Changing the Social Determinants of Health

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Chapel Hill, North Carolina

DISCLOSURE: Neither Dr. Thomas nor any member of her immediate family has a financial relationship or interest with any proprietary entity producing health care goods or services. The content of her material(s)/presentation(s) in this CME activity will not include discussion of unapproved or investigational uses of products or devices.

LEARNING OBJECTIVES:
At the conclusion of this presentation, the participant should be able to:

1. Describe how consistent positive shared experiences between child and caregiver impact early brain development.
2. Describe how adverse childhood experiences limit the brain and contribute to chronic disease.
3. Demonstrate how to use books in well child visits in a brief effective intervention to optimize early brain development.
Changing the Social Determinants of Health

Gayle Thomas, MD
Learning Objectives
Participants will be able to:

• Describe how adverse childhood experiences limit the brain and contribute to chronic disease.
• Describe how consistent positive shared experiences between child and caregiver impact early brain development.
• Demonstrate how to use books in well child visits in a brief, effective intervention to optimize brain development.
I have no financial conflicts to disclose
There is mounting evidence to suggest that SDH influence health outcomes more than medical care

Perry, BD and Pollard, D. Altered brain development following global neglect in early childhood.
Types of stress responses

**POSITIVE**
A normal and essential part of healthy development
**EXAMPLES**
- getting a vaccine, first dose

**TOLERABLE**
Response to a more severe stressor, limited in duration
**EXAMPLES**
- loss of a loved one

**TOXIC**
Experiencing strong, frequent, and/or prolonged adversity
**EXAMPLES**
- physical or emotional abuse

Center on the Developing Child, Harvard University. Graphic courtesy of Kaboom.org
Early Stress – Effect on the Brain

CHILDHOOD STRESS

Hyper-responsive stress response; calm/coping

Chronic “fight or flight;” cortisol / norepinephrine

Changes in Brain Architecture

AAP EBCD Leadership Workgroup
Abnormal Stress Hormone Levels in Young Children

The Adverse Childhood Experiences Study

• 17,337 adult patients of Kaiser Permanente in San Diego in 1995-96
• Assessed for 8 adverse childhood experiences (occurring <18 yo)
  • Emotional abuse (10.6%)
  • Physical abuse (28.3%)
  • Witnessing domestic violence (12.7%)
  • Sexual abuse (20.7%)
  • Substance abuse in the home (26.9%)
  • Mental Illness (19.4%)
  • Incarceration (4.7%)
  • Parental Separation or Divorce (23.3%)

### Cumulative Burden of ACE’s

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<th>Number of ACE’s</th>
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Participants assessed on 18 health parameters

- Mental Health: depression, anxiety, panic, hallucinations
- Somatic Disturbances: sleep, severe obesity, multiple somatic symptoms
- Substance abuse: current cigarettes, self described alcoholism, ever used street drugs injected drugs
- Impaired memories of childhood: number of age ranges impaired
- Sexuality: early intercourse, promiscuity, current sexual dissatisfaction
- Perceived stress, anger control, risk of intimate partner violence
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<th>ACE score (N)</th>
<th>Mental health disturbances</th>
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<td>Depressed affect</td>
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<td>Hallucinations</td>
<td>Sleep disturbance</td>
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*All odds ratios are adjusted for age.*
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<th>Alcoholism</th>
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<th>Injected drug use</th>
<th>Early intercourse</th>
<th>Promiscuity (≥30 partners)</th>
<th>Sexual dissatisfaction</th>
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<td>5.8</td>
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<td>26.0</td>
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*All odds ratios are adjusted for age, sex, race, and educational attainment using logistic regression.

• Can structural brain development, as measured by functional MRI, mediate the relationship between childhood poverty and impaired academic performance?

• N=389, ages 4-22, economically diverse, typically developing children
Results

• Children from families with limited financial resources displayed systematic structural differences in the frontal lobe, temporal lobe and hippocampus.

• Developmental differences in the frontal and temporal lobes may explain as much as 20% of low-income children’s achievement deficits.
The 30 Million Word Gap by Age 4

An average 4 year old in a:

• professional family has heard 45 million words
• working class family has heard 26 million words
• welfare family has heard 13 million words

American Educator, Spring 2003
Hart and Risley
Disparity in affirmations as well as number of words

• The average child in a professional family was accumulating 32 affirmatives and five prohibitions per hour, a ratio of 6 encouragements to 1 discouragement.

• The average child in a working-class family was accumulating 12 affirmatives and seven prohibitions per hour, a ratio of 2 encouragements to 1 discouragement.

• The average child in a welfare family, though, was accumulating five affirmatives and 11 prohibitions per hour, a ratio of 1 encouragement to 2 discouragements.
Adverse Childhood Experiences/Poverty

Altered Brain Development

Altered Behaviors

Chronic Medical Conditions
How to buffer against Adverse Childhood Experiences
The Five R’s of early childhood development

• **Reading** together as a daily family activity
• **Rhyming**, playing, talking, singing and cuddling together often
• **Routines** and regular times for meals, play and sleeping, which help children know what they can expect and what is expected of them
• **Rewards** for everyday successes, realizing that praise from those closest to a child is a very potent reward
• **Relationships** that are reciprocal, nurturing and enduring are the foundation of healthy child development

www.greatschools.org
What can we do in a brief office visit?

**The early literacy family intervention**

- Give parents advice and tools to carry out that advice
- Books are tools to stimulate “serve and return” interactions
- Books prompt richer spoken vocabulary in the home
- Books promote a calm bedtime routine, reducing stress hormones
- Sharing books with children help parents (and doctors) to feel successful, creating positive reinforcement to continue
Dialogic Book Sharing

An interactive verbal exchange between parent and child about a book

Adults’ use of evocative or interactive behaviors during book sharing including:

- following the child's interest
- asking open-ended questions
- following the child's answers with further questions
- repeating and expanding on the child's responses
- and providing praise and encouragement of the child's participation
- well controlled studies have demonstrated that caregivers can be trained to engage in high quality dialogic reading, and that when such training is provided, there are significant benefits to child developmental progress

How to build healthy brains

• Serve and Return
Dialogic Reading – The Fundamental Technique

The Adult:

<table>
<thead>
<tr>
<th>P</th>
<th>Prompts the child to say something about the book: <em>What does a dog say?</em></th>
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<tbody>
<tr>
<td>E</td>
<td>Evaluates the child’s response: <em>That’s right, a dog says “woof woof!”</em></td>
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<tr>
<td>E</td>
<td>Expands on the child’s response: <em>And a cat says “meow!”</em></td>
</tr>
<tr>
<td>R</td>
<td>Repeats the prompt: <em>What does a cow say?</em></td>
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AAFP Policy on promoting early literacy development

Family physicians should promote early literacy development as an important intervention at health supervision visits for children from six months through six years of age by effective methods that include:

• Advising parents and caregivers about the importance of reading aloud to young children;
• Counseling parents and caregivers about specific age- and developmentally-appropriate reading activities; and
• Participating in early literacy programs. (2014)
AAP Literacy Promotion: An Essential Component of Primary Care Pediatric Practice

The American Academy of Pediatrics recommends that pediatric providers promote early literacy development for children beginning in infancy and continuing at least until the age of kindergarten entry by

- advising all parents that reading aloud with young children can enhance parent-child relationships and prepare young minds to learn language and early literacy skills
- counseling all parents about developmentally appropriate shared-reading activities that are enjoyable for children and their parents and offer language-rich exposure to books, pictures, and the written word
- providing developmentally appropriate books given at health supervision visits for all high-risk, low-income young children (Pediatrics June 2014)
www.reachoutandread.org
IT ALL STARTS WITH THE TURN OF A PAGE

WHY DOCTORS?

90% of children visit their doctor each year.
Parents trust their child’s doctor.
Doctors use books as a tool to assess developmental milestones.

IMPACT

305,294 children served annually in NC & SC
406 participating clinics and hospitals
1,301 Reach Out and Read Carolinas trained medical providers

www.rorcarolinas.org
Evidence that Reach Out and Read Changes Child Outcomes

• Mendelsohn et al., *Pediatrics* 2001
  High-risk urban families participating in Reach Out and Read read more frequently to their children. Children exposed to Reach Out and Read had higher receptive language scores (equivalent to 6 months improvement) and expressive language scores (equivalent to 3 months improvement). Increased exposure to Reach Out and Read led to larger increases in language scores (receptive and expressive).

• High et al., *Pediatrics* 2000
  Families participating in the Reach Out and Read model read to their children more often (4.3 vs. 3.8 days/week), and their toddlers’ receptive and expressive vocabulary scores were higher, even when adjusting for parental education, foreign-born status, and language proficiency.

• Theriot et al., *Clinical Pediatrics* 2003
  Among children aged 33 months to 39 months attending a well-child clinic in Louisville, KY, expressive and receptive language scores were significantly associated with both the number of Reach Out and Read-enhanced well-child visits they had attended, and with the number of books purchased for them by their parents. This finding supports a "dose effect" for the Reach Out and Read intervention: the more Reach Out and Read, the higher the score.

• Sharif et al., *Journal of the National Medical Association* 2002
  Children participating in Reach Out and Read had higher receptive vocabulary scores (mean: 81.5 vs. 74.3). They also had higher scores on the Home Literacy Orientation (measured reading to child and number of books in the home) than children not participating in Reach Out and Read.
Evidence that Reach Out and Read changes parental attitudes and practices

- Silverstein et al., *Pediatrics* 2002
  Non-English speaking families who participated in the Reach Out and Read model increased their weekly bedtime reading (from 45% to 71%), and more parents reported reading as their favorite activity (from 18% to 40%). The number of non-English speaking families having more than 10 children’s books in the home also increased from 49% to 63% as a result of the Reach Out and Read model.

- Sanders et al., *Archives of Pediatrics and Adolescent Medicine* 2000
  Hispanic parents participating in Reach Out and Read were 3.5 times more likely to report reading to their children compared to other parents. When parents read more frequently to their children, they were also more likely to read frequently themselves.

- Golova et al., *Pediatrics* 1999
  Hispanic parents whose children had received bilingual books, educational materials and literacy-promoting anticipatory guidance were 2 times more likely to report reading books with their child at least three days/week and report that reading books was one of their three favorite things to do with their child (43% vs. 13%) than parents in a control group. Parents participating in the Reach Out and Read model intervention also tended to have more books in the home (for children and adults).
Evidence that Reach Out and Read changes parental attitudes and practices

• Thakur et al, BMJ Qual Improv Rep 2016
  • Increased percentage of books given at Well Child Visits from 30% to 96%
  • Increased providers providing advice about reading at Well Child Visits from 26% to 87%
  • Resulted in increased percent of parents who report reading at home more than 4 days per week from 56% to 80%
Evidence that Reach Out and Read results in better primary care

• Jones et al., *Clinical Pediatrics* 2000
  Parents participating in Reach Out and Read were more likely to rate their child's pediatrician as helpful than those not participating. Pediatricians in the Reach Out and Read group were more likely to rate parents as receptive than those in the non-Reach Out and Read group. Mothers in the Reach Out and Read group were two times more likely to report enjoyment in reading together with their child than those in the non-Reach Out and Read group.

• Byington et al., *Journal of Health Care for the Poor and Underserved* 2008
  This qualitative study examined the thank-you notes sent to staff at a Reach Out and Read clinic by Hispanic families. Families expressed thanks for the books received, as well as the literacy advice given by doctors and nurses. Many families believed that the books and advice promoted the habit of reading and demonstrated respect the staff held for the families and their children.
Increased Reading at home changes brain function

Greater home reading exposure is positively associated with greater activation of brain areas supporting mental imagery and narrative comprehension

- 19 children ages 3-5 years
- Normally developing
- Evaluated home reading exposure with questionnaire
- fMRI during age-appropriate story listening task and pure tones (control)
- Controlled for income (37% low income)

Hutton JS et al Pediatrics 2015 Sep;136(3):466-78
The Reach Out and Read Program: 
the basics

Advice: Clinicians encourage parents to share books daily with their children and offer age-appropriate advice

Books: From 6 months through 5 years, clinicians give children a new, developmentally appropriate book at well child visits

Environment: The practice is made into a literacy-rich environment with posters, gently used books, library information, volunteer readers (where feasible) and all staff involvement
Use the book in your developmental evaluation at start of visit

- **6 - 12 months**
  - Sits up in lap, head steady
  - Attends to faces on page
  - Grasps book, puts in mouth

- **12 - 24 months**
  - Turns board book pages
  - Holds and walks with book
  - Says single words, points to pictures

- **2 - 3 years**
  - Names familiar objects
  - Completes familiar sentences

- **3 - 4 years**
  - Turns paper pages singly
  - Sits still for longer stories
  - Recites whole phrases from favorite books

Offbeatenpagetravel.com
Use the book to “warm up your patient”
Use the book to model dialogic reading for parents
Use the book to help families establish comforting night time rituals
What are important messages for parents to hear?

• Your doctor believes sharing books with your young child daily is very important to their proper development
• You should let your child lead the book sharing experience, responding verbally to them
• You now have all you need to do this! You don’t need to be able to read well yourself, talking about the pictures is great
This brief intervention meets the quadruple aim

- Improves the patient experience
- Is cost effective
- Improves population health
- Improves the provider experience

“I don’t ever want to practice pediatrics without books!” Community Health Center Provider
Many of us are left scrambling at the beginning of May trying to figure out something to give to our moms. Did you know we will spend $19 billion on flowers and chocolate on this special day, but what moms really want is to be together with their children, safe and loved.
REACH OUT AND READ