The Impact of the Social Determinants of Health

Child Health Advances Measured in Practice (CHAMP) Learning Session
Prescription for Whole Health
Social Determinants of Health: Family Well-Being and Food Security
We have no relevant financial relationships to disclose or conflicts of interest to resolve.
The prescription for whole health

- Why this matters
- Social Determinants of Health 101
- How food insecurity and parental depression affects our patients
- What we can do about it
Why this matters

Human Brain Development

Most Vulnerable Period: Birth – Age 4yrs

Synapse formation, neural networks – “brain architecture”
Brain architecture
physical structure, interconnections, & neural networks

“Blooming and Pruning”

First 3 years, child’s brain will have twice as many synapses as it will in adulthood.

Years 0-3 largely set trajectory:
• cognitive/socio-emotional development
• school readiness
• academic achievement
• educational attainment

Source: Corel, JL. The postnatal development of the human cerebral cortex.
Cambridge, MA: Harvard University Press; 1975
Toxic stress and why it matters

**POSITIVE**
Brief increases in heart rate, mild elevations in stress hormone levels.

**TOLERABLE**
Serious, temporary stress responses, buffered by supportive relationships.

**TOXIC**
Prolonged activation of stress response systems in the absence of protective relationships.

Source: Center on the Developing Child at Harvard University
Toxic stress
and why it matters

Source: American Academy of Pediatrics
Toxic stress and why it matters

An interpretation of Maslow's Hierarchy of Needs

- **Physiological needs:** food, water, warmth, rest
- **Safety needs:** security, safety
- **Belongingness and love needs:** intimate relationships, friends
- **Esteem needs:** prestige and feeling of accomplishment
- **Self-actualization:** achieving one's full potential, including creative activities

Parental Depression

food insecurity
“Children thrive when we respond to their realities”

Dr. Deborah Frank with Duvon Haughton, then around three or four years old

Dr. Deborah Frank with Duvon Haughton, now an eighteen year old college freshman
Social determinants of health are conditions in the environments in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks.

**Examples of social determinants include:**

• Availability of resources to meet daily needs (e.g., safe housing and local food markets)

• Socioeconomic conditions (e.g., concentrated poverty and the stressful conditions that accompany it)

• Quality of education and job training

• Transportation options

• Access to health care services

Source: Healthy People 2020
Social Determinants of Health 101

What Goes Into Your Health?

Socioeconomic Factors
- Education
- Job Status
- Family/Social Support
- Income
- Community Safety

Physical Environment

Health Behaviors
- Tobacco Use
- Diet & Exercise
- Alcohol Use
- Sexual Activity

Health Care
- Access to Care
- Quality of Care

Source: Institute for Clinical Systems Improvement, Going Beyond Clinical Walls: Solving Complex Problems (October 2014)
Policy implications of the Social Determinants of Health
Health outcomes

US Ranking out of 34 OECD countries

Maternal Mortality: 25th

Life expectancy: 26th

Low birth weight: 28th

Infant mortality: 31st

Source: OECD, Health at a Glance 2009: OECD Publishing
Ratio of social to health spending is different

[Graph showing the ratio of social to health spending for various countries, with the United States highlighted.]
Total health care investment in US is less

In OECD, for every $1 spent on health care, about $2 is spent on social services.
In the US, for $1 spent on health care, about 55 cents is spent on social services.
Health Impact Pyramid

- **Socioeconomic Factors**
  - Poverty reduction
  - Improved education
  - Health insurance/access to care

- **Changing Context To Make Individuals’ Default Decisions Healthy**
  - Healthy air, water, food
  - Salt iodization
  - Water fluoridation
  - Essential HI benefits packages: high value services

- **Long-Lasting Protective Interventions**
  - One-time or infrequent interventions: immunizations, colonoscopy
  - Smoking cessation

- **Clinical Interventions**
  - Ongoing interventions: CVD prevention has greatest impact, A1C testing and reporting
  - Medication adherence and personalized behavioral interventions
  - Care coordination, particularly multiple chronic comorbidities

- **Counseling & Education**
  - Ongoing interventions: personalized HRA, health information, education, counseling and support
  - Lifestyle interventions connecting personal health services with community-based services: obesity, smoking, YMCA-DPP, etc.

- **Increasing Individual Effort Required**

- **Increasing Population Impact**

Improving health and reducing cost

Source: Institute for Clinical Systems Improvement, Going Beyond Clinical Wisd: Solving Complex Problems (October 2011)

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Triple Aim of Health Care

Lower Costs

Better care for the whole population at the lowest cost

Improve Patient Care

Improve Health at A Population Level
Social Determinants of Health:

Why choose food insecurity and parental depression?

1. Household hardships do not occur in isolation - they are a constellation
2. Food insecurity and parental depression cost the health care system billions of dollars each year
3. Food insecurity and parental depression are devastating to children’s health and wellbeing
Over 900 families interviewed at least twice, at least six months apart.

48% became food secure

29% remained food insecure

23% became more severely food insecure ("child food insecure")

Those who became food secure also:

- 57% became energy secure
- 65% improved housing stability
- 44% did not delay or forgo medical care
- 58% paid for medical expenses without trading off

Food Insecurity: When families lack access to enough food for all members to lead active, healthy lives because of insufficient family resources.

Housing Instability: When families experience at least one of the following: moved twice or more in the past year, were behind on rent in the past year, or were ever homeless.

Energy Insecurity: When families have limited or uncertain access to enough home energy to sustain a healthy and safe life.

Foregone Care: When families delay or forgo receiving medical care or filling prescriptions because of cost.

Basic needs trade-offs for health care: When families are unable to pay for basic needs because of the cost of medical care or prescription medicines.
## Economic impact

**Exhibit 2** *Estimated Costs Attributable to Food Insecurity and Hunger in the US, 2014*

<table>
<thead>
<tr>
<th>Source of Cost</th>
<th>Costs ($Billion 2014 Dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct health-related costs in 2014 based on new research evidence</td>
<td>$29.68</td>
</tr>
<tr>
<td>Non-overlapping direct health-related costs reported by Brandeis researchers in 2011, continued in 2014 and expressed in 2014 dollars</td>
<td>$124.92</td>
</tr>
<tr>
<td>Indirect costs of lost work time due to workers’ illnesses or workers providing care for sick family members based on new research evidence</td>
<td>$5.48</td>
</tr>
<tr>
<td><strong>Total direct and indirect 2014 health-related costs</strong></td>
<td><strong>$160.07</strong></td>
</tr>
<tr>
<td>Indirect costs of special education in public primary and secondary schools, based on new research evidence</td>
<td>$5.91</td>
</tr>
<tr>
<td>Total costs of dropouts reported by Brandeis researchers in 2011, continued in 2014 and expressed in 2014 dollars</td>
<td>$12.94</td>
</tr>
<tr>
<td><strong>TOTAL ESTIMATED COSTS</strong></td>
<td><strong>$178.93</strong></td>
</tr>
</tbody>
</table>

Sources described in document text.

Cook and Poblacion, 2015
Avoidable Costs in Health Care and Education for Mothers and Children

- Mental health costs linked to maternal depression largest contributor to cost
- Other costs associated with increased:
  - Hospitalizations
  - Ambulatory visits
  - Dental procedures
  - Medications
  - Special education services
Pediatric Provider’s Perspective
Black Mamba

- Location: Not Vermont
- Speed: Very Fast
- Length: Huge
- Deadly: Yes!
- Method: Very aggressive
- Raises up 1/3 of its body
- Strikes up to 12x in a row
- 1 bite may kill 10-25 men.
Plasticity of the child’s brain makes it sensitive to chemical influences.

**Fxns:**
- **Emotional Center:** Activates Stress Response
- **Regulates Memories/Emotions:** Inhibits stress response
- **Top down regulation, executive function, impulse control:** Inhibits stress response

**Consequences**
1. Children more reactive to mild adverse experiences (PTSD)
2. Poor coping with future stress
3. Functional changes in ability to learn, use memory, and perform executive functions
“Nature dancing with Nurture over time”

Shonkoff, et. al, 2011, Pediatrics
Pediatrician DNA
I CARE FOR KIDS AND I VOTE

Children Deserve To Be SAFE From Gun Violence
An obesity-centered home visitation curriculum for pediatric residents at Children's National Health System

“Healthy Homes, Healthy Futures”

Essel et. al, MedEdPortal, 2016
It changed how I thought about the resources that they have, and even the space,...my model home in my head always has some type of space outside. Um, whether that is like a fenced in back yard or just green space. So, its...I don't know if it is my house, but like the one I create when I counsel a patient. Even if they say they live in an apartment. Oh, like there has got be like a sidewalk or a green space near it. So, its...I was wrong.
I think knowing a family’s circumstances and personal barriers I think helps you understand how they live. I think it’s easy to give a family tips in clinic that may not actually pertain to their home life, they might not be able to tell you that. Like one example I can think of is in this apartment they didn’t really have the space for a large dining table where the family could eat together, around a dining table. There was one very small table and it was used for storage, stuff was on top of it, so there was no table they could sit around and eat a meal together. So I can recommend that they turn off the TV and sit around the table together for family time, but in their apartment it’s actually not feasible.
“...[I]nevitably you reflect on your own life a little bit and I end up always feeling guilty about what I complain about...Because if you go and look in someone's fridge and there are six people in the house and they have less food then I have and it's just me.”
STEP #1

- Developing an increased awareness of Social Determinants of Health
5 Anticipatory Guidance Priorities of Well Child Visits

**Newborn Visit**
- Social Determinants of Health
- Parent & Family Health & Well-Being
- Newborn behavior & Care
- Nutrition & Feeding
- Safety

**5 & 6 yo Visit**
- Social Determinants of Health
- Development & Mental Health
- School
- Physical Growth & Development
- Safety

**15-17 yo Visit**
- Social Determinants of Health
- Physical Growth & Development
- Emotional Well Being
- Risk Reduction
- Safety
American Academy of Pediatrics STAR Center Initiative:

Academic Pediatric Association (APA) Poverty Curriculum:

Bright Futures Website:
https://brightfutures.aap.org
STEP #2

- Recognizing that intervening is not always easy
28.7 million children (39.1%) are “low income”

**Deep Poverty:** Income <50% FPL - 8.2% children (6 million)

**Poor:** Income: <100% FPL - 18.0% children

**Near Poor:** 100-199% FPL

**Low income:** <200% FPL (Poor & Near Poor)
Socioeconomic Discordance

- Median Income for Pediatricians: $189,000
- Median Income for US Populations: $51,939

Providers often describe:

- Lack of recognized impact or measurable outcomes
- Lack of time
- Lack of professional training
- Lack of familiarity with relevant assessment tools
- Lack of knowledge of relevant community resources

Chung, et. al, Current Problems Pediatric Adolescent Health Care, 2016
STEP #3

- Recognizing that children are resilient and there is hope along with effective interventions
21st Century Clinician

- Integrate Population Health & Clinical Care
Health inequalities and the social determinants of health are not a footnote to the determinants of health. They are the main issue.

-Michael Marmot
Thank You

Equality doesn’t mean Equity