TRAUMA
A Key Social Determinant of Health in a Lifecourse Perspective

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Introduction

- "Trauma," "lifecourse perspective," "social determinants of health"
  -- what do all these words mean to busy health and education professionals?
- Goal: review some recent evidence on child development (proving what we’ve all known for centuries) and begin the discussion on what we can do about it

Objectives

At the end of this session, you will be able to
  - To explain the importance of "trauma" in a "lifecourse framework" and as a "social determinants of health"
  - To describe how epidemiological and historical trends affect the system of care
  - To identify at least one way to identify trauma and integrate the lifecourse framework/social determinants of health into your everyday work

History of Medical Care

1870s
  - General practice
  - Varied training
  - Rural/local/isolated
  - Low income/prestige
  - +/- State license
  - Pre-germ theory
  - Eclectic therapies

1930s
  - Specialization
  - Standardized training
  - Urban/connected
  - Reasonable income/prestige
  - License required
  - Germ theory
  - Health and Education Professionals
Infant Mortality (US Bureau of Statistics)

US: Child are Healthy (Chronic conditions per 100)

- Learning disability: 8
- ADHD: 7
- Depression: 3
- Intellectual disability: 1.5
- Autism: 1.1
- Hearing loss: 0.4
- Visual loss: 0.4
- Cerebral Palsy: 0.3
- Down Syndrome: 0.15
- Obesity: 16
- Allergies: 9
- Recurrent OM: 8
- Asthma: 8
- Diabetes: 0.1
- Sickle cell: 0.1
- Child cancers: 0.02
- Liver transplant: 0.0004

US Measles Mortality

What Year was the Measles Vaccine Widely Available?

Large Decline in Child Mortality Precedes Antibiotics (1940s/50s) and Vaccines (1950s/60s)

Social Determinants

- The social determinants of health are those factors which are outside of the individual; they are beyond genetic endowment and beyond individual behaviors. They are the context in which individual behaviors arise and in which individual behaviors convey risk. The social determinants of health include individual resources, neighborhood (place-based) or community (group-based) resources, hazards and toxic exposures, and opportunity structures.

Camara Jones, CDC, 2010
Approach to Health Disparities (IMR)

- For the last 150 years, infant mortality rate (IMR) has been one of the key health outcome measures
- Deaths in the first year of life/1000 live births
- Measure of health of a population, health care, public health
  - Better/more accessible prenatal care
  - Better/more accessible neonatal care
- Governmental and private actions improve prenatal care rates and decrease disparities in health care

Social Determinants in a Life Course Perspective (Birth Outcomes)

- “You can’t cure a lifetime of ills in nine months of a pregnancy” (M. Kotelchuck)
- “or in 3 months in a NICU . . .” (we might add)

Life Course Perspective

**“Early Programming” (Synapse Formation)**

- Sensing Pathways (vision, hearing)
- Language
- Higher Cognitive Function

**Barker Hypothesis**

**Birth Weight and Coronary Heart Disease**

**ACE Study**

- The Relationship of Adverse Childhood Experiences & Adult Health
  - Physical, emotional or sexual abuse (25% beaten in childhood)
  - Emotional or physical neglect
  - Household mental illness, alcoholism or substance abuse (25%)
  - Family violence
  - Incarcerated family member
  - Parental separation or divorce

Of 17,000 respondents, two-thirds had at least one ACE.

**Adverse Childhood Events Predict Adult Substance Abuse**

- Self-Report: Alcoholism
- Self-Report: Illicit Drug Use
ACEs Predict the 10 Leading Causes of Adult Death/Disability

1. Heart disease
2. Cancer
3. Chronic lower respiratory diseases
4. Stroke
5. Unintentional injuries
6. Alzheimer's disease
7. Diabetes
8. Kidney disease
9. Influenza and pneumonia
10. Suicide

ACE Study, Felitti et al. 1998

One Biological Mechanism: Epigenetics
- Stress in early life causes long-lasting changes in physiology/behavior by inducing epigenetic changes
  - AVP - hormone affects mood and cognition
  - Mice exposed to high stress early in life showed differences in AVP and behavior later in life
  - Same mice showed significantly lower levels of DNA methylation in the regulatory region of the AVP gene

So what do we do?
- Acknowledge that our health care system was not designed to address trauma/adverse events
- Payments schemes, training, institutions all built on an acute care model designed to focus on technological interventions for individual patients
- Do something.
- Friedan’s public health triangle

Poverty: What’s the Problem?
- If social determinants are critical, what are we going to do about poverty, discrimination, structural inequities in our society?
- US has long history of deep ambivalence about directly addressing social and economic inequities
- Does reducing poverty really make a difference?
**Non-Indian and Indian Families Below Poverty Line**

![Graph showing percentage of families below poverty line from 1980 to 1990](Image)

**Behavioral Symptoms Before & After the Casino**

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<td>Sleep</td>
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**SEED for Oklahoma Kids**

(Huang, JAMA PEDS, March 2014)

- 2008: 1358 randomly selected infants received $1000 into a 529 college savings plan; 1346 controls
- 4 year old - follow-up using ASQ – SE (caregiver)
- Effects greater for disadvantaged subsamples
  - “I’m going to have to get him through school so he can use this and go to college”
- 2005-2010: Child Trust Fund in the United Kingdom
  - Newborns get an account, higher for low-income

**RWJF Commission to Build a Healthier America**

(AmJPrevMed 2011)

1. Ensure that all children have high-quality early childhood developmental support (early care/education)
2. Fund and design nutrition programs (e.g. WIC and SNAP) to meet the needs of hungry families for nutritious food
3. Create public–private partnerships to open and sustain full-service grocery stores in all communities.
4. Feed children only healthy foods in schools.
5. Require all schools (K–12) to include time for all children to be physically active every day.
Early Childhood Education

RWJF Commission to Build a Healthier America (AmJPrevMed 2011)

6. Become a smoke-free nation.
7. Create healthy community demonstrations to evaluate the effects of health-promoting policies and programs.
8. Develop a health impact rating for housing & infrastructure projects; provide incentives for projects to earn the rating.
9. Integrate safety and wellness into every aspect of community life.
10. Ensure that decision makers have evidence they need to build health into public and private policies and practices.

Head Start/Trauma Smart
- Preschool-based clinical intervention for children with behavioral symptoms related to trauma
- Evidence-based trauma intervention framework ARC
  - Attachment, Self-regulation, Competency
- Entire preschool staff and family trained to watch for a child’s emotional needs, help the child recognize them, then help the child problem-solve or go to a “safe spot” (breathing, sensory areas)

Evidence-based Clinical Interventions
- Healthy Steps – developmental specialist in office
- Behavior modification programs
  - Train parents to increase positive feedback, ignore mild disruptive behaviors, and use time-out
  - Large, sustained, significant positive outcomes
- Examples
  - Parent-Child Interaction Therapy, Triple P—Positive Parenting Program, Incredible Years
Incredible Years in Pediatric Practices

- 10 week, manual-guided program that encourages proactive, nurturing parenting
- Group-based approach, using discussion, role play, and video-tape with feedback
- Perrin et al JAMA Peds Nov 2013
- 12 community pediatric practices implement the IY program
- Positive outcomes compared to wait-list controls at 12 m
- IY is commercially available, led by pediatric staff

What Are You Going to Do?

- How will knowledge of trauma/adverse events in a lifecourse perspective affect your practice?
- How will knowledge of trauma/adverse events in a lifecourse perspective affect how you train health and education professionals?
- How will knowledge of trauma/adverse events in a lifecourse perspective affect how you advocate for children and families—go beyond the individual to address population health?