

# **Adverse Childhood Experiences and their Relationship to Adult Health and Well-being**

A collaborative effort of Kaiser Permanente and the Centers for Disease Control

**Norway**

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# **The Adverse Childhood Experiences (ACE) Study**

- **The largest study of its kind ever done to examine the medical, social, and economic effects of adverse childhood experiences over the lifespan (18,000 participants)**



## **What do we mean by Adverse Childhood Experiences?**

- Experiences that lead to medical and social problems of national importance.
  - childhood abuse and neglect
  - growing up with domestic violence, substance abuse or mental illness in the home, parental loss, or crime



# ACE Study Design

Survey Wave 1 -- complete  
71% response (9,508/13,454)

n=13,000  
71% response  
*All medical evaluations  
abstracted*

vs.

*Present  
Health Status*

& →

Mortality

National Death Index

Morbidity

Hospital Discharges  
Doctor Office Visits  
Emergency Room Visits  
Pharmacy Costs

Survey Wave II

n=13,000  
*All medical evaluations  
abstracted*

# ACE Study Findings

*Adverse childhood life experiences affect adult:*

- **Disease burden and medical care costs**
- **Well-being, depression, and suicide rates**
- **Alcoholism and drug use**
- **Job performance and disability**
- **Subsequent generations.**

# Categories of Adverse Childhood Experiences

**Category  
Prevalence (%)**

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## **Abuse, by Category**

Psychological (by parents)	11%
Physical (by parents)	11%
Sexual (anyone)	22%

## **Household Dysfunction, by Category**

Substance Abuse	26%
Mental Illness	19%
Mother Treated Violently	13%
Imprisoned Household Member	3%

# Adverse Childhood Experiences Score

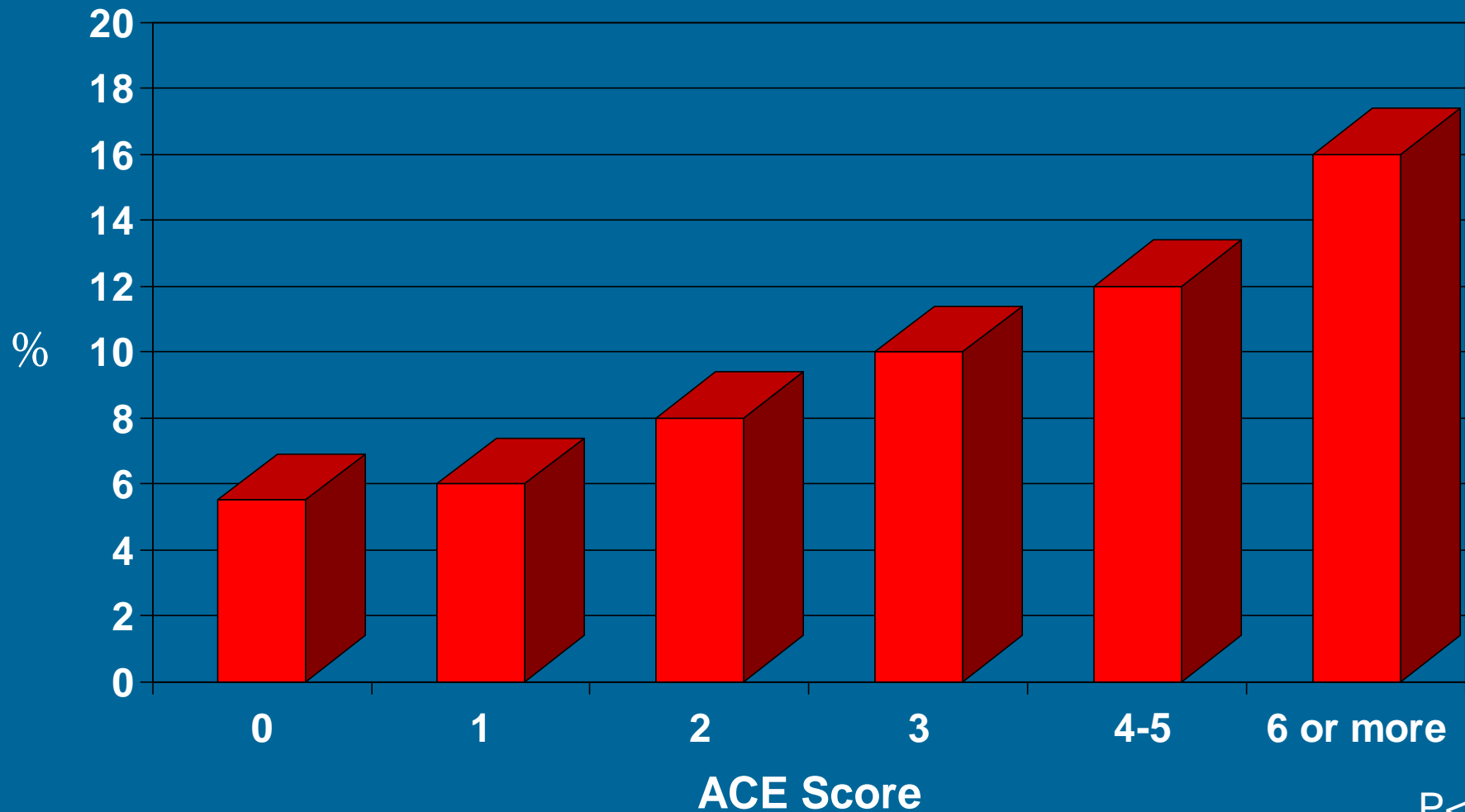
Number of categories of adverse childhood experiences are summed ...

<i>ACE score</i>	<i>Prevalence</i>
0	48%
1	25%
2	13%
3	7%
4 or more	7%



- More than *half* have at least one ACE
- If one category of ACE is present, there is an 86% likelihood of additional categories being present.

# Adverse Childhood Experiences vs. Current Smoking

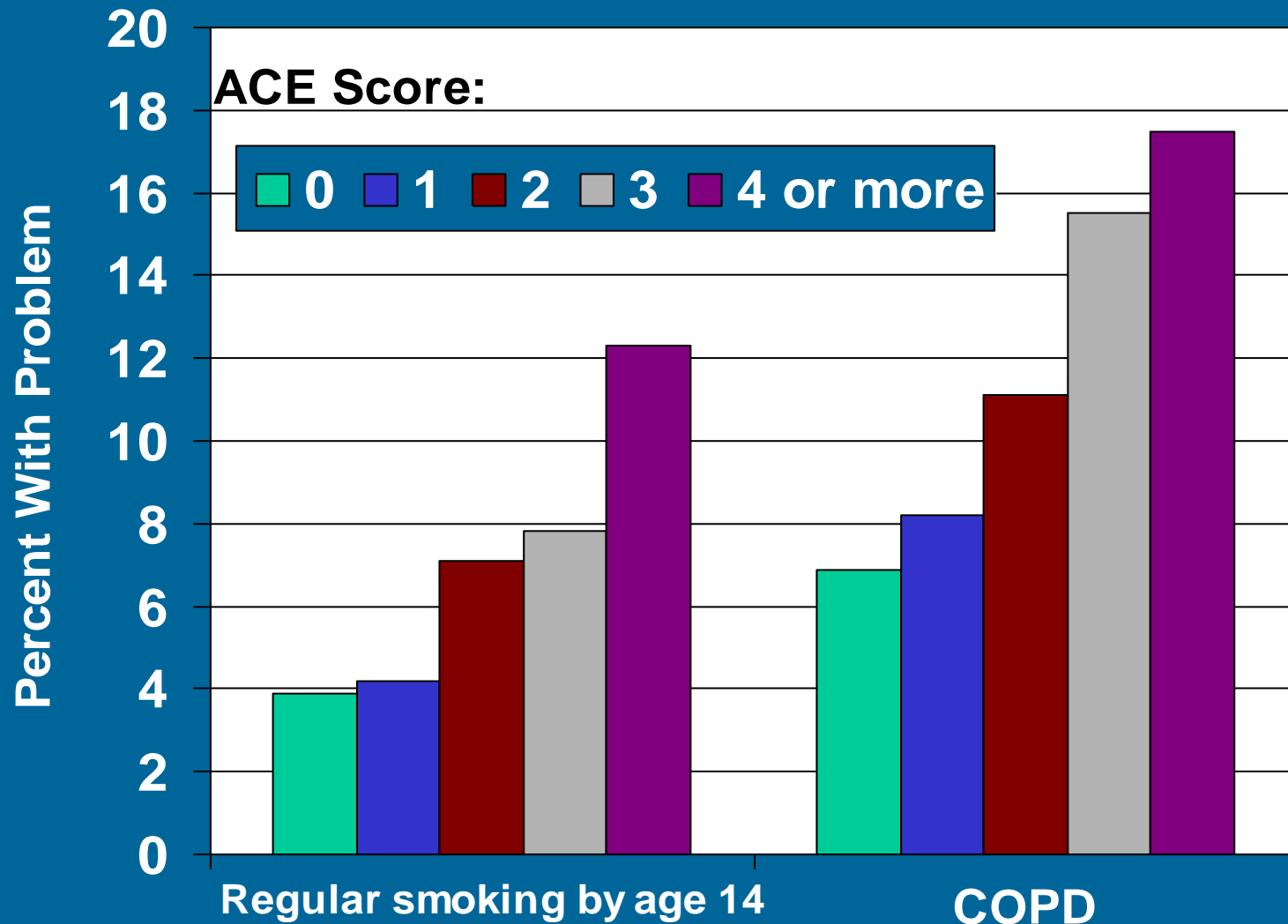


# Smoking to Self-Medicate



Smoke3-28comp.avi

# ACE Score vs. Smoking and COPD



# Childhood Experience and Later Organic Disease

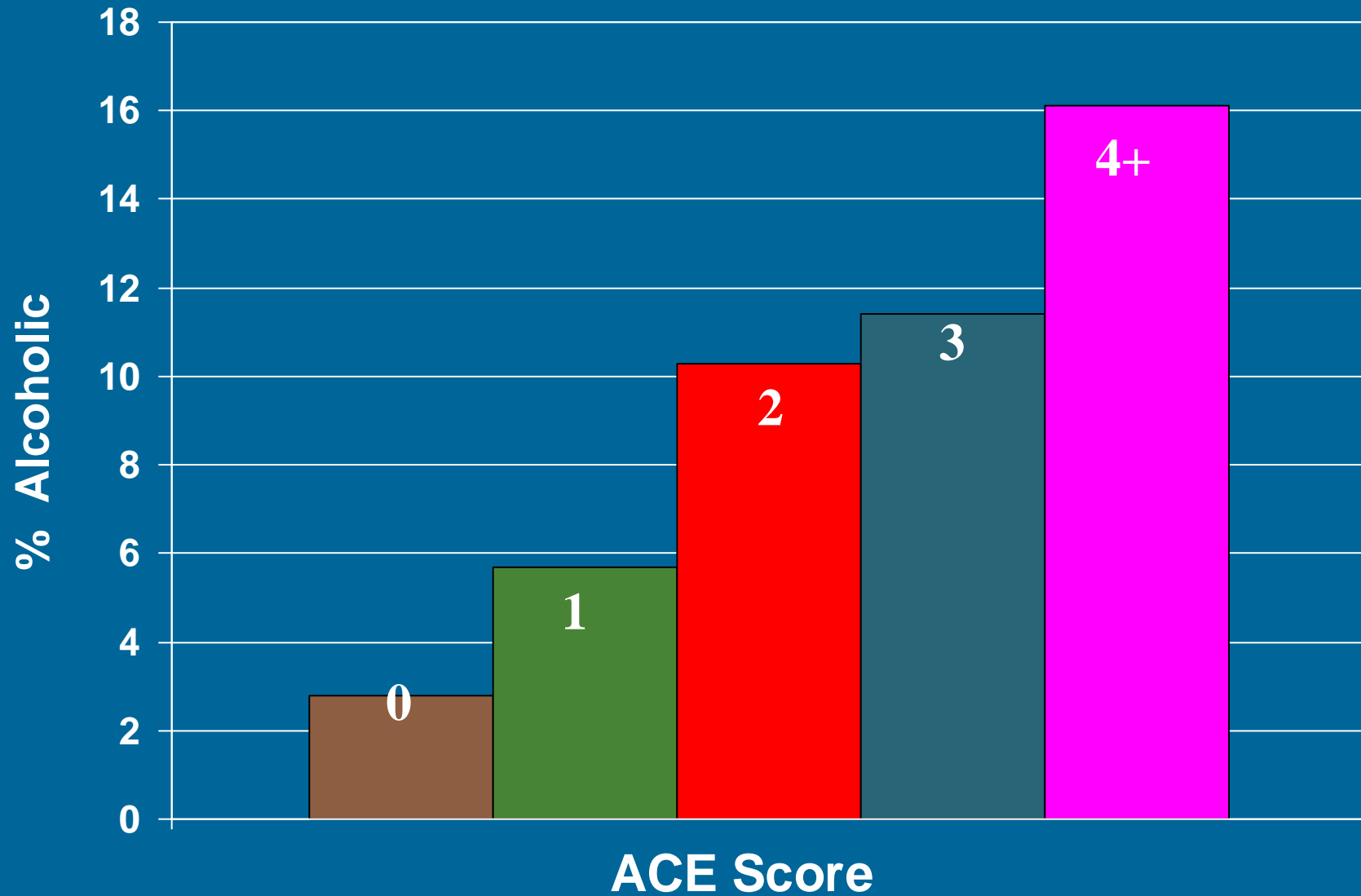
## ACEs Increase Likelihood of Heart Disease\*

- 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



\*After correction for age, race, education, and conventional risk factors like smoking and diabetes.  
*Circulation*, Sept 2004.

# Childhood Experiences vs. Adult Alcoholism



# Molestation in Childhood



Molest3-28comp.avi

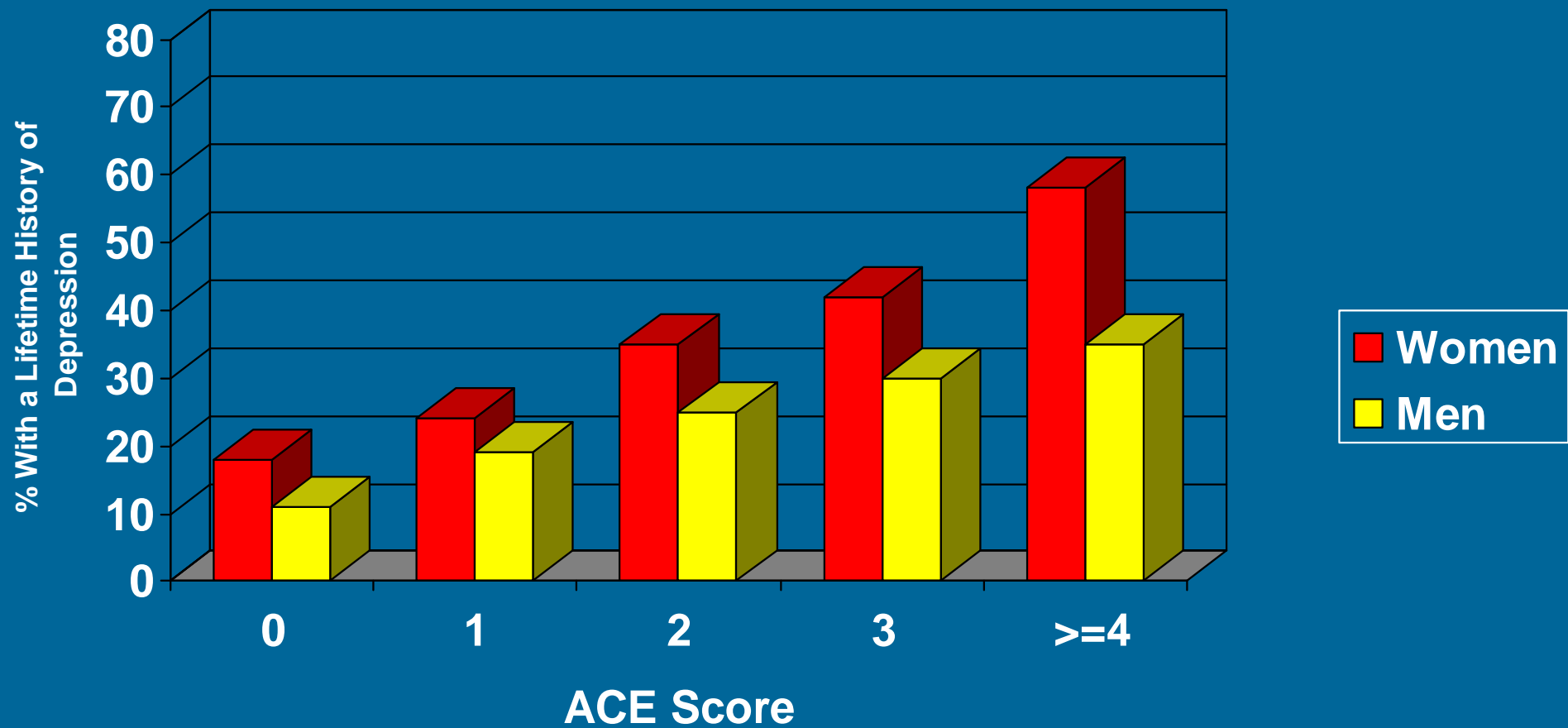
Some say depression is a disease.  
Some say depression is genetic.  
Some say depression is due to a chemical imbalance.



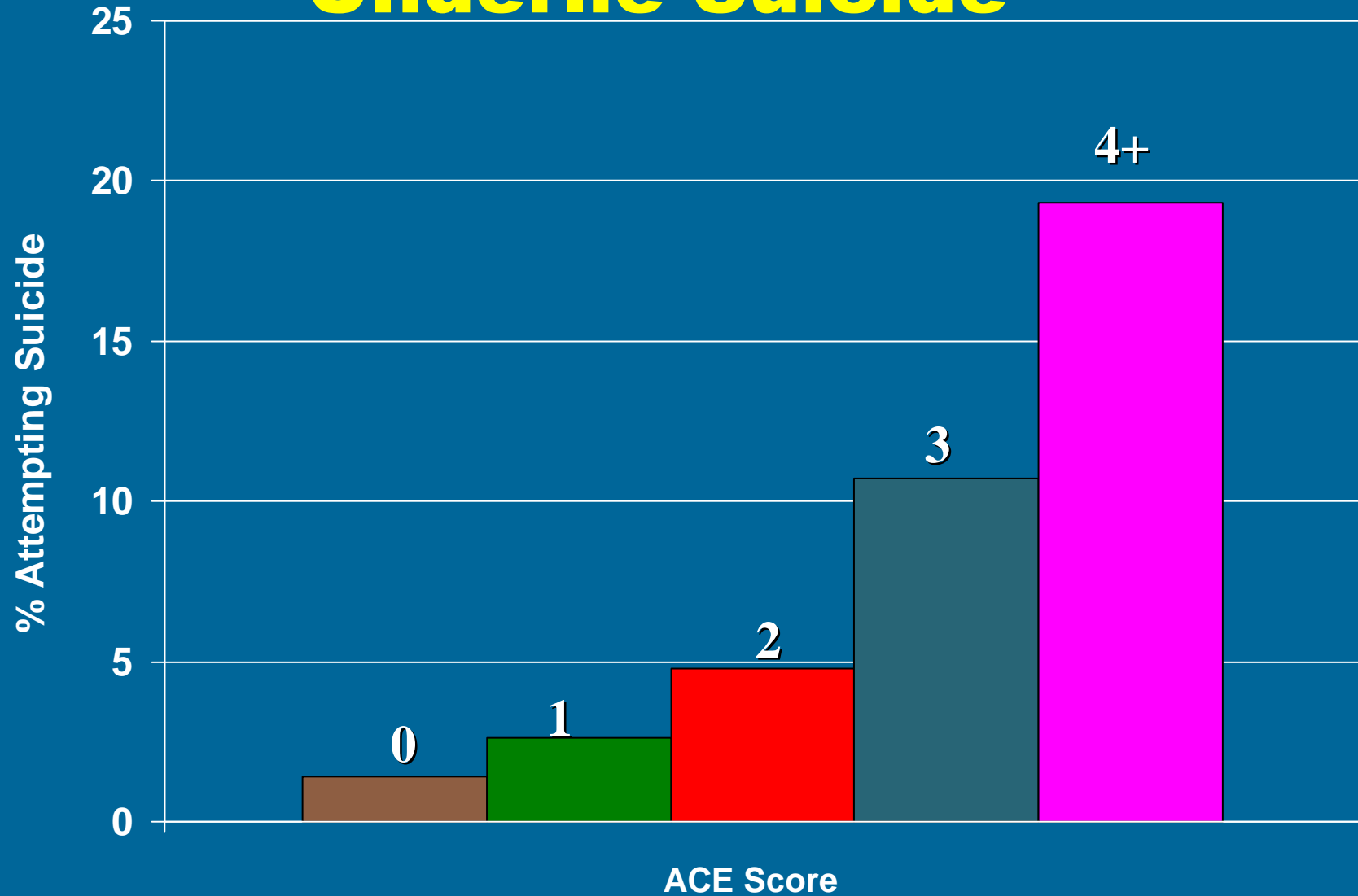
Might depression be a *normal* response to *abnormal life experiences*?



# Childhood Experiences Underlie Chronic Depression



# Childhood Experiences Underlie Suicide

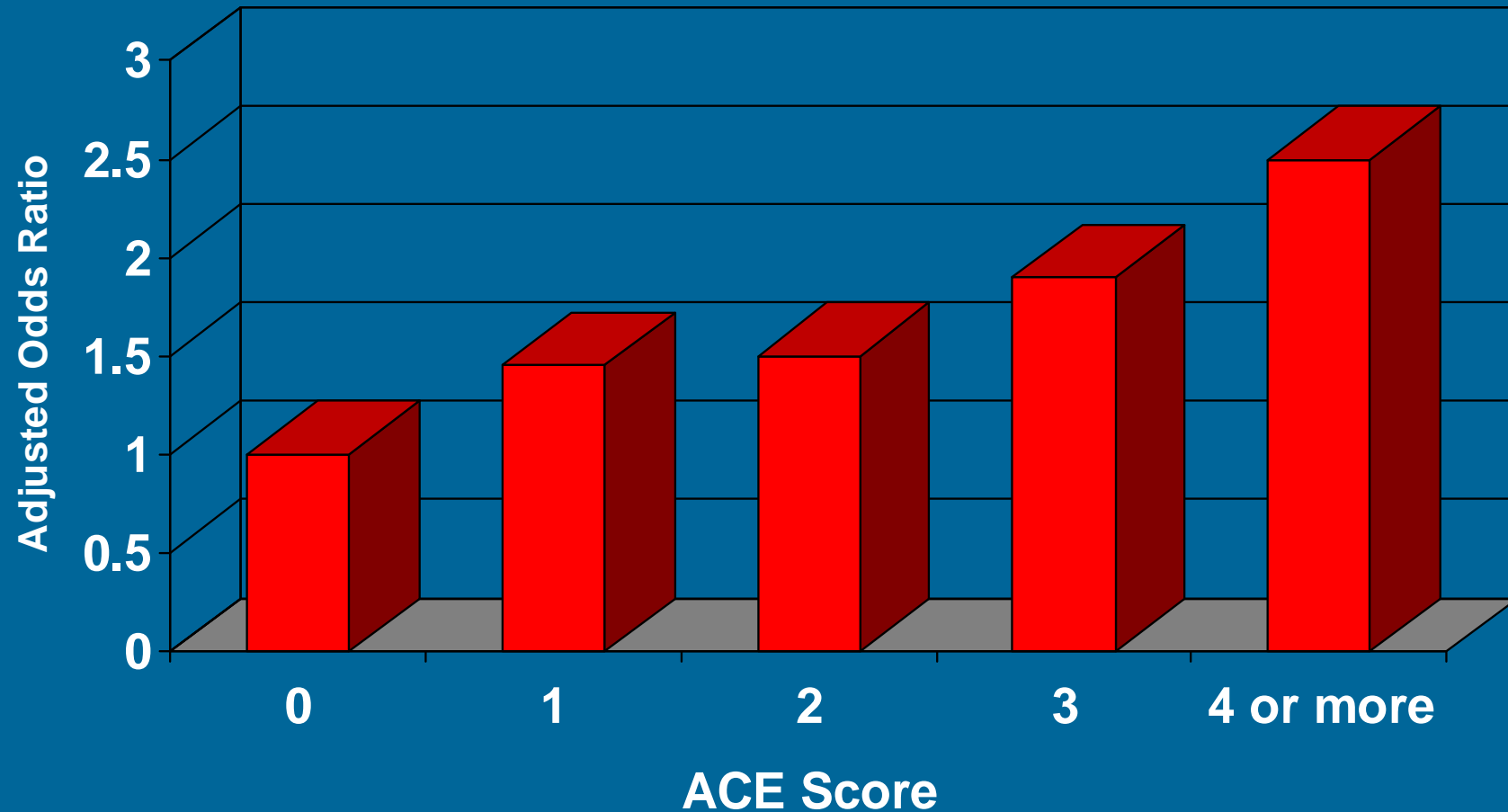


# Estimates of the Population Attributable Risk\* of ACEs for Selected Outcomes in Women

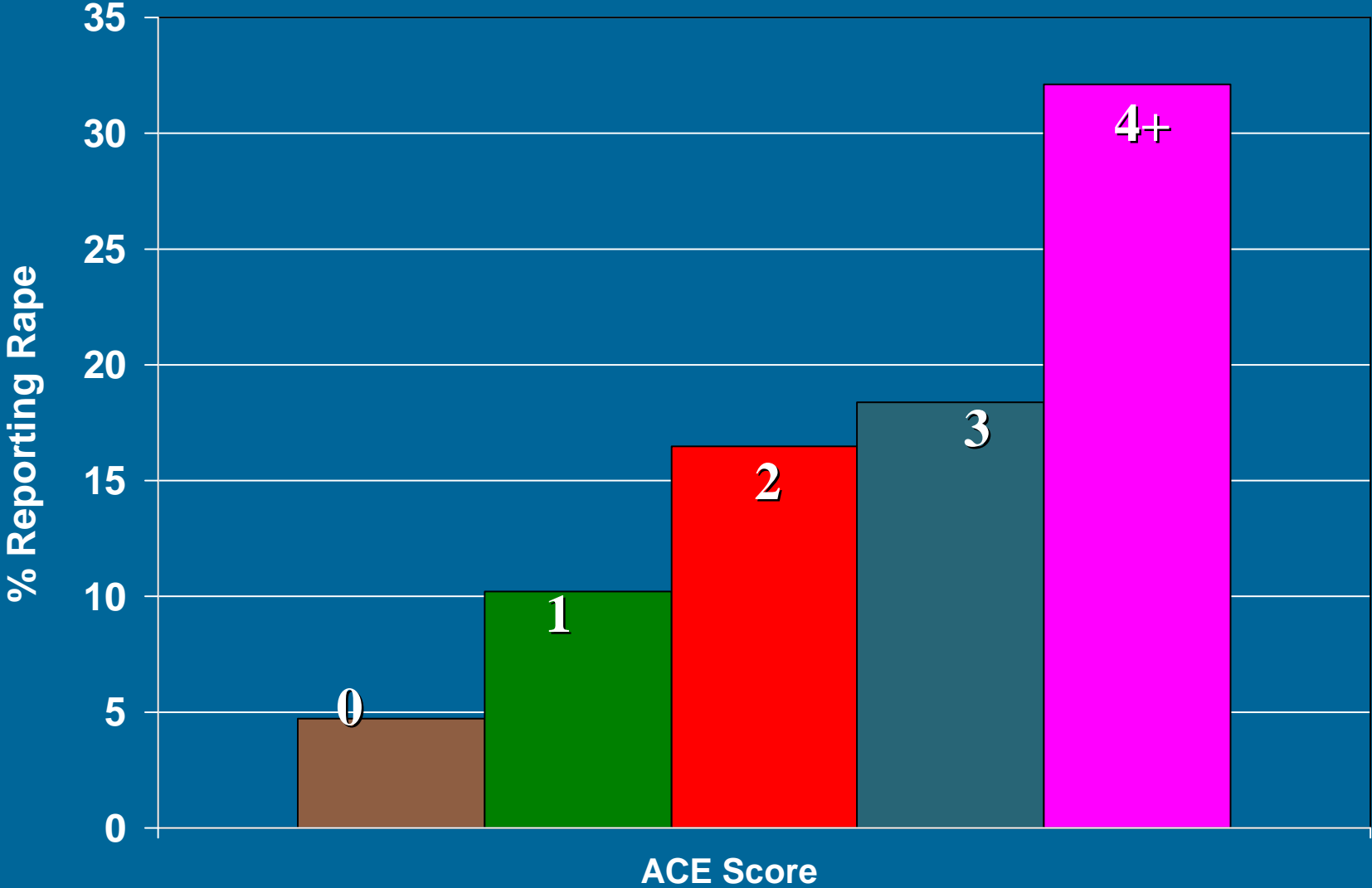
<b>Mental Health</b>	<b>PAR</b>
Current depression	54%
Chronic depression	41%
Suicide attempt	58%

\*That portion of a condition attributable to specific risk factors

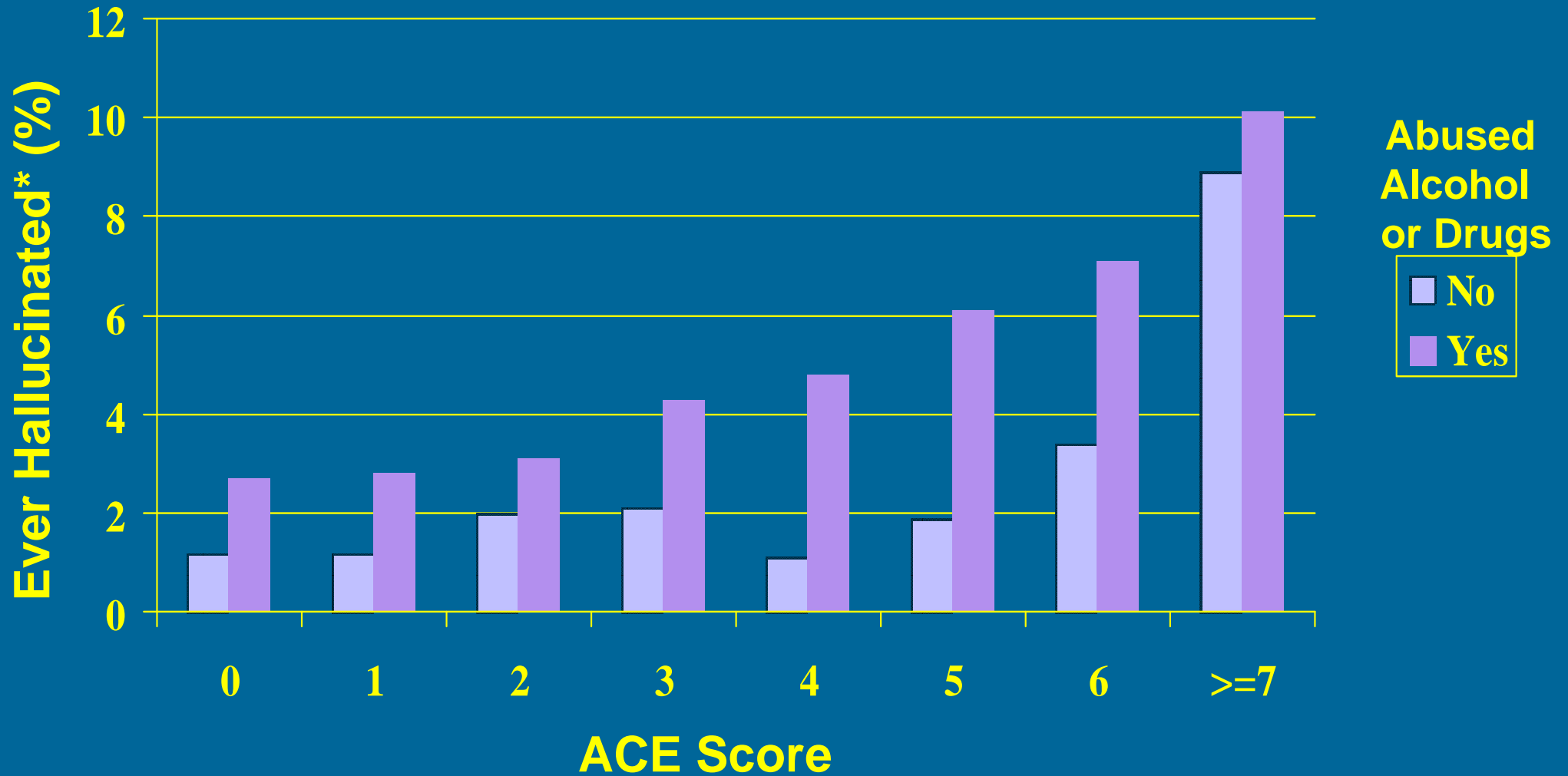
# Adverse Childhood Experiences vs. History of STD



# Childhood Experiences Underlie Rape



# ACE Score and Hallucinations



\*Adjusted for age, sex, race, and education.

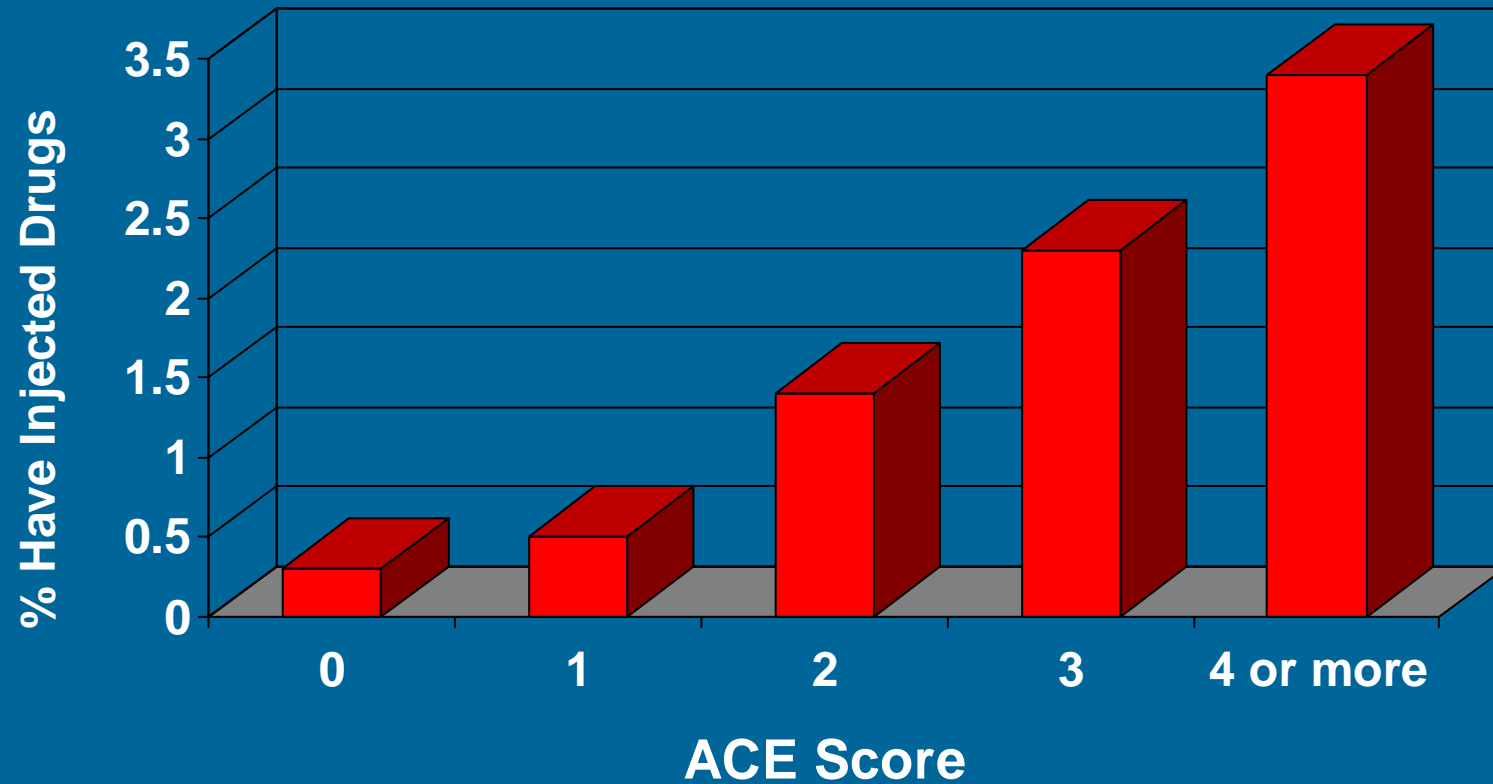
**The traditional concept:**

“Addiction is due to the characteristics intrinsic in the molecular structure of some substance.”

**We find that:**

**“Addiction highly correlates with characteristics intrinsic to that individual’s childhood experiences.”**

# ACE Score vs. Intravenous Drug Use



**N = 8,022**    **p < 0.001**

# Estimates of the Population Attributable Risk\* of ACEs for Selected Outcomes in Women

<b>Drug Abuse</b>	<b>PAR</b>
Alcoholism	65%
Drug abuse	50%
IV drug use	78%

\*That portion of a condition attributable to specific risk factors

# **Adverse Childhood Experiences determine the likelihood of the ten most common causes of death in the United States.**

**Top 10 Risk Factors:** smoking, severe obesity, physical inactivity, depression, suicide attempt, alcoholism, illicit drug use, injected drug use, 50+ sexual partners, h/o STD.

**With an ACE Score of 0, the majority of adults have few, if any, risk factors for these diseases.**

**However, with an ACE Score of 4 or more, the majority of adults have multiple risk factors for these diseases or the diseases themselves.**

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

**Their risk factors are also  
reliable markers for  
antecedent problems.**

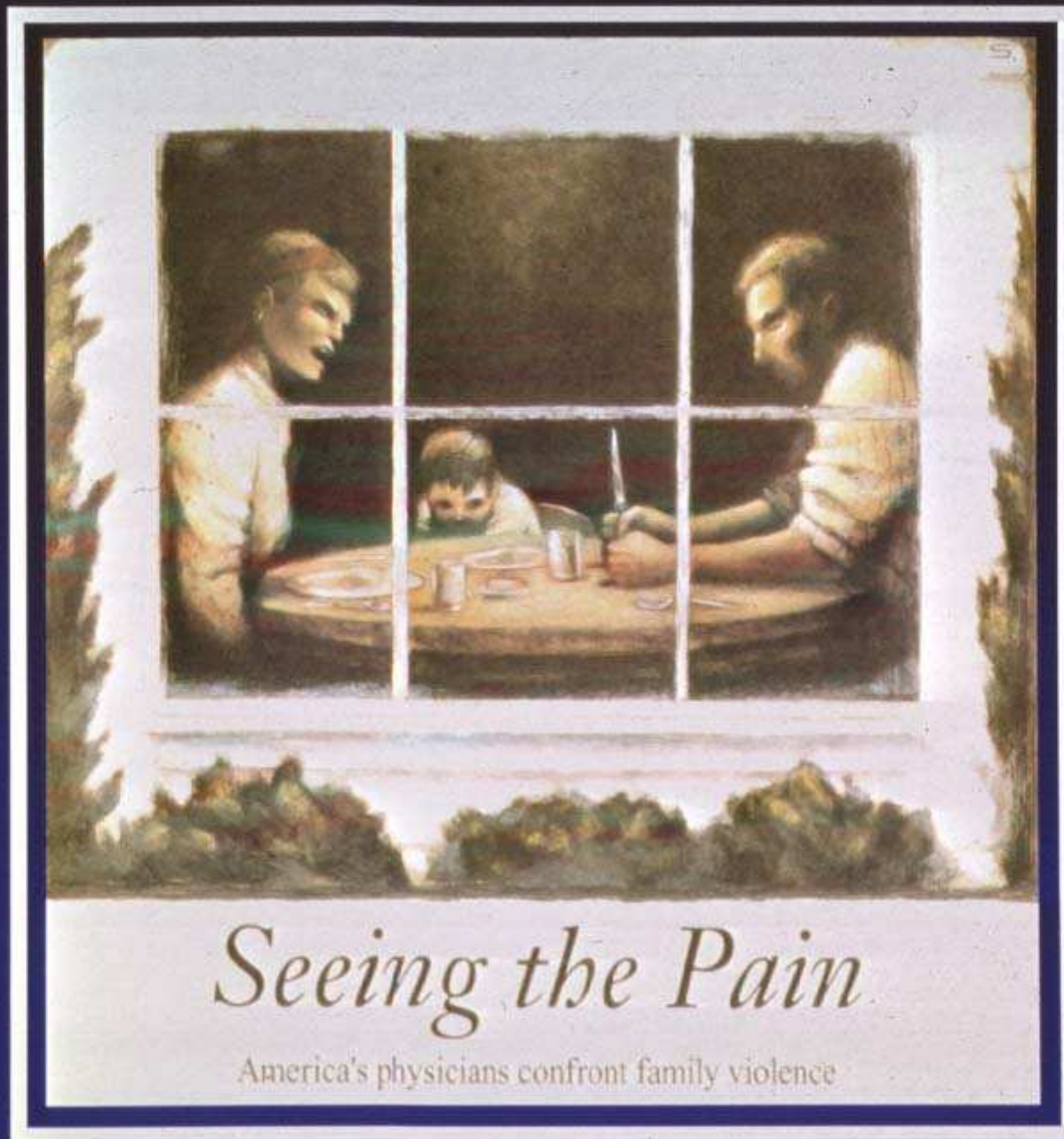
*“In my end is my beginning.”*

T.S. Eliot - Quartets

Dismissing them as “bad habits” or “self-destructive behavior” hides their functionality.



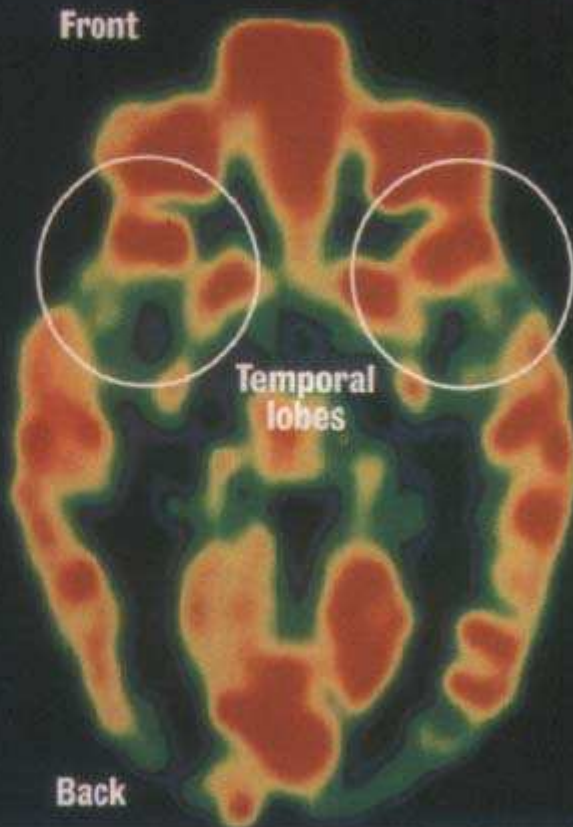
**The risk factors  
underlying these adult  
diseases are effective  
short-term coping devices.**



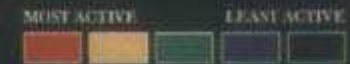
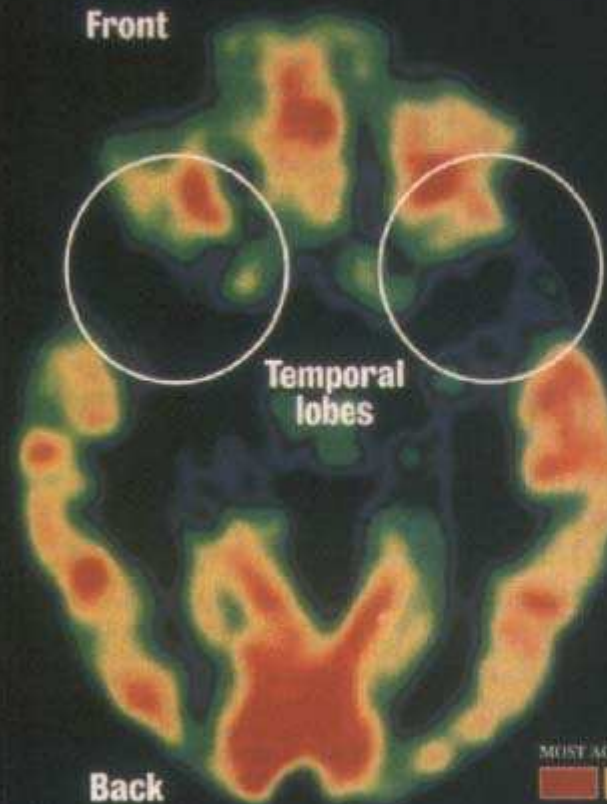
**Why are their long-term consequences so difficult to treat?**

### 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



### An Abused Brain

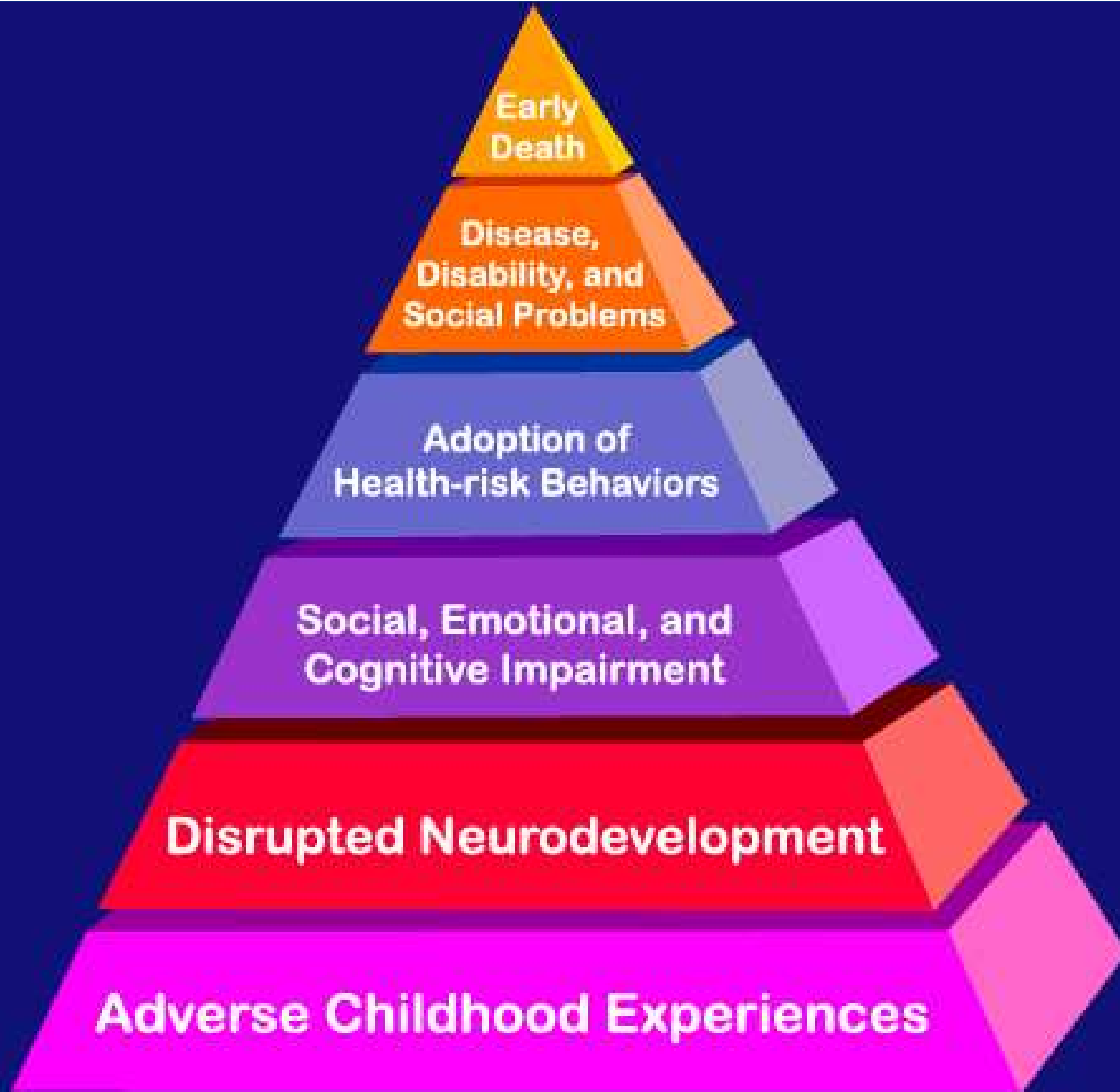
This PET scan of the brain of a Romanian orphan, who was institutionalized shortly after birth, shows the effect of extreme deprivation in infancy. The temporal lobes (top), which regulate emotions and receive input from the senses, are nearly quiescent. Such children suffer emotional and cognitive problems.

**Many public health problems  
are often attempted  
solutions to unrecognized  
childhood experiences.**

Evidence from ACE Study Indicates:

**Adverse childhood experiences are the most basic cause of health risk behaviors, morbidity, disability, mortality, and healthcare costs.**

**Death**



**Early  
Death**

**Disease,  
Disability, and  
Social Problems**

**Adoption of  
Health-risk Behaviors**

**Social, Emotional, and  
Cognitive Impairment**

**Disrupted Neurodevelopment**

**Adverse Childhood Experiences**

**Conception**

# **Bridging the Chasm**



**Child  
health  
and  
well-being  
as it  
stands  
today.**

**Acknowledgment that  
the problem exists.**

**Recognition of cases  
in medical practice.**

**Human  
health  
and  
well-being  
as it  
could be.**

# What Can We Do Today?

- Routinely seek history of adverse childhood experiences from all patients
- Acknowledge their reality by asking, “*How has this affected you later in life?*”
- Develop systems to help with current problems
- **Develop systems for early prevention.**

# Translating Research into Practice

a beginning



1.2 million patient evaluations since 1975

# Unconventional Questions of Demonstrated Value

- Have you lived in a war zone?
- Have you ever 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?

# Economics of a Biopsychosocial Preventive Approach

Biomedical evaluation: 11% reduction in DOVs, subsequent year (700 patient sample)

Biopsychosocial evaluation: 35% reduction in DOVs (125,000 patient sample)

**Digital technology makes  
comprehensive, *individual*  
biopsychosocial evaluation a  
powerful and affordable basis  
for population-based preventive  
medicine.**

## An Economist's View

- Gary S. Becker, winner in 1992 of the Nobel Prize for Economics, feels so strongly about the value of early childhood programs that in a recent speech, he recommended that society make payments to parents contingent on their children's regular attendance at an early childhood program.

# Further Information

[www.cestudy.org](http://www.cestudy.org)

<http://www.cdc.gov/NCCDPHP/ACE/>

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