Overview of the Adverse Childhood Experiences (ACE) Study

Robert F. Anda, MD, MS
Co-Principal Investigator

www.RobertAndaMD.com
Adoption of Health-risk Behaviors

Social, Emotional, & Cognitive Impairment

Disease, Disability and Social Problems

Early Death

Adverse Childhood Experiences
The Adverse Childhood Experiences (ACE) Study

Examines the health and social effects of ACEs throughout the lifespan among 17,421 members of the Kaiser Health Plan in San Diego County

What do we mean by Adverse Childhood Experiences?

- childhood abuse and neglect
- growing up with domestic violence, substance abuse or mental illness in the home, parental discord, crime
ACE Study Design

Survey Wave I
(N = 9,508)
Index

Survey Wave II
(N = 8,667)
Utilization

Follow-up
(N = 17,421)

Mortality
National Death

Morbidity
Hospital Discharge
Outpatient Visits

Emergency room
visits
Pharmacy

All medical evaluations
abstracted from both waves
Adverse Childhood Experiences Are Common

**Household dysfunction:**
- Substance abuse: 27%
- Parental sep/divorce: 23%
- Mental illness: 17%
- Battered mother: 13%
- Criminal behavior: 6%

**Abuse:**
- Psychological: 11%
- Physical: 28%
- Sexual: 21%

**Neglect:**
- Emotional: 15%
- Physical: 10%
Adverse Childhood Experiences Rarely Occur in Isolation…

They come in groups.
Domestic Violence and the Risk of Other ACEs...
Prevalence of Childhood Abuse by Frequency of Witnessing Domestic Violence

- Emotional Abuse
- Physical Abuse
- Sexual Abuse

Frequency of witnessing domestic violence:
- Never
- Once, Twice
- Sometimes
- Often
- Very often

Percent (%)

Frequency range:
- 0
- 20
- 40
- 60
- 80
- 100

Childhood Abuse

- Emotional
- Physical
- Sexual

Bar chart showing the prevalence of childhood abuse by frequency of witnessing domestic violence.
ACEs tend to come in groups…

<table>
<thead>
<tr>
<th>Additional ACEs (%)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>≥5</th>
</tr>
</thead>
</table>

*If you had:*  
A battered mother  

<table>
<thead>
<tr>
<th></th>
<th>95</th>
<th>82</th>
<th>64</th>
<th>48</th>
<th>52</th>
</tr>
</thead>
</table>

If you had:  
A battered mother
Adverse Childhood Experiences Score Complex Trauma—Trauma “Dose”

Number of individual types of adverse childhood experiences were summed…

<table>
<thead>
<tr>
<th>ACE score</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>33%</td>
</tr>
<tr>
<td>1</td>
<td>26%</td>
</tr>
<tr>
<td>2</td>
<td>16%</td>
</tr>
<tr>
<td>3</td>
<td>10%</td>
</tr>
<tr>
<td>4 or more</td>
<td>16%</td>
</tr>
</tbody>
</table>
ACE Score and Teen Sexual Behaviors

- Intercourse by Age 15
- Teen Pregnancy
- Teen Paternity

ACE Score
- 0
- 1
- 2
- 3
- 4 or more
The ACE Score and the Prevalence of Severe Obesity (BMI ≥35)
ACEs and Mental Health...
The ACE Score and the Prevalence of Attempted Suicide

![Graph showing the relationship between ACE Score and percent attempted suicide.](image-url)
The ACE Score and a Lifetime History of Depression

ACE Score vs. Percent Depressed (%)

- Women
- Men

ACE Score categories: 0, 1, 2, 3, >=4

Percent depressed (%) range: 0 to 70

Bar chart showing the percentage of women and men who are depressed based on their ACE Score.
ACEs and Violent Victimization as an Adult...
ACE Score and the Risk of Being a Victim of Domestic Violence

![Graph showing the risk of victimization based on ACE Score for women and men. The x-axis represents ACE Score (0-4, >5) and the y-axis represents Risk of Victimization (%). The graph indicates a higher risk for women compared to men at higher ACE scores.](image-url)
ACE Score and Drug Abuse

- Ever addicted to drugs
- Ever had a drug problem
- Ever injected drugs
ACE Score and HIV Risks

Ace Score

- Ever Injected Drugs
- Had 50 or More Intercourse Partners
- Ever Had an STD

Percent With Health Problem (%)

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

Legend:
- Turquoise
- Blue
- Light Blue
- Yellow
- Purple
ACEs, Smoking, and Lung Disease

ACE Score

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

Percent With Health Problem (%)

Early smoking initiation
Current smoking
COPD
The ACE Score and the Prevalence Ischemic Heart Disease

![Bar chart showing the prevalence of ischemic heart disease at different ACE scores.](chart.png)
One Perspective on the Direct Health Care Costs of ACEs:
The Burden of Prescription Drug Use
Prescription Drugs in the United States (2003)

- nearly $180 billion spent
- 11% of total national health expenditures
- more than four times the amount spent in 1990
ACE Score and Rates of Antidepressant Prescriptions

![Bar chart showing the relationship between ACE Score and prescription rate.]
ACE Score and Rates of Prescribed Antidepressant Medications by Age, 1997-2004

Relative rates are adjusted for age, sex, race/ethnicity, and education. Adults with an ACE Score of 0 are the referent.

ACE Score and Rates per 100 P-Y

- 18-44 yrs
- 45-64 yrs
- 65-89 yrs
Adverse Childhood Experiences as a Clinical and Public Health Issue

ACEs:
- are endemic
- highly interrelated
- have a cumulative stressor effect
- effects are biologically plausible
Adverse Childhood Experiences
As a National Health Issue

ACEs have a strong influence on:
- adolescent health
- reproductive health
  - smoking
  - alcohol abuse
  - illicit drug abuse
  - sexual behavior
  - mental health
  - risk of revictimization
- stability of relationships, homelessness
- performance in the workforce
Adverse Childhood Experiences
As a National Health Issue

ACEs increase the risk of:
- Heart disease
- Chronic Lung disease
- Liver disease
  - Suicide
  - Injuries
- HIV and STDs
- and other risks for the leading causes of death
The Adverse Childhood Experiences (ACE) Study

Summary of Findings:

- Adverse Childhood Experiences (ACEs) are very common

- ACEs are strong predictors of health risks and disease from adolescence to adulthood

- This combination of findings makes ACEs one of the leading, if not the leading determinant of the health and social well-being of our nation
Bridging The Chasm

Child health as it stands today

Breakthroughs in molecular genetics and biology:
- Mental illness
- Substance abuse
- Violence

Improved recognition and treatment of:
- Mental illness
- Substance abuse
- Domestic violence
- Child abuse

Mass education about child development & parenting:
- Media
- Schools

Documenting the societal burden of child health as it stands today

New directions in prevention and treatment

Child health as it could be
Bridging The Chasm

Involving those who don’t yet realize that they are working on issues that represent the “downstream” wreckage of child abuse and neglect—and other adverse childhood experiences—in the effort to bridge the chasm.

Routine screening for trauma is needed