voluntary and you don't have to answer any question you prefer not to.

Do you have the phone number for Poison Control, 1-800-222-1222 in your phone? N

Do you have a smoke detector and fire extinguisher in your home? N

Does anyone smoke tobacco at home? Y

In the last year, did you worry that your food would run out before you got money or Food Stamps to buy more? Y

In the last year, did you run out of food before you had money to get more? Y

Do you often feel your child is difficult to take care of? N

Do you sometimes find you need to hit/spank your child? Y

Do you wish you had more help with your child? N

Do you often feel under extreme stress? N

In the past month, have you often felt down, depressed, or hopeless? N

In the past month, have you felt little interest or pleasure in things you used to enjoy? Y

In the past year, have you been afraid of your partner? Y

In the past year, have you or anyone who cares for your child had a problem with drugs or alcohol? N

Are there any other problems you would like help with today? Y
SEEK Outcomes

- **SEEK II**
  - Community practices
  - Selected Well Child Visits
    - 2 months, 9 months, 15 months, 2 year, 3 year, 4 year, 5 year

- **Results**
  - No difference in time spent addressing psychosocial issues
  - Greater provider confidence/efficiency
SEEK and Intermountain

- License to use
- Training
  - MOC part 2
  - MOC part 4
  - CME
  - http://theinstitute.umaryland.edu/seek/corematerials.cfm
SEEK and Intermountain

- **Team-based care**
  - Identifying local resources, 211
  - Care Management training
  - Mental Health Integration

- **Email me**
  - Neal.Davis@imail.org
Community Resources

- Nurse Family Partnership
- Parents and Teachers
- Early Head Start and Head Start
- Utah Youth Village
- Others
Toxic Stress and the Medical Home

- The power of a pediatric medical home is:
  - Trust
  - Team
Toxic Stress and the Medical Home

Nurse Family Partnership
SEEK/PQ Screening
Developmental Surveillance
Reach out and read
Early Intervention
Mental Health Integration

Prenatal Birth 1 year 2 years 3 years 4 years 5 years 6 years...
Toxic Stress and the Medical Home

Nurse
Family
Partnership
SEEK/PQ Screening
Developmental Surveillance
Reach out and read
Early Intervention
Mental Health Integration

Prenatal  Birth  1 year  2 years  3 years  4 years  5 years  6 years...
Toxic Stress and the Medical Home

Nurse Family Partnership

SEEK/PQ Screening
Developmental Surveillance
Reach out and read
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Prenatal Birth 1 year 2 years 3 years 4 years 5 years 6 years...
Toxic Stress and the Medical Home

Nurse Family Partnership

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Mental Health Integration

Prenatal Birth 1 year 2 years 3 years 4 years 5 years 6 years...
The gamin
Victor Hugo

- The gamin is a beauty and, at the same time, a disease of the nation - a disease that must be cured.
- Light makes whole.
- Light enlightens...
- Give them light, so they can give you warmth.