Adverse Childhood Experiences and their Relationship to Adult Well-being and Disease: 

*Turning gold into lead*

A collaborative effort between

Kaiser Permanente and the Centers for Disease Control

The National Council Webinar
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The largest study of its kind ever to examine over the lifespan the medical, social, and economic consequences in adults of adverse childhood experiences. (17,337 participants)
The ACE Study
Summary of Findings:

- Adverse Childhood Experiences (ACEs) are very common, but largely unrecognized.
- ACEs are strong predictors of later death, disease, health risks, social functioning, well-being, and medical care costs.
- ACEs are the basis for much of adult medicine and of many major public health and social problems.
- Adverse childhood experiences are interrelated, not solitary.
- This combination makes Adverse Childhood Experiences the prime determinant of the health, social, and economic well-being of our nation.
Origins of the ACE Study

51 weeks later

408 → 132 lbs

What was the core problem here?
>400 lbs. in a shorter period of time than the weight was lost.
ACE Study Design

Survey Wave 1
71% response (9,508/13,454)
n=13,000

All medical evaluations abstracted

Survey Wave II
n=13,000

All medical evaluations abstracted

Present Health Status

17,337 adults

VS.

Mortality
National Death Index

Morbidity
Hospitalization
Doctor Office Visits
Emergency Room Visits
Pharmacy Utilization
## Prevalence of Adverse Childhood Experiences

<table>
<thead>
<tr>
<th>Abuse, by Category</th>
<th>Prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological (by parents)</td>
<td>11%</td>
</tr>
<tr>
<td>Physical (by parents)</td>
<td>28%</td>
</tr>
<tr>
<td>Sexual (anyone)</td>
<td>22%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Neglect, by Category</th>
<th>Prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional</td>
<td>15%</td>
</tr>
<tr>
<td>Physical</td>
<td>10%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Household Dysfunction, by Category</th>
<th>Prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcoholism or drug use in home</td>
<td>27%</td>
</tr>
<tr>
<td>Loss of biological parent &lt; age 18</td>
<td>23%</td>
</tr>
<tr>
<td>Depression or mental illness in home</td>
<td>17%</td>
</tr>
<tr>
<td>Mother treated violently</td>
<td>13%</td>
</tr>
<tr>
<td>Imprisoned household member</td>
<td>5%</td>
</tr>
</tbody>
</table>
**Adverse Childhood Experiences Score**

Number of categories (not events) is 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>25%</td>
</tr>
<tr>
<td>2</td>
<td>15%</td>
</tr>
<tr>
<td>3</td>
<td>10%</td>
</tr>
<tr>
<td>4</td>
<td>6%</td>
</tr>
<tr>
<td>5 or more</td>
<td>11%*</td>
</tr>
</tbody>
</table>

- Two out of three experienced at least one category of ACE.
- If any one ACE is present, there is an 87% chance at least one other category of ACE is present, and 50% chance of 3 or >.
- Women are 50% more likely than men to have a Score >5.
Molestation in Childhood

Familial obesity does *not* mean genetic
Depression:

Most say depression is a disease.
Many say depression is genetic.
Some say it is due to a chemical imbalance.
Childhood Experiences Underlie Chronic Depression

Well-being

% With a Lifetime History of Depression

ACE Score

ACE Score

Women
Men

>=4

0
1
2
3

0
10
20
30
40
50
60
70
80
%
Childhood Experiences Underlie Suicide Attempts

Well-being

% Attempting Suicide

ACE Score

0 1 2 3 4+

25
20
15
10
5
0
ACE Score and Rates of Antidepressant Prescriptions

approximately 50 years later

Costs

ACE Score and Rates of Antidepressant Prescriptions

approximately 50 years later
ACE Score and Hallucinations

*Adjusted for age, sex, race, and education.
Well-being

ACE Score and Impaired Memory of Childhood

ACE Score

Well-being
Risk Behaviors: ‘Addictions’

Smoking to Self-Medicate

Distant consequences of violence
The traditional concept:

“Addiction is due to the characteristics intrinsic in the molecular structure of some substance.”
Addiction highly correlates with characteristics intrinsic to that individual’s childhood experiences.

The ACE Study challenges that by showing:
Health Risks

Adverse Childhood Experiences vs. Smoking as an Adult

ACE Score

0 1 2 3 4-5 6 or more

%
Childhood Experiences vs. Adult Alcoholism

Health Risks

ACE Score vs. % Alcoholic

- ACE Score 0: 0%
- ACE Score 1: 1%
- ACE Score 2: 2%
- ACE Score 3: 3%
- ACE Score 4+: 4%

The graph shows the relationship between childhood experiences (ACE Score) and the percentage of individuals who are alcoholic. As the ACE Score increases, the percentage of alcoholics also increases.
ACE Score vs Injection Drug Use

% Have Injected Drugs vs ACE Score

ACE Score

% Have Injected Drugs

0 1 2 3 4 or more

p<0.001

Health risks
Estimates of the Population Attributable Risk* of ACEs for Selected Outcomes in Women

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<th>PAR</th>
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<tbody>
<tr>
<td>Alcoholism</td>
<td>65%</td>
</tr>
<tr>
<td>Drug abuse</td>
<td>50%</td>
</tr>
<tr>
<td>IV drug use</td>
<td>78%</td>
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*That portion of a condition attributable to specific risk factors
The Hidden Threat of Weight Loss

The unspoken benefits of Obesity
The Silent *Benefits* of Obesity

Lost 158 pounds, but why did he gain it?
Health risks, Social function:

Looking for Love
ACE Score vs > 50 Sexual Partners

Adjusted Odds Ratio

ACE Score

0 1 2 3 4 or more

0 1 2 3 4

0 1 2 3 4 or more
ACE Score and Teen Sexual Behaviors

Looking for love

Social function

Percent With Health Problem (%) 0 1 2 3 4 or more

Intercourse by 15
Teen Pregnancy
Teen Paternity

Intercourse
Teen Pregnancy
Teen Paternity
Childhood Experiences Underlie Later Being Raped

Well-being

% Reporting Rape

ACE Score

0
1
2
3
4

+
ACE Score and the Risk of *Perpetrating* Domestic Violence

Social function:
Social function:

ACE Score and Indicators of Impaired Worker Performance

- **Absenteeism** (>2 days/month)
- **Serious Financial Problems**
- **Serious Problems Performing job**

ACE Score

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

Prevalence of Impaired Performance (%) vs. ACE Score
The ACE Score and the Prevalence of Liver Disease (Hepatitis/Jaundice)
ACEs Increase Likelihood of Heart Disease*

- Emotional abuse 1.7x
- Physical abuse 1.5x
- Sexual abuse 1.4x
- Domestic violence 1.4x
- Mental illness 1.4x
- Substance abuse 1.3x
- Household criminal 1.7x
- Emotional neglect 1.3x
- Physical neglect 1.4x

Effect of ACEs on Death Rate
(Null hypothesis)

Age Group

- 19-34
- 35-49
- 50-64
- >=65

Percent in Age Group

ACE Score

0 2 4
How and why do Adverse Childhood Experiences exert their influence throughout life?

Why is treatment so difficult?
Healthy Brain

This PET scan of the brain of a normal child shows regions of high (red) and low (blue and black) activity. At birth, only primitive structures such as the brain stem (center) are fully functional; in regions like the temporal lobes (top), early childhood experiences wire the circuits.

Front

Temporal lobes

Back

An Abused Brain

This PET scan of the brain of a Romanian orphan, who was institutionalized shortly after birth, shows the effect of extreme deprivation in infancy. The temporal lobes (top), which regulate emotions and receive input from the senses, are nearly quiescent. Such children suffer emotional and cognitive problems.
Mechanisms by Which Adverse Childhood Experiences Influence Health and Well-being Throughout the Lifespan
In Summary, the ACE Study indicates:

Adverse childhood experiences are the most *basic and long-lasting* cause of health risk behaviors, mental illness, social malfunction, disease, disability, death, and healthcare costs.
Adverse Childhood Experiences Underlie these National Problems

- adult biomedical health
- reproductive health
- smoking
- alcohol abuse
- illicit drug use
- sexual behavior
- mental health
- risk of re-victimization
- stability of relationships
- performance in the workforce
A Public Health Paradox

What are conventionally viewed as Public Health problems are often personal solutions to long-concealed adverse childhood experiences.
Translating Research into Practice

a beginning

Interventions

6th Floor

1.25 million comprehensive patient evaluations since 1975
An Individual, Population-based Health Appraisal System: A Biopsychosocial Concept

- Comprehensive history (not symptom-initiated) obtained at home by detailed questionnaire, better by Internet.
Unconventional Questions of Demonstrated Value

- Have you ever lived in a war zone?
- Have you been a combat soldier?
- Who in your family has committed suicide?
- Who in your family has been murdered?
- Who in your family has had a nervous breakdown?
- Were you molested as a child?
- Have you ever been held prisoner?
- Have you been tortured?
- Have you been raped?
Benefits of Incorporating a Trauma Approach

Effect of Interventions

Biomedical evaluation:  
(Control group)  
11% reduction in DOVs in subsequent year.  
(700 patient sample)

Biopsychosocial evaluation:  
(Trauma-oriented approach)  
35% reduction in DOVs in subsequent year.  
(125,000 patient sample)
What Can We Do Today?

• Routinely seek a history of adverse childhood experiences from all patients/inmates, by questionnaire.

• Acknowledge their reality by asking, “How has this affected you later in your life?”

• Use existing systems to help with current problems.

• Develop systems for primary prevention.
Final Insights from the ACE Study

- Adverse childhood experiences are common but typically unrecognized.
- Their link to major problems later in life is strong, proportionate, and logical.
- They are the nation’s most basic public health problem.
- It is comforting to mistake intermediary mechanism for basic cause.
- What presents as the ‘Problem’ may in fact be an attempted solution.
- Treating the solution may threaten people and cause flight from treatment.
- Change will be resisted by us in spite of enormous benefits.
Further Information

www.ACEsTooHigh.com

Medline/PubMed, Google  (Anda or Felitti as author)

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www.HumaneExposures.com  (3 Important Books)

www.CavalcadeProductions.com  (Documentary DVDs)

http://xnet.kp.org/PermanenteJournal/winter02/deardoc.pdf