Changing the Pediatric Practice Paradigm in the Philippines

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Child Protection Unit
Philippine General Hospital
University of the Philippines Manila
Move to Action

• Know your audience
• Speak their language
• Relevance
• Beware of “otherization”
• People care about individuals
• Stretch
• The Messenger
Adverse Childhood Experiences and Health-Risk Behaviors Among Adults in a Developing Country Setting

Laurie S. Ramiro, PhD, Bernadette J. Madrid, MD, David R. Brown, PhD

Child Abuse & Neglect 2010; 34: 842-855
What Are ACEs?

Adverse Childhood Experiences

• ACEs are experiences in childhood that are unhappy, unpleasant, hurtful.

• Sometimes referred to as toxic stress or childhood trauma.
What are Adverse Childhood Experiences (ACEs)?

• Growing up (prior to age 18) in a household with:
  • Recurrent physical abuse.
  • Recurrent emotional abuse.
  • Sexual abuse.
  • Emotional or physical neglect.
Growing up (prior to age 18) in a household with (con’t):

- An alcohol or drug abuser
- An incarcerated household member.
- Someone who is chronically depressed, suicidal, institutionalized or mentally ill.
- Mother being treated violently.
- One or no parents.
ACEs HAVE MANY IMPACTS THROUGHOUT THE LIFESPAN

Critical & Sensitive Dev’tal period

ADVERSE CHILDHOOD EXPERIENCE
MORE CATEGORIES – GREATER IMPACT
Physical Abuse, Sexual Abuse, Neglect Witnessing Domestic Violence, Depression/Mental Illness in Home Incarcerated Family Member Substance Abuse in Home Loss of a Parent

GENETICS
Including gender – Remember that experience triggers gene expression (Epigentics)

Brain Development
Electrical, Chemical, Cellular Mass

ADAPTATION
Hard-Wired Into Biology

CHRONIC DISEASE

PSYCHIATRIC DISORDER

IMPAIRED COGNITION

WORK/SCHOOL Attendance Behavior, Performance

OBESITY

ALCOHOL, TOBACCO, DRUGS

RISksY SEX

POVERTY

CRIME

INTERGENERATIONAL TRANSMISSION, DISPARITY

Carson & Porter, 2011
Death

ACE Study (Anda & Felitti, 2004)

Conception

Scientific gaps

Early Death

Disease, Disability and Social Problems

Adoption of Health-risk Behaviors

Social, Emotional, & Cognitive Impairment

Adverse Childhood Experiences
## Prevalence of ACE during the first 18 years of life

<table>
<thead>
<tr>
<th>Childhood Abuse</th>
<th>Percentage (n=1068)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional</td>
<td>22.8</td>
</tr>
<tr>
<td>Physical</td>
<td>1.3</td>
</tr>
<tr>
<td>Sexual</td>
<td>5.2</td>
</tr>
<tr>
<td>Physical neglect</td>
<td>22.5</td>
</tr>
<tr>
<td>Psychological neglect</td>
<td>43.6</td>
</tr>
</tbody>
</table>

Ramiro L, Madrid B, Brown D

*Child Abuse & Neglect* 2010; 34: 842-855
Prevalence of Household dysfunction:

<table>
<thead>
<tr>
<th>Household dysfunctions</th>
<th>Percentage (n=1068)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illicit drug use</td>
<td>7.5</td>
</tr>
<tr>
<td>Alcohol abuse</td>
<td>36.2</td>
</tr>
<tr>
<td>Mental Illness</td>
<td>6.2</td>
</tr>
<tr>
<td>Mother treated violently</td>
<td>17.7</td>
</tr>
<tr>
<td>Incarcerated household member</td>
<td>4.8</td>
</tr>
<tr>
<td>Parental separation or divorce</td>
<td>10.0</td>
</tr>
</tbody>
</table>

Ramiro L, Madrid B, Brown D  
*Child Abuse & Neglect* 2010; 34: 842-855
<table>
<thead>
<tr>
<th>Categories of adverse childhood experiences, Number</th>
<th>Percentage (n=1068)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>26.8</td>
</tr>
<tr>
<td>1</td>
<td>24.7</td>
</tr>
<tr>
<td>2</td>
<td>18.8</td>
</tr>
<tr>
<td>3</td>
<td>13.8</td>
</tr>
<tr>
<td>4 or more</td>
<td>9.2</td>
</tr>
</tbody>
</table>

75% had at least one ACE

Ramiro L, Madrid B, Brown D
Child Abuse & Neglect 2010; 34: 842-855
Results of the Metro Manila ACE Study

Those who were sexually abused are:

• 12 times more likely to engage in early sex;
• 9 times more likely to have early pregnancy;
• 5 times more likely to commit suicide.

Ramiro L, Madrid B, Brown D
Child Abuse & Neglect 2010; 34: 842-855
Results of the Metro Manila ACE Study

Individuals who felt that they were not loved during childhood are:

- Twice as likely to smoke, use illicit drugs, have early sex and multiple sex partners
- 5 times more likely to commit suicide.

Ramiro L, Madrid B, Brown D

*Child Abuse & Neglect* 2010; 34: 842-855
Relationship between ACE Score and Suicide Attempt

- Odds Ratio
- Percent (%)

Relationship between ACE Score and Early Smoking Initiation

- Percent (%)

Relationship between ACE Score and Use of Illicit Drugs

- Percent (%)

Relationship between ACE Score and Multiple Partners (> 3)

- Percent (%)

<table>
<thead>
<tr>
<th>ACE Score</th>
<th>Odds Ratio</th>
<th>Percent (%)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>10.2</td>
<td>10.5</td>
</tr>
<tr>
<td>2</td>
<td>10.5</td>
<td>17.4</td>
<td>17.6</td>
</tr>
<tr>
<td>3</td>
<td>18.3</td>
<td>26.2</td>
<td>32.3</td>
</tr>
<tr>
<td>&gt; 4</td>
<td>24.1</td>
<td>26.9</td>
<td>38.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACE Score</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>4.5</td>
</tr>
<tr>
<td>1</td>
<td>6.8</td>
</tr>
<tr>
<td>2</td>
<td>14.2</td>
</tr>
<tr>
<td>3</td>
<td>24.9</td>
</tr>
<tr>
<td>&gt; 4</td>
<td>50.3</td>
</tr>
</tbody>
</table>
Relationship between ACE Score and Bronchitis/Emphysema

![Graph showing the relationship between ACE Score and Bronchitis/Emphysema.]

Relationship between ACE Score and Ischemic Heart Disease

![Graph showing the relationship between ACE Score and Ischemic Heart Disease.]

Ramiro L, Madrid B, Brown D.  
Child Abuse & Neglect 2010; 34:842-855
Strong graded response between number of ACEs & poor health

- Bronchitis/ emphysema
- Asthma
- Ischemic Heart Disease
- Hypertension
- Tuberculosis
- Skin problems
- UTI
- Liver problems
- GI problems - ulcers, constipation, indigestion
- Depression

Ramiro L, Madrid B, Brown D.  
*Child Abuse & Neglect* 2010; 34:842-855
**TOP TEN CAUSES OF DEATHS**
**Philippines, 2009**

<table>
<thead>
<tr>
<th>Diseases</th>
<th>Number of deaths</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Diseases of the heart</td>
<td>100,908</td>
<td>21.0</td>
</tr>
<tr>
<td>2. Cerebro-vascular disease</td>
<td>56,670</td>
<td>11.8</td>
</tr>
<tr>
<td>3. Malignant neoplasm</td>
<td>47,732</td>
<td>9.9</td>
</tr>
<tr>
<td>4. Pneumonia</td>
<td>42,642</td>
<td>8.9</td>
</tr>
<tr>
<td>5. Tuberculosis</td>
<td>25,470</td>
<td>5.3</td>
</tr>
<tr>
<td>6. COPD</td>
<td>22,755</td>
<td>4.7</td>
</tr>
<tr>
<td>7. Diabetes</td>
<td>22,345</td>
<td>4.6</td>
</tr>
<tr>
<td>8. Nephritis, Nephrotic Syndrome</td>
<td>13,799</td>
<td>2.9</td>
</tr>
<tr>
<td>9. Assault</td>
<td>12,227</td>
<td>2.5</td>
</tr>
<tr>
<td>10. Certain conditions arising from perinatal period</td>
<td>11,514</td>
<td>2.4</td>
</tr>
</tbody>
</table>

Many chronic diseases in adults are determined decades earlier, by experiences in childhood.

*Philippine National Statistics Office, 2009*
Unprecedented Opportunity for Pediatricians!

Most adult diseases are in fact developmental disorders that begin early in life.

Our Challenge

• We can and must “immunize” kids against the effects of ACEs.

• We can and must reduce the numbers of ACEs for all children!
Foundations of Lifelong Health

• Creating a stable and responsive environment of relationships
• Safe and supportive chemical, physical, and built environments
• Sound and appropriate nutrition

Center on the Developing Child at Harvard University (2010)
*The Foundations of Lifelong Health are Built in Early Childhood*
http://www.developingchild.harvard.edu
What can Pediatricians do?

10 Practical Tips for the 0-5 years
The Heckman Curve
Returns to a Unit Dollar Invested

(a) Return to a unit dollar invested at different ages from the perspective of the beginning of life, assuming one dollar initially invested at each age

Programs targeted towards the earliest years

Preschool programs

Schooling

Job training

Rate of return to investment in human capital

0-3
4-5 Preschool
School
Post-school

0
Age
1. Be part of the prenatal visit

- The status of the mother such as stress, anxiety and depression has been shown to be associated with an increased risk of developing a wide variety of disorders in the offspring e.g. LBW, learning & memory

- Maternal over-and under-nutrition has been associated with the onset of metabolic syndrome as well as autism and developmental delays.
Perinatal risk factors for infant maltreatment

• Mother smoked during pregnancy
• Families with 3 or more siblings
• Maternal age less than 20 years
• Births to unmarried mothers
• Medicaid beneficiaries (poverty)
• Inadequate prenatal care

*International Journal of Health Geographics* 5:53
2. Anticipatory guidance

- Provision of age-appropriate counseling
- Discussion to occur at every well child visit
- Addressing age appropriate topics-
  Think of nutrition, safety, development, family functioning
- Reinforces practices
- Provides new information
2. Anticipatory guidance

- Importance of the development of attachment

- Parenting skills e.g. education of parents post delivery on how to handle infant crying & SBS has decreased the incidence of SBS by 24% - 48% (Dias et al, 2005; Palusci et al, 2006).
Breastfeeding Protects Against Child Abuse and Neglect

A 15-year cohort study in Australia showed that breastfeeding for 4 months or more was protective against child abuse and neglect.

Strathern, Mamun, et. al. Pediatrics 2009;123;483
3. Early identification of developmental delays

- There are different developmental trajectories and early identification is key!
4. Identification of socio-emotional problems

- Children identified as uncontrolled at age 3 were 2.9 times as likely as adults to be diagnosed with anti-social personality disorder, 2.2 times as likely to be repeat offenders, 4.5 times as likely to be convicted for a violent offense!

*Nancy Eisenberg, 2000
Annu Rev Psychol, 52:665-97*
5. Prevent lead exposure

• Each increase of 10 μg per deciliter in the lifetime average blood lead concentration was associated with a 4.6-point decrease in IQ (P=0.004).

  *Canfield, Henderson, et. al. 2003
  *N Engl J Med. 348:1517-1526

• Children with high blood levels have an eight to nine-fold increased odds of developing a conduct disorder.

  *Braun, Froehlich, Daniels, et.al. 2008
  *Environmental Health Perspectives, 116(7): 956-962
Impact of Exposure to Environmental Toxins: Lead

- In a study done in the Visayas, 21% of children tested, aged 6 months to 5 years, had blood lead levels greater than 10ug/l.

Ridell, Solon, Quimbo, Tan, et. al. WHO Bulletin, September 2007, 85(9)
Prevalence & epidemiology of high lead exposure among Filipino Children in Bulacan: The role of floods
Ostrea EM et.al.
Acta Medica Philippina (submitted for publication)
Prevalence and concentration of lead (Pb) in children’s hair, teeth, soil, ambient air, faucet water and river water

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>% positive</th>
<th>Median</th>
<th>Interquartile Range</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pb in hair (ppm)</td>
<td>150</td>
<td>91.3%</td>
<td>8.924</td>
<td>5.48 – 13.42</td>
<td>0</td>
<td>38.29</td>
</tr>
<tr>
<td>Pb in teeth (µg/mg)</td>
<td>149</td>
<td>22.1%</td>
<td>0</td>
<td>0.0 – 0.0</td>
<td>0</td>
<td>0.02</td>
</tr>
<tr>
<td>Pb in soil (mg/kg) *</td>
<td>150</td>
<td>100%</td>
<td>27.06</td>
<td>14.72 – 55.97</td>
<td>3.05</td>
<td>1155.80</td>
</tr>
<tr>
<td>Pb in air (µg/Ncm)</td>
<td>19</td>
<td>21.1%</td>
<td>0</td>
<td>0.0 – 0.0</td>
<td>0</td>
<td>0.10</td>
</tr>
<tr>
<td>Pb in faucet water (ppm)</td>
<td>150</td>
<td>4.0%</td>
<td>0</td>
<td>0.0 – 0.0</td>
<td>0</td>
<td>40</td>
</tr>
<tr>
<td>Water in river (ppb)</td>
<td>7</td>
<td>100%</td>
<td>70.00</td>
<td>60-70</td>
<td>30</td>
<td>90</td>
</tr>
</tbody>
</table>

*48% were within World Bank level of natural lead concentration in soil (5-25 mg/kg)
10 % were greater than WHO maximum tolerable limit (> 100 mg/kg)
6. Do not forget Iron!

- Iron is important for normal neuronal and glial energy metabolism, neurotransmitter production and myelination.
- 3 peak times of risk for Iron deficiency anemia: late fetal/early neonatal period, toddlerhood & adolescence.
- Affects learning & memory, motor development, language development, behavior problems including anxiety & depression
### Anemia prevalence by age, sex, and physiologic state: FNRI, 2008

<table>
<thead>
<tr>
<th>Age/sex/Physiologic State</th>
<th>Number</th>
<th>Prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philippines</td>
<td>22412</td>
<td>19.5</td>
</tr>
<tr>
<td>6 mos - &lt; 1 yr</td>
<td>205</td>
<td>55.7</td>
</tr>
<tr>
<td>1-5 y</td>
<td>2279</td>
<td>20.9</td>
</tr>
<tr>
<td>6-12 y, M</td>
<td>2039</td>
<td>20.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>1830</td>
</tr>
<tr>
<td>6-12 y, F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-19 y, M</td>
<td>1778</td>
<td>10.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>1488</td>
</tr>
<tr>
<td>13-19 y, F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pregnant</td>
<td>1516</td>
<td>42.5</td>
</tr>
<tr>
<td>Lactating</td>
<td>891</td>
<td>31.4</td>
</tr>
</tbody>
</table>
7. The importance of follow-up

- Most pediatricians do not follow-up to see if their recommendations are followed or if there is any improvement.
8. Preschool attendance

• Researches on enhanced preschools for low-income families that start at 3 years of age show that participants experienced higher achievement test scores, decreased grade retention, reduced time in special education, less crime and delinquency and increased high school graduation.
9. Reach out and read

- Parents served by Reach Out and Read are up to four times more likely to read aloud to their children.
- Reach Out and Read reaches the child through effectively teaching the parent to start lifelong learning in the home.
- During the preschool years, children served by Reach Out and Read score three to six months ahead of their non-Reach Out and Read peers on vocabulary tests. These early foundational language skills help start children on a path of success when they enter school.

www.reachoutandread.org
10. Use of integrated interventions

- Conditional cash transfers
- Integration of stimulation with economic, nutrition and health interventions
“The solution of all adult problems tomorrow depends in large measure upon the way our children grow up today.”

- Margaret Mead, Anthropologist
If our society is to prosper in the future, we will need to make sure that all children have the opportunity to develop intellectually, socially and emotionally.
Thank You!