The Foundation of a Successful Society is Built in Early Childhood

A Public Health Approach

Opening Minds, 2016
CHILD DEVELOPMENT INITIATIVES

Efforts include:

- providing pediatrician and interprofessional education, resources, and technical assistance;
- working on policy, advocacy, and systems improvement issues; and
- connecting providers and families to community resources for education, treatment, and other services such as early intervention, home visiting, child care, and trauma-informed care
Who’s in the Room?

- Your name
- Where you work and in what role
- What does a ‘successful society’ look like to you?
TODAY

- Identify the foundations of a successful society built in early childhood

- Describe the influence of early childhood (adverse) experience on developmental outcomes

- Demonstrate strategies to support positive parent engagement, healthy attachment, and community resilience
AAP Priorities

AAP Agenda for Children 2015-2016
DEDICATED TO THE HEALTH OF ALL CHILDREN™

- Poverty and Child Health
- Early Brain and Child Development
- Epigenetics

- Access
- Quality
- Finance

- Health Equity
- Medical Home

- Planning
- Implementing
- Integration/Integrated
The Changing Face of Pediatrics

- Medical community moved from care of child to care of family to care of community
- Partnering with extended family and community
- Not all remedies are exclusively medical
THE FOUNDATION OF A SUCCESSFUL SOCIETY IS BUILT IN EARLY CHILDHOOD
The Foundation of a Successful Society

- Strong Communities
- Healthy Economy

Successful Parenting of Next Generation

- Educational Achievement
- Economic Productivity
- Responsible Citizenship
- Lifelong Health

Healthy Child Development
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Unicef Report Card

“Failure to protect and promote the well-being of children is associated with increased risk across a wide range of later-life outcomes.”
Unicef Report Card

Those outcomes include:

• impaired cognitive development
• lower levels of school achievement
• reduced skills and expectations
• lower productivity and earnings
• higher rates of unemployment
• increased dependence on welfare
• prevalence of antisocial behavior
• involvement in crime
• greater likelihood of drug and alcohol abuse
• higher levels of teenage births
• increased health care costs
• higher incidence of mental illness
AAP Agenda for Children 2015-2016
DEDICATED TO THE HEALTH OF ALL CHILDREN™

Health Equity

Medical Home

Profession of Pediatrics

Poverty and Child Health
Early Brain and Child Development
Epigenetics

Access
Quality
Finance

Planning
Implementing
Integration/Integrated
Early Brain and Child Development

Coordinating neuroscience with developmental pediatrics research and changes to policy and systems
BRAIN ARCHITECTURE: KEY CONCEPTS
700 New Neural Connections per Second
Brains are built over time, starting in the earliest years of life. Simple skills come first; more complex skills build on top of them.

Cognitive, emotional, and social capabilities are intertwined throughout the life course.

A strong foundation in the early years improves the odds for positive outcomes and a weak foundation increases the odds of later difficulties.
The Brain’s Ability to Change in Response to Experiences

Amount of Effort Such Change Requires

AGE

Birth 2 4 6 8 10 20 30 40 50 60 70
Critical Periods of Development

- Critical periods of development are times during which a set of environmental signals must be present for neural systems to differentiate normally.

- Synapses are formed after only minimal experience has been obtained.
Learning

- Patterns of experience define and stabilize patterns of synaptic connections
- Optimizes one’s adaptation to specific environmental factors
- In adults, experience can alter pre-existing neural organization (when exposed to new information, we modify old synapses and make new ones)
- Learning has no critical period
Human Brain Development

Neural Connections for Different Functions Develop Sequentially

- Sensory Pathways (Vision, Hearing)
- Language
- Higher Cognitive Function

FIRST YEAR

Birth (Months) | (Years)
---|---
-8 | 1
-7 | 2
-6 | 3
-5 | 4
-4 | 5
-3 | 6
-2 | 7
-1 | 8
1 | 9
2 | 10
3 | 11
4 | 12
5 | 13
6 | 14
7 | 15
8 | 16
9 | 17
10 | 18
11 | 19
The Role of Experience in Brain Development

• All sensory information is “transduced” by the nervous system into changes in nerve cells

• This repetitive sensory input allows the brain to make internal representations, which is how a child learns about the world:
  • Recognize a parent’s voice
  • Feel a sense of mastery and self-worth
Brains are built over time
The 3-Legged Stool for Developmental and Health Trajectories

Genetic, Prenatal, & Neuro-Developmental Factors

Socio-Economic Environment

Attachment and Relationship Patterns
Serve & Return
Builds Brains and Skills

- Ongoing, **reliable** interaction with trusted adults is **essential** for the development of healthy brain circuits

- Systems that **support** the quality of relationships in early care settings, communities, and homes help build brain architecture
Humans do not develop in isolation; there is a need for connection.

Development proceeds through and by relationships.
The Still-Face Paradigm

https://www.youtube.com/watch?v=apzXGEBZht0
Brain Architecture Supports Lifelong Learning, Behavior, and Health

- Brains are built over time, starting in the earliest years of life. Simple skills come first; more complex skills build on top of them.

- A strong foundation in the early years improves the odds for positive outcomes and a weak foundation increases the odds of later difficulties.
THE INFLUENCE OF EARLY CHILDHOOD (ADVERSE) EXPERIENCE ON DEVELOPMENTAL OUTCOMES
The Adverse Childhood Experiences (ACE) Study

The largest study of its kind that looks at the health and social effects of adverse childhood experiences over a lifespan.
Adverse childhood experiences include:

- Emotional abuse
- Physical abuse
- Sexual abuse
- Emotional neglect
- Physical neglect
- Mother treated violently
- Household substance abuse
- Household mental illness
- Parental separation or divorce
- Incarcerated household member
Risk Factors of Developmental Delay are Embedded in ACE

Children with Developmental Delays

Number of Risk Factors

Data Source: Barth, et al. (2008)
Graphic adapted from 2011, Center on the Developing Child at Harvard University
Risk Factors for Adult Depression are Embedded in ACE

![Graph showing the relationship between ACE Score and Odds Ratio.](Source: Chapman et al, 2004)
ACE vs. Suicide Attempts

% Attempting Suicide

ACE Score

- 0: 1.4
- 1: 2.6
- 2: 4.8
- 3: 10.7
- 4+: 19.3
ACE vs. Smoking and COPD

% with Problem

ACE Score
- 0
- 1
- 2
- 3
- 4 or more

Regular Smoking by Age 14

COPD
ACE vs. Adult Alcoholism

!!!importance: 1.8

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<td>4+</td>
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Risk Factors of Adult Heart Disease are Embedded in ACE

Source: Dong, et al. (2004) via Center on the Developing Child at Harvard University
As the ACE Score Increases, the Risk of the Following Increases:

- Alcoholism/alcohol abuse
- STDs
- COPD
- Fetal death
- Liver disease
- Ischemic heart disease
- Suicide attempts
- Depression
- Smoking
- Unintended pregnancy
- Intimate partner violence

Data from: www.cdc.gov/nccdphp/ace/
Understanding the Impact of ACE

Adverse Childhood Experiences

Social, Emotional, and Cognitive Impairment

Adoption of Health-Risk Behaviors

Disease & Disability

Early Death
ACE and the Brain

WHAT IS THE ROLE OF STRESS?
Three Levels of Stress Response: Positive, Tolerable, Toxic

**POSITIVE**
Important to development in the context of stable and supportive relationships
Positive Stress

• Child sees someone approaching with an immunization syringe

• Parent leaving on the first day of school
Three Levels of Stress Response: Positive, Tolerable, Toxic

**TOLERABLE**

Serious and temporary, but impact buffered by supportive relationships and safe environments
Tolerable Stress

• Death of a family member

• Serious illness

• Natural disaster
Three Levels of Stress Response: Positive, Tolerable, Toxic

TOXIC
Prolonged activation of stress response systems in the absence of protective relationships
 Toxic Stress

• Child abuse/neglect
• Parental substance abuse
• Chronic homelessness
What happens?

**Amygdala:** activates the stress response
   *Toxic stress*: enlargement

**Prefrontal cortex:**
   usually a check to the amygdala
   *Toxic stress*: loss of neurons, less able to function

**Hippocampus:**
   major role in memory and mood
   *Toxic stress*: impairment in understanding and emotion
Toxic stress in early childhood:

- associated with **persistent** effects on the nervous system and stress hormone system
- can **damage** developing brain architecture
- can lead to lifelong problems in learning, behavior and both physical and mental health
For more on trauma and brain development:

Opening Minds Session - Brain Research: Early Experiences Matter

Wednesday, January 20\textsuperscript{th} @2pm
Thursday, January 21\textsuperscript{st} @9am
EFFECT OF TRAUMA ON PARENTING ABILITY

• Adults may exhibit reduced parenting capacity or maladaptive responses to their children.

• Changes that have occurred to the adult’s stress response system can result in diminished capacity to respond to additional stressors in a healthy way.

• ACEs increase the chance of social risk factors, mental health issues, substance abuse, IPV, and adult adoption of risky adult behaviors.

• Can perpetuate a continuing exposure to ACEs across generations by transmission of genetic changes
However...
Adverse experiences and other trauma in childhood, however, do not dictate the future of the child!
STRATEGIES TO SUPPORT POSITIVE PARENT ENGAGEMENT, HEALTHY ATTACHMENT, AND COMMUNITY RESILIENCE
RESILIENCE AND OTHER REASONS FOR OPTIMISM

Several factors for resiliency, including:

• cognitive capacity
• healthy attachment relationships (especially with parents and caregivers)
• the motivation and ability to learn and engage with the environment
• the ability to regulate emotions and behavior
• supportive environmental systems
RESILIENCE AND OTHER REASONS FOR OPTIMISM

Additional reasons for optimism!

Evidence-based, effective clinical treatments:
• Trauma-Focused Cognitive-Behavioral Therapy
• Parent-Child Interactive Therapy

Proactive initiatives:
• Home visitation programs
• High quality early childcare
Significant Adversity

Healthy Developmental Trajectory

Impaired Health and Development
...but they don’t have to
Those outcomes include:

- impaired cognitive development
- lower levels of school achievement
- reduced skills and expectations
- lower productivity and earnings
- higher rates of unemployment
- increased dependence on welfare
- prevalence of antisocial behavior
- involvement in crime
- greater likelihood of drug and alcohol abuse
- higher levels of teenage births
- increased health care costs
- higher incidence of mental illness
The Heckman Equation
EARLY CHILDHOOD DEVELOPMENT IS A SMART INVESTMENT

The earlier the investment, the greater the return

Source: James Heckman, Nobel Laureate in Economics
A Public Health Approach

Universal Primary Preventions

Targeted Interventions
(for those “at-risk”)

Evidence-Based Treatments
(for the symptomatic)
• International rank of US child well-being: 26th

• Portion of 5-year-olds in the US entering kindergarten not ready to learn: 40%

• Portion of Americans age 17-24 not qualified for military service in 2012 because they were overweight, too poorly educated, had emotional problems, or had a criminal record: 3/4

• Rank of US high school graduation rate among rich nations in 1970 and 2014: 1st, 23rd

• Percentage of new mothers in the US who return to work by the time their infants are 3 months old, some because they want to, most because they have to: 40%

• Number of months of paid parental leave in Hungary, Germany and France by law: 24, 14, 10

• Number of months of paid parental leave in the U.S. under federal law: 0
• Rank of U.S. among 45 rich nations for quality, affordability and availability of childcare: **22nd, 16th, 31st**

• Average cost for center-based childcare per child per year: **$10,000**

• Portion of childcare centers in the U.S. that are accredited: **1 in 10**

• Annual median wage for childcare workers in the U.S.: **$19,600 (less than poverty level for family of three)**

• Portion of children age 0-5 living in poverty: **1 in 4**

• Portion of children age 0-5 living in poverty who are White, Black, and Hispanic: **31%, 24%, 36%**

• Number of rich nations that do NOT guarantee workers any paid vacations, paid holidays, paid sick leave, or paid maternity leave by federal law: **1 (the United States)**

• Rank of U.S. in GDP in the world: **1st**
Who will represent us?
WHAT CAN WE DO IN THE MEANTIME?
Your voice makes a difference

- Vote

- Call/email your state representative

- Participate in Springfield advocacy days
Most powerful

Change our dialogue from

“What’s wrong with this child, this parent, this teacher?"

To

“What happened/ is happening to this person? What’s behind the behavior?”
Building Adult Capabilities to Improve Child Outcomes: A Theory of Change

https://www.youtube.com/watch?v=urU-a_FsS5Y
The Five R’s of Early Childhood Education

• **READING** together - daily
• **RHYMING**, playing and cuddling
• **ROUTINES** – help children know what to expect of us – and what is expected of them
• **REWARDS** for everyday successes – PRAISE is a powerful reward!
• **RELATIONSHIPS**, reciprocal and nurturing – THE foundation of healthy child development
Thank you!

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