

# Adverse Childhood Experiences and their Repressed Relationship to Adult Well-being, Disease, and Premature Death



The ACE Study is a collaborative effort between  
Kaiser Permanente and the Centers for Disease Control



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# The ACE Study Summary of Findings:

- Adverse Childhood Experiences (ACEs) are very common, but mostly unrecognized.
- ACEs are strong predictors of later well-being, health risks, disease, and premature death.
- This combination makes ACEs *the leading* determinant of the health and social well-being of our nation.



# What is the *Core* Problem Here?

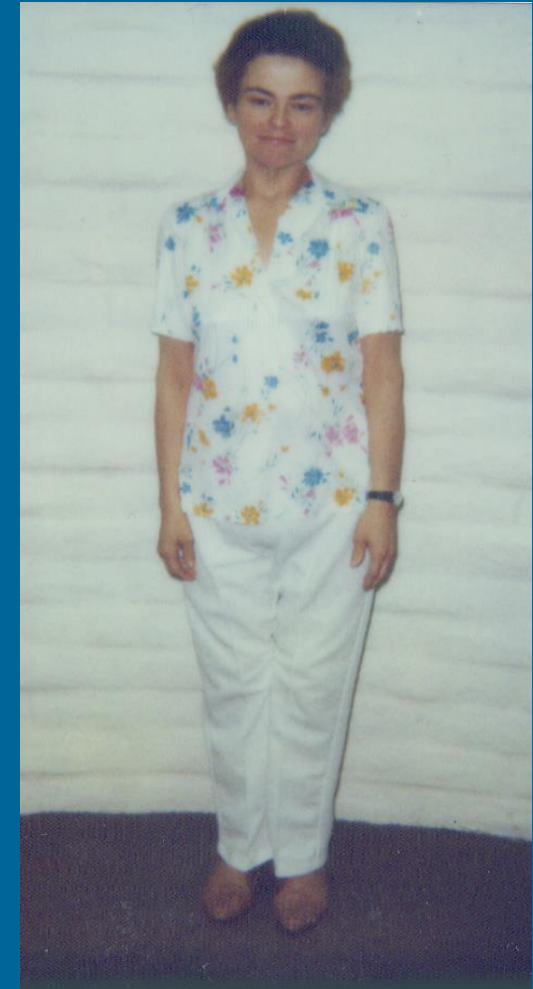


Age 8



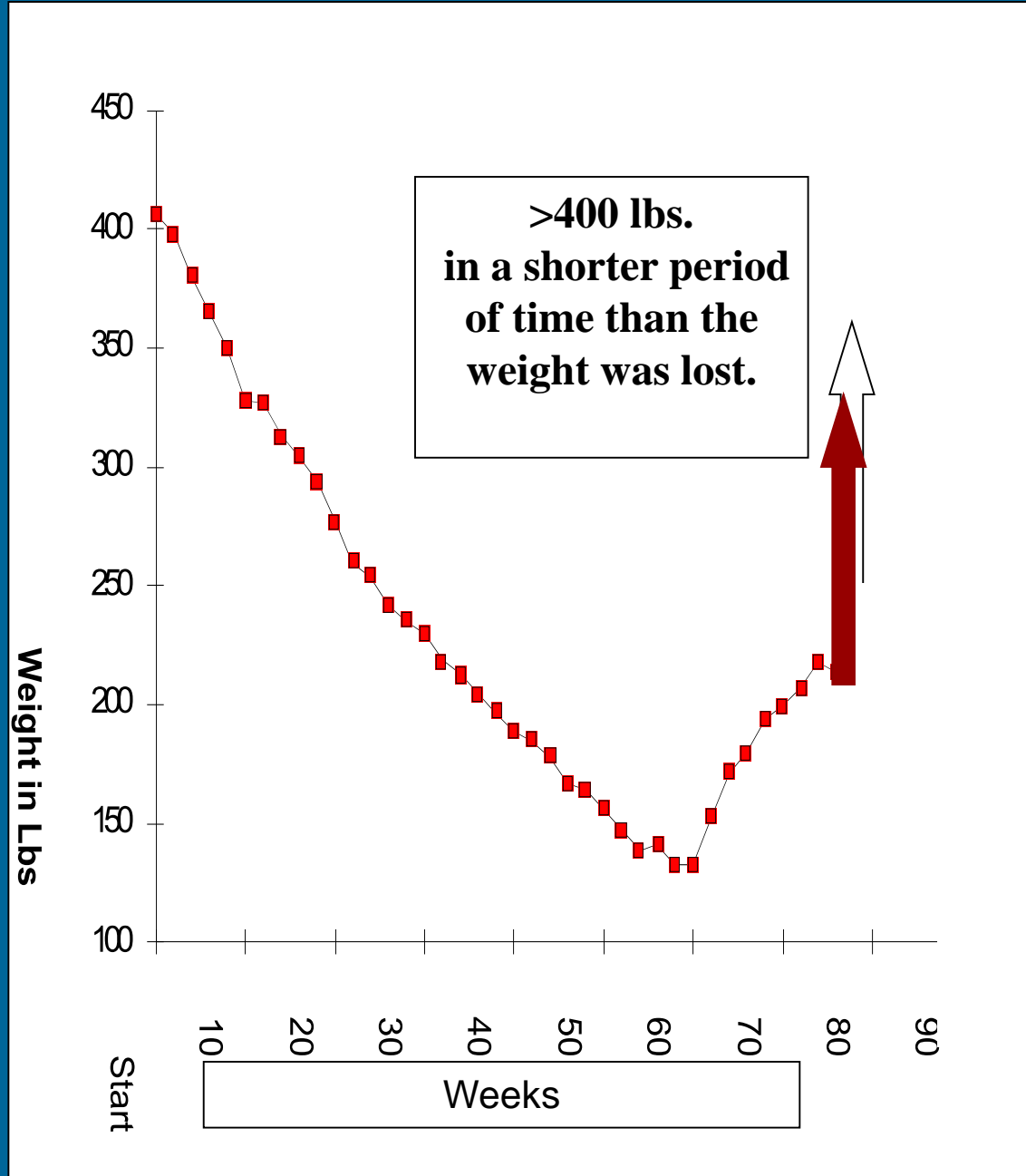
Age 28

In 51 weeks:  
408 to 132 lbs



Age 29

Which photo represents the patient's *problem*?



# 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*

vs.

*Present  
Health Status*

17,337 adults

## Mortality

National Death Index

## Morbidity

Hospitalization

Doctor Office Visits

Emergency Room Visits

Pharmacy Utilization

# Prevalence of Adverse Childhood Experiences

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	Prevalence (%)
<b>Abuse, by Category</b>	
Psychological (by parents)	11%
Physical (by parents)	28%
Sexual (anyone)	22%
<b>Neglect, by Category</b>	
Emotional	15%
Physical	10%
<b>Household Dysfunction, by Category</b>	
Alcoholism or drug use in home	27%
Loss of biological parent < age 18	23%
Depression or mental illness in home	17%
Mother treated violently	13%
Imprisoned household member	5%

# Adverse Childhood Experiences Score


Number of categories (not events) is summed...

<i>ACE Score</i>	<i>Prevalence</i>
0	33%
1	25%
2	15%
3	10%
4	6%
5 or more	11%*



- 67% 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



Patty's Sister

Is Obesity genetic? It's certainly familial.

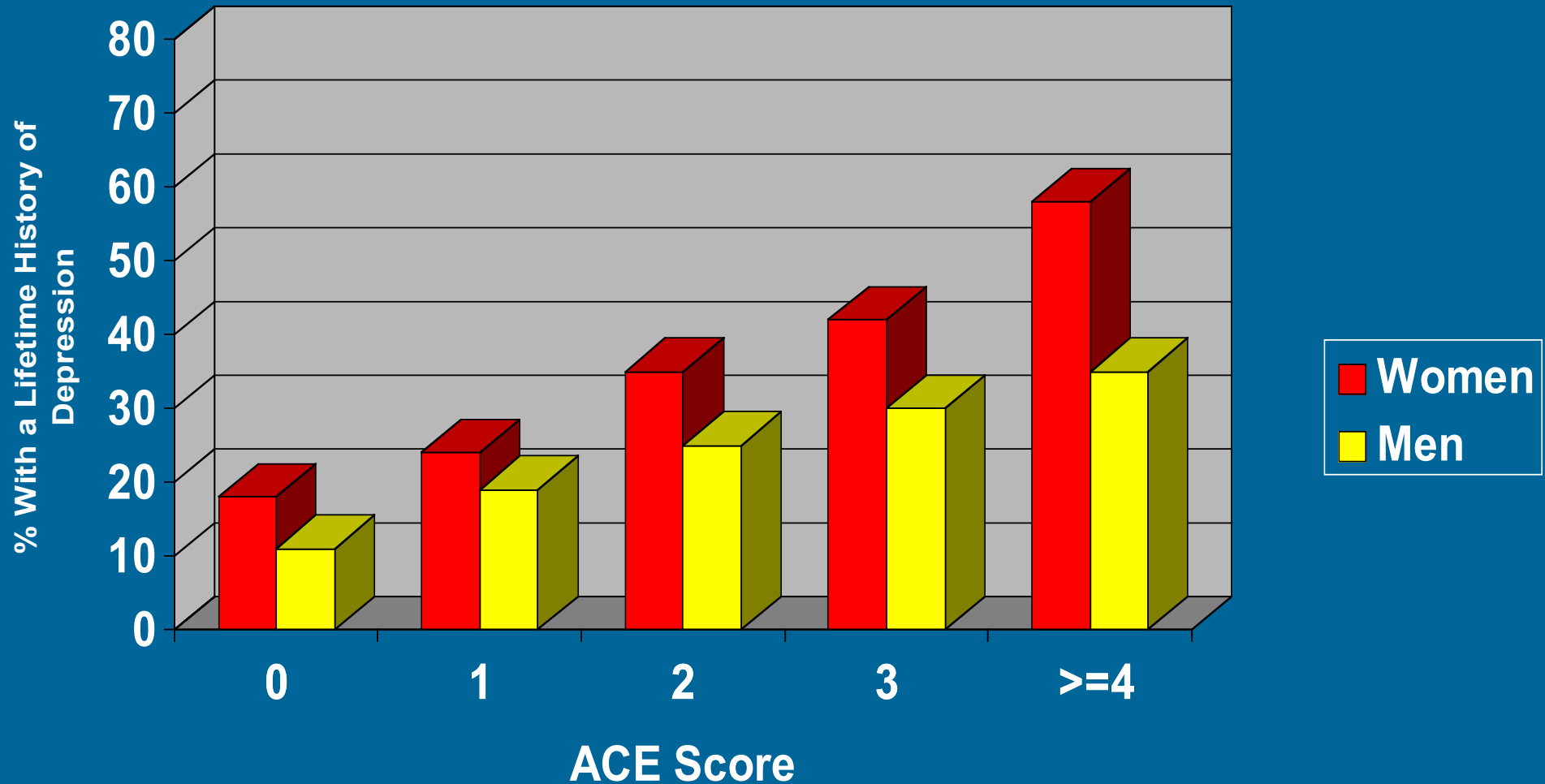


# Depression:

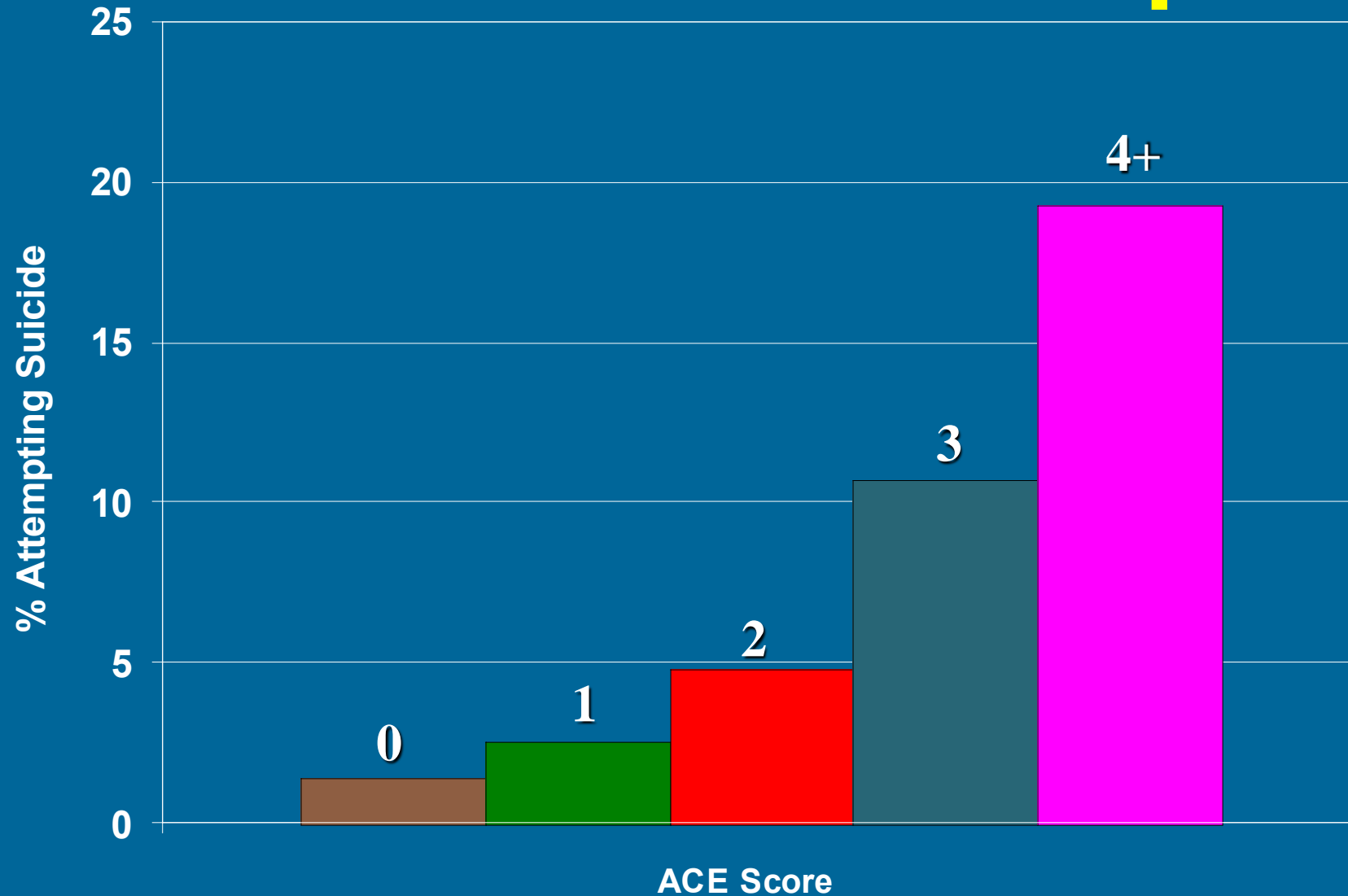
Most say depression is a disease.  
Many say depression is genetic.  
Some say it is due to a chemical  
imbalance in the brain.



# Childhood Experiences Underlie Chronic Depression

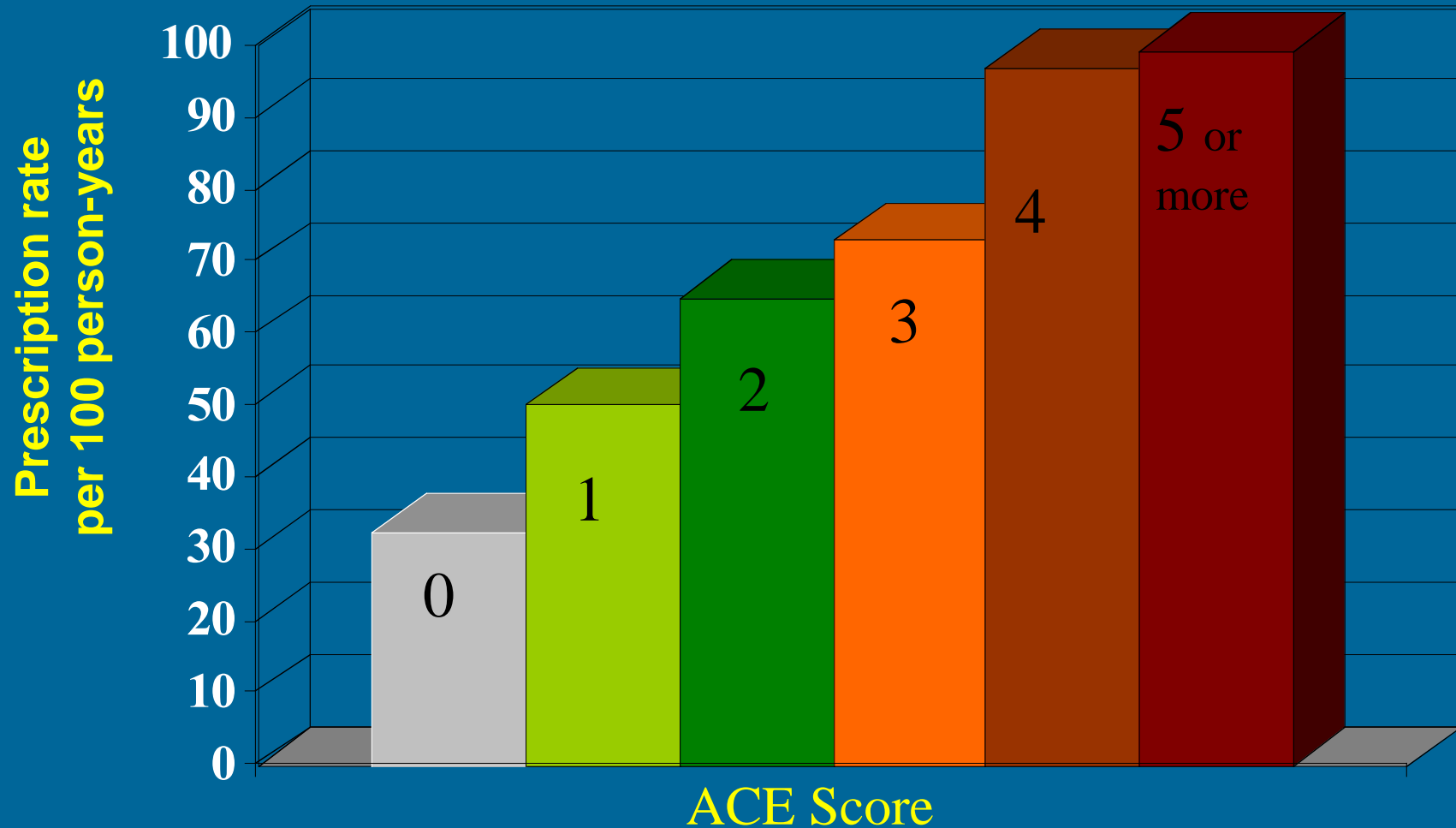


# Childhood Experiences Underlie Suicide Attempts



# ACE Score and Rates of Antidepressant Prescriptions

approximately 50 years later



# An ad from the 1940s, for the Profession

**'Amphedroxyn Hydrochloride'**  
(Methamphetamine Hydrochloride, *Lilly*)

One Pint (475 cc.) No. 38

**ELIXIR AMPHEDROXYN HYDROCHLORIDE**  
(Methamphetamine Hydrochloride)  
2.5 mg. per 4 cc.

Contains Alcohol 5 Percent  
Contains 100 cc.

Methamphetamine Hydrochloride 42.5 mg.  
Concentrated in methamphetamine form, especially when administered in solution to stimulate the drug.

**CAUTION:**—To be dispensed only by or on the prescription of a physician.

100 Tablets  
**AMPHEDROXYN HYDROCHLORIDE**  
(Methamphetamine Hydrochloride)  
2.5 mg.

**CAUTION:**—To be dispensed only by or on the prescription of a physician.

100 Tablets  
**AMPHEDROXYN HYDROCHLORIDE**  
(Methamphetamine Hydrochloride)  
2.5 mg.

**IS OFTEN PREFERABLE TO OTHER FORMS OF AMPHETAMINE—**  
because—  
smaller doses produce longer cerebral stimulation, with a minimum of undesirable excitement and other side-effects.

When patients with depression, narcolepsy, alcoholism, or obesity are selected as suitable cases for stimulant therapy, 'Amphedroxyn Hydrochloride' is a prudent choice of drug.

Detailed information and literature on 'Amphedroxyn Hydrochloride' are personally supplied by your Lilly medical service representative or may be obtained by writing to  
Eli Lilly and Company, Indianapolis 6, Indiana, U.S.A.

*Lilly*  
SINCE 1876

## Risk Behaviors: 'Addictions'

# Smoking to Self-Medicate



Distant consequences of abuse

The traditional concept:

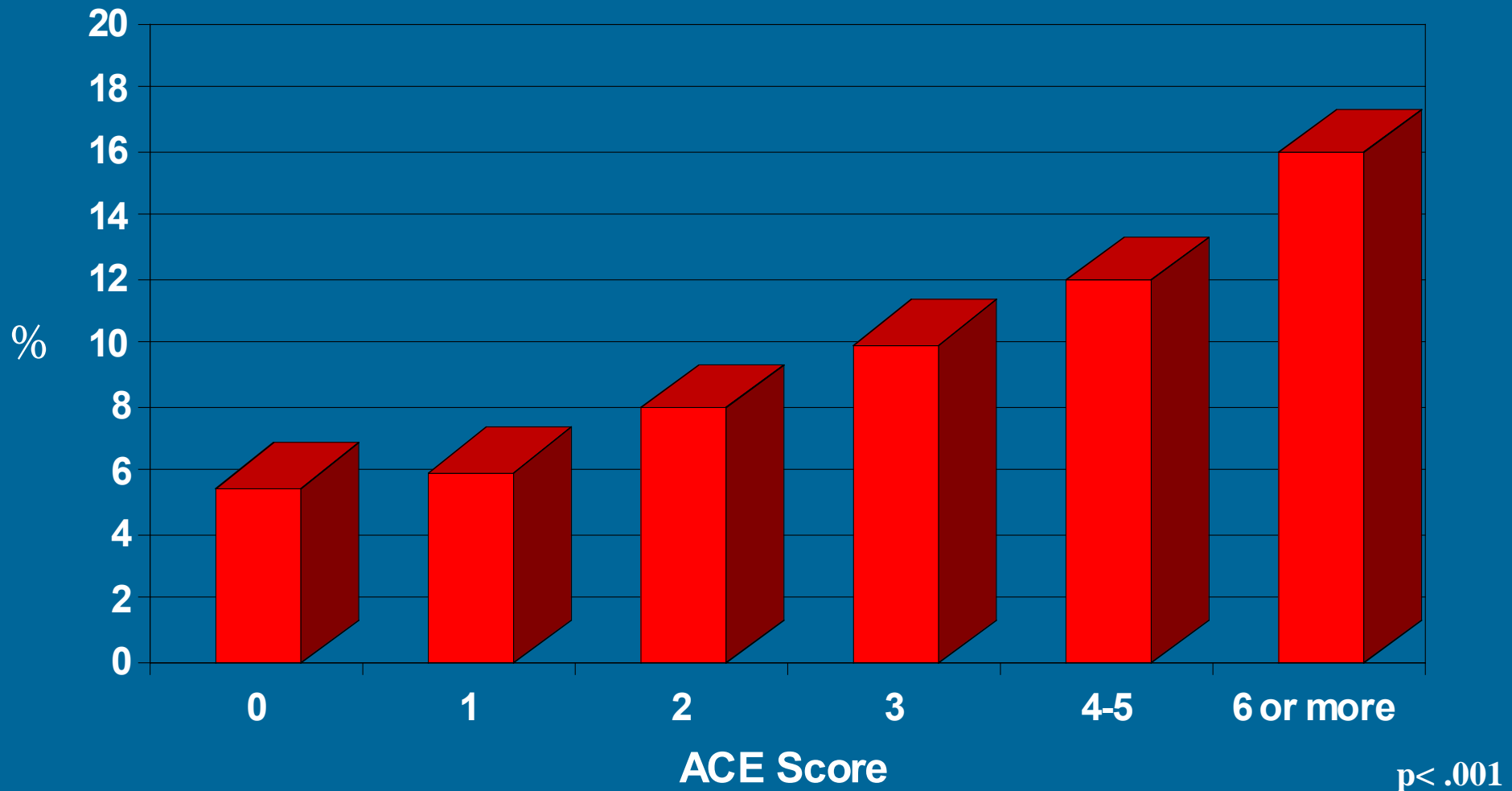
“Addiction is due to the characteristics intrinsic in the molecular structure of some substance.”

The ACE Study challenges that by showing:

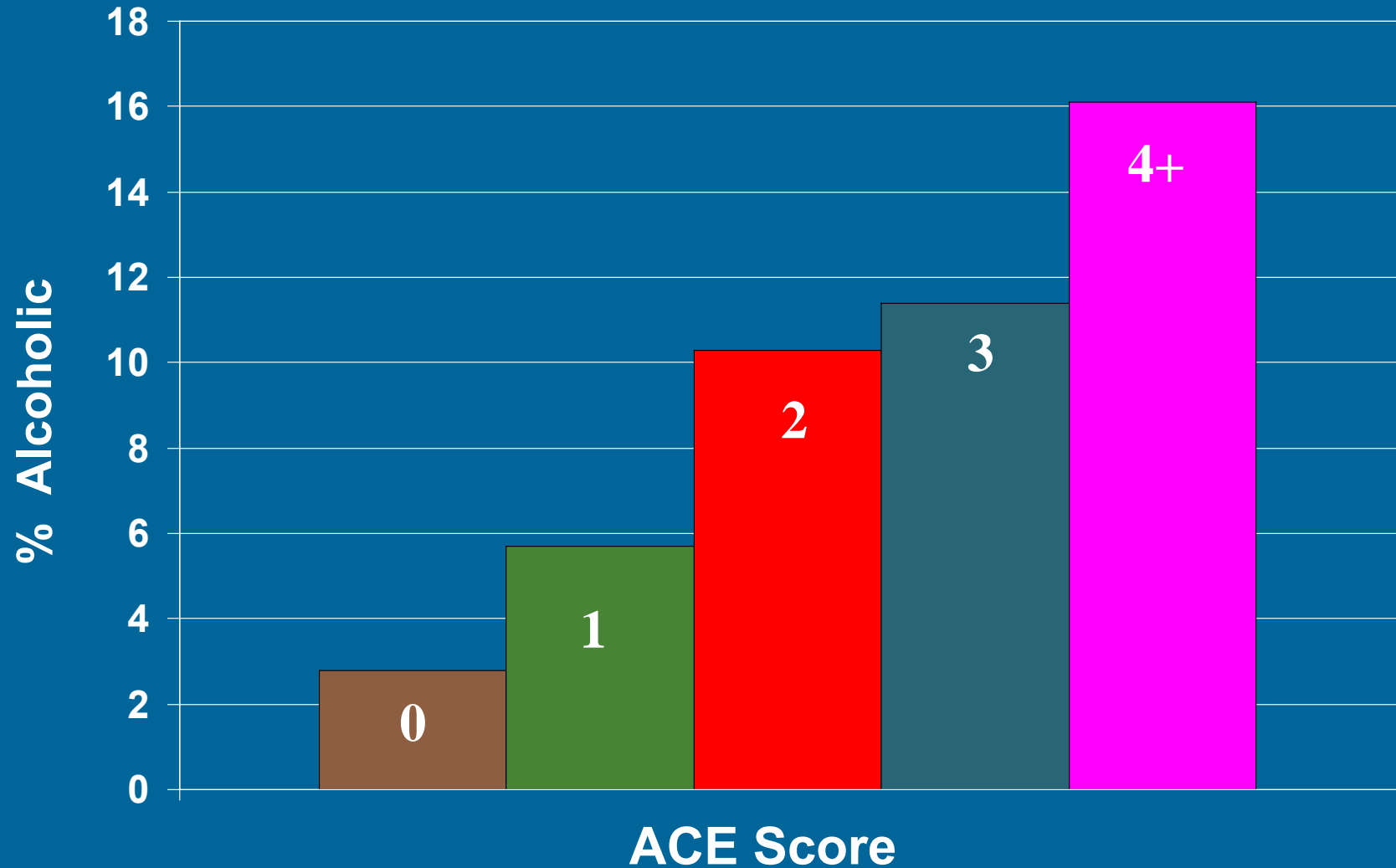
Addiction highly correlates with  
characteristics intrinsic to that  
individual's childhood  
experiences.



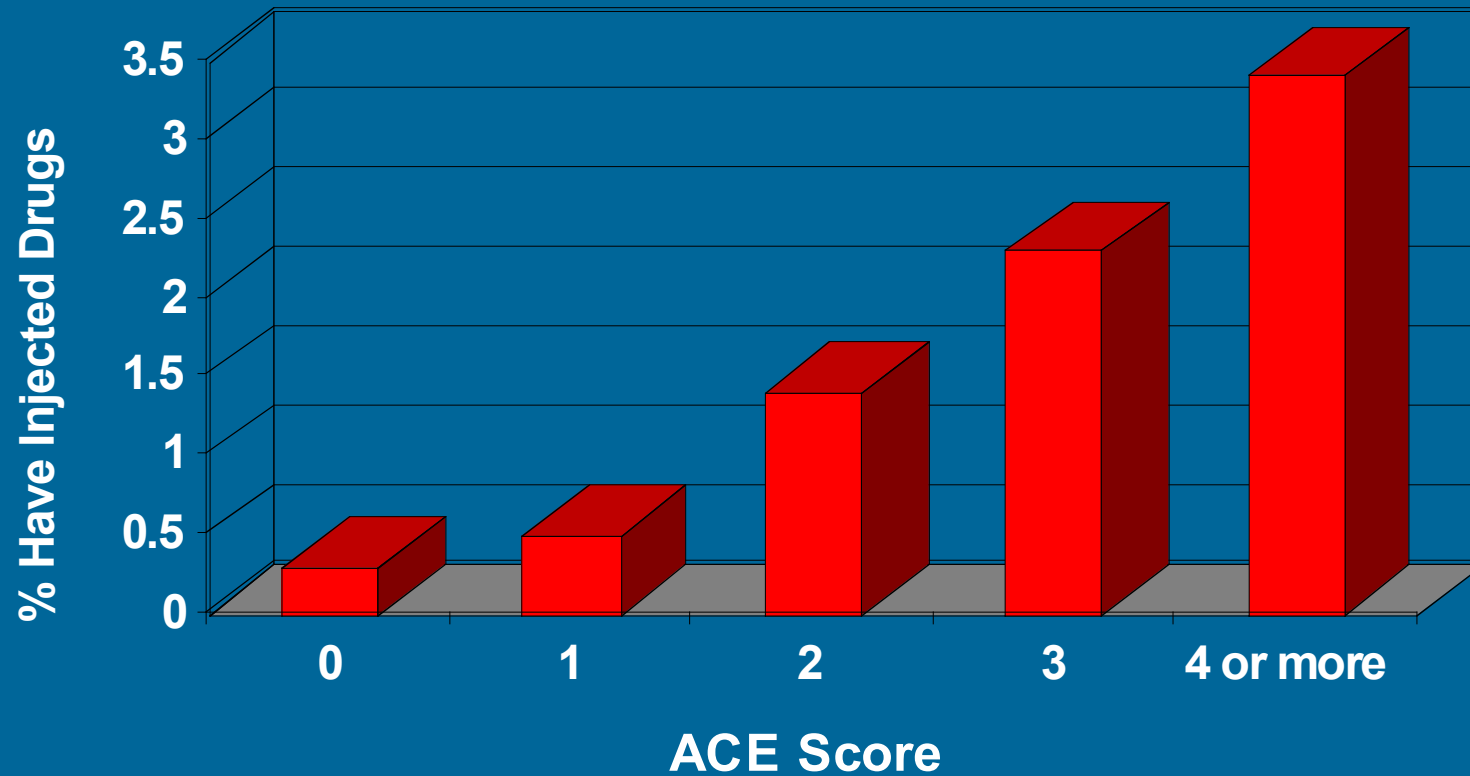
# Adverse Childhood Experiences vs. Smoking as an Adult



# Childhood Experiences vs. Adult Alcoholism

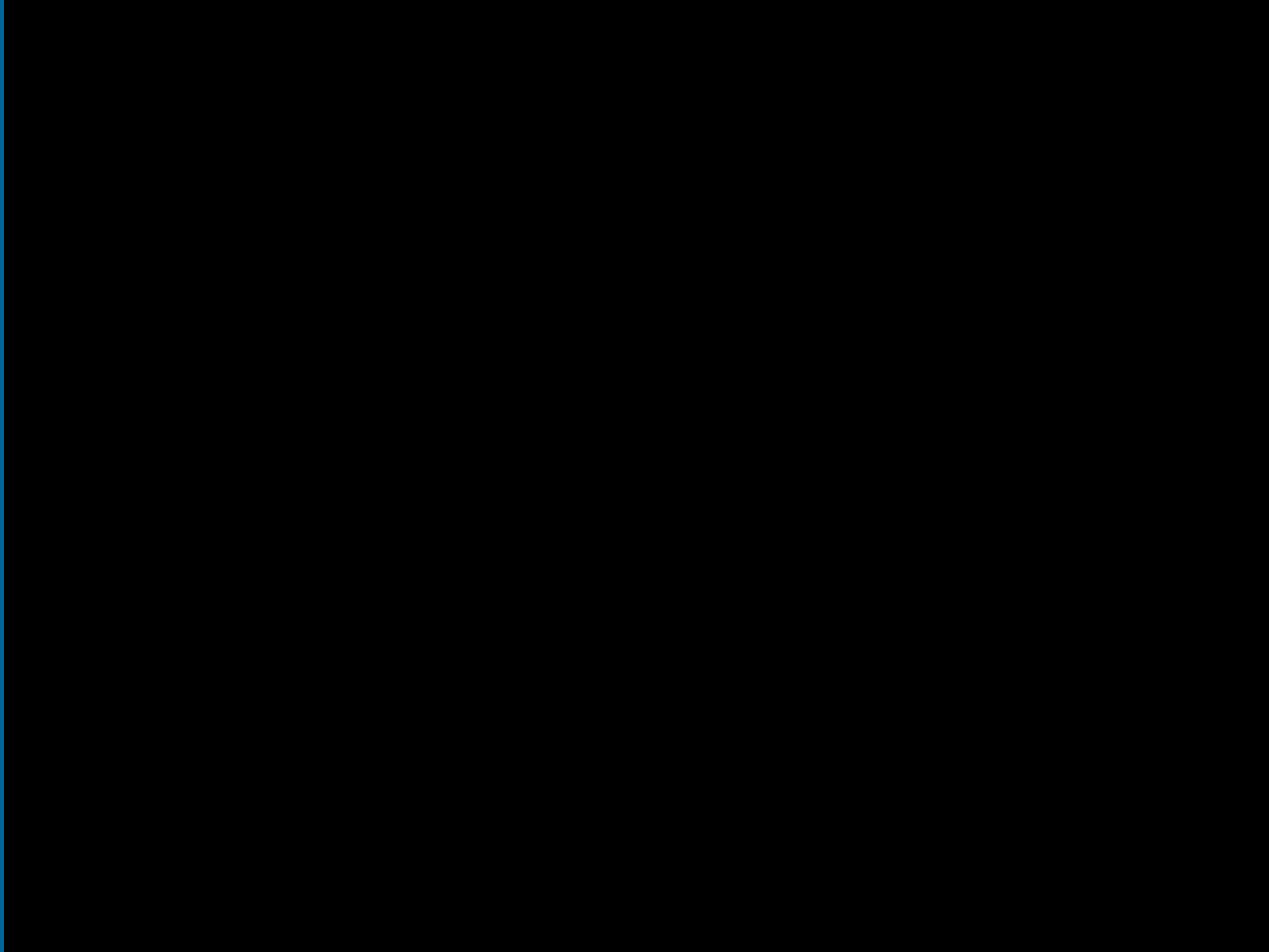


# ACE Score vs Injection Drug Use




$p < 0.001$

# The Hidden *Threat* of Weight Loss



The unspoken *benefits* of Obesity

# The Silent *Benefits* of Obesity

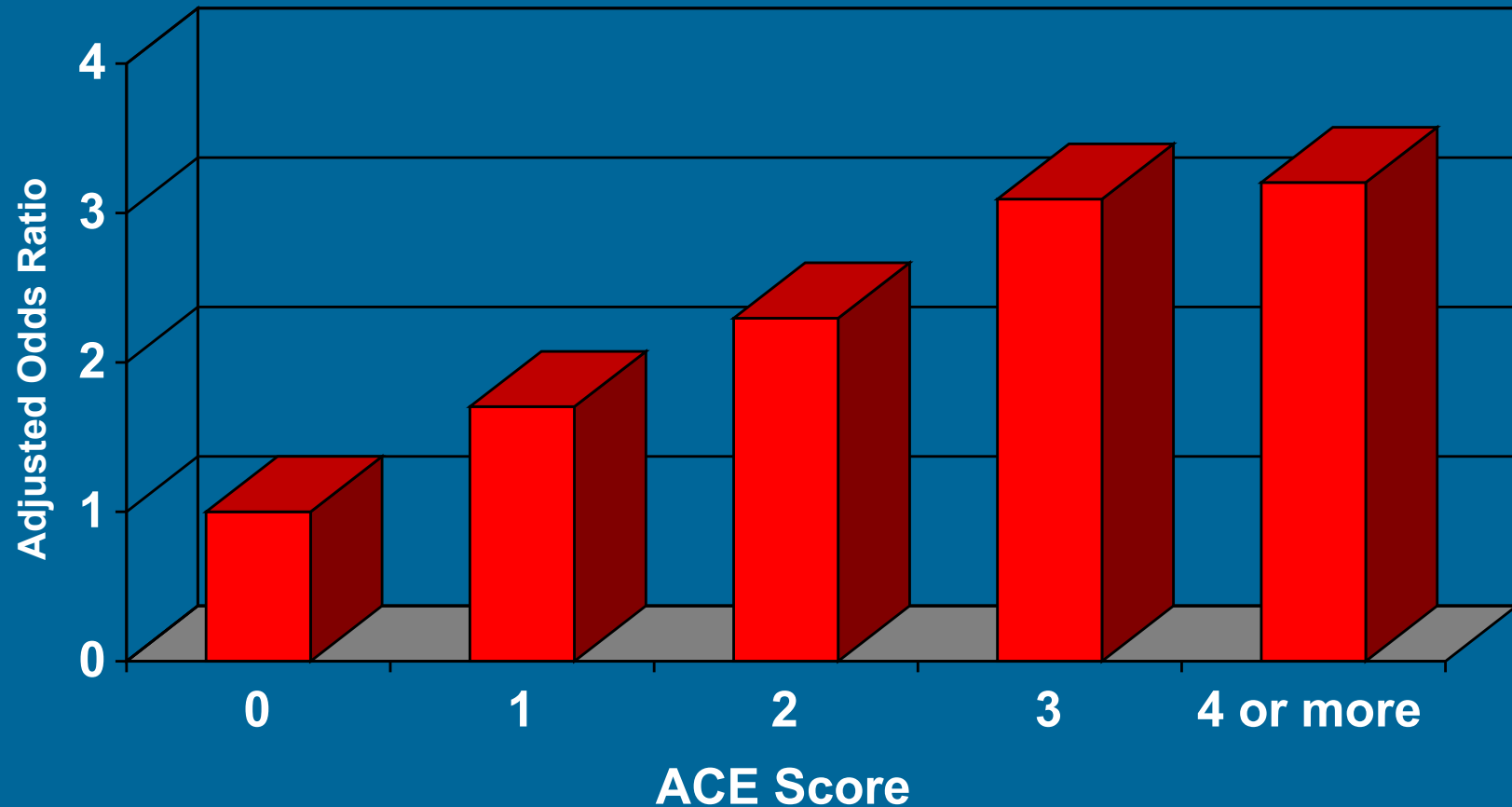


Physical safety in  
being obese ...

Lost 158 pounds, but why did he gain it?

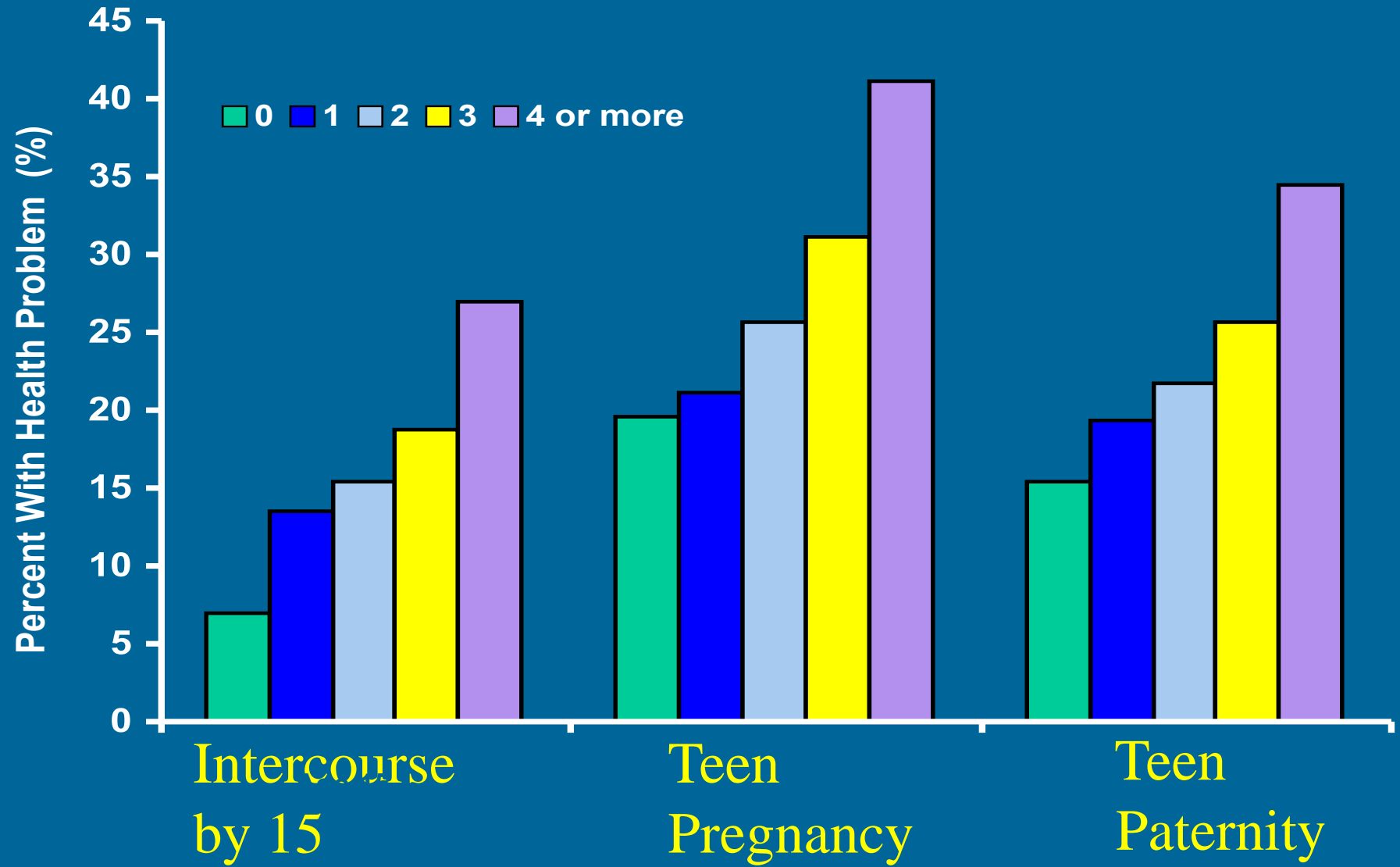
## Health risks & Social function:

# Looking for Love ACE Score vs > 50 Sexual Partners

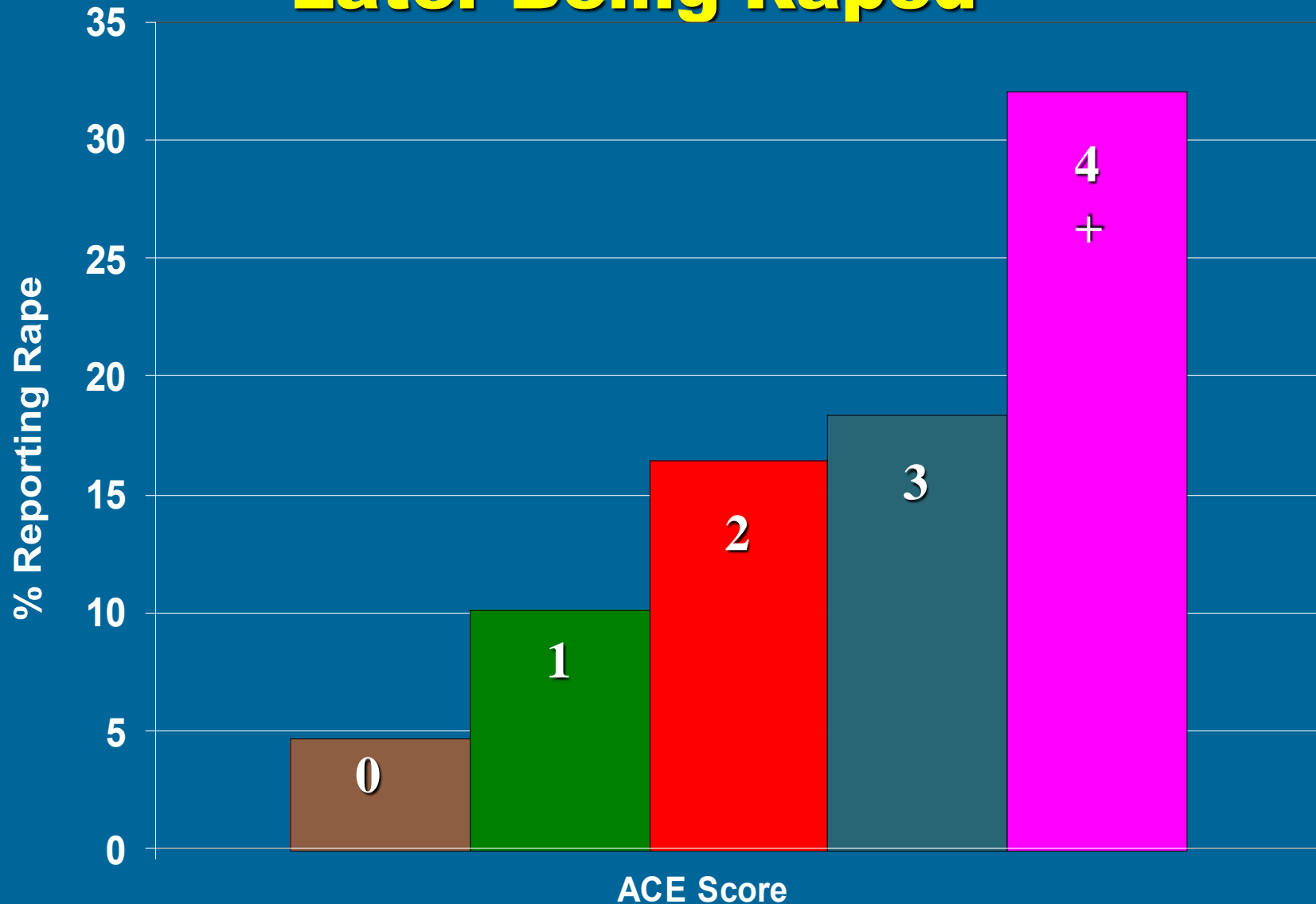


# ACE Score and Teen Sexual Behaviors

*Looking for love*



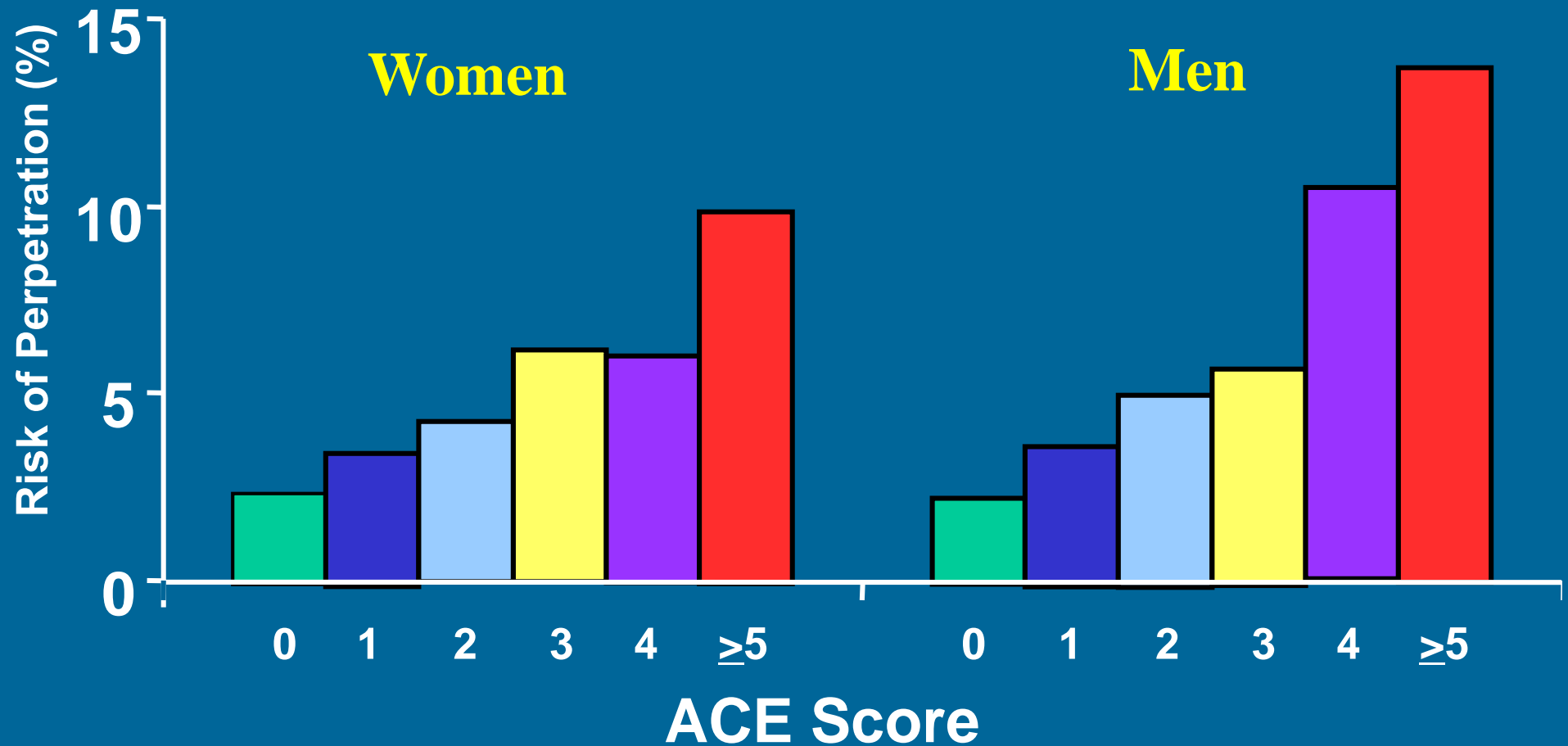
# Childhood Experiences Underlie Later Being Raped



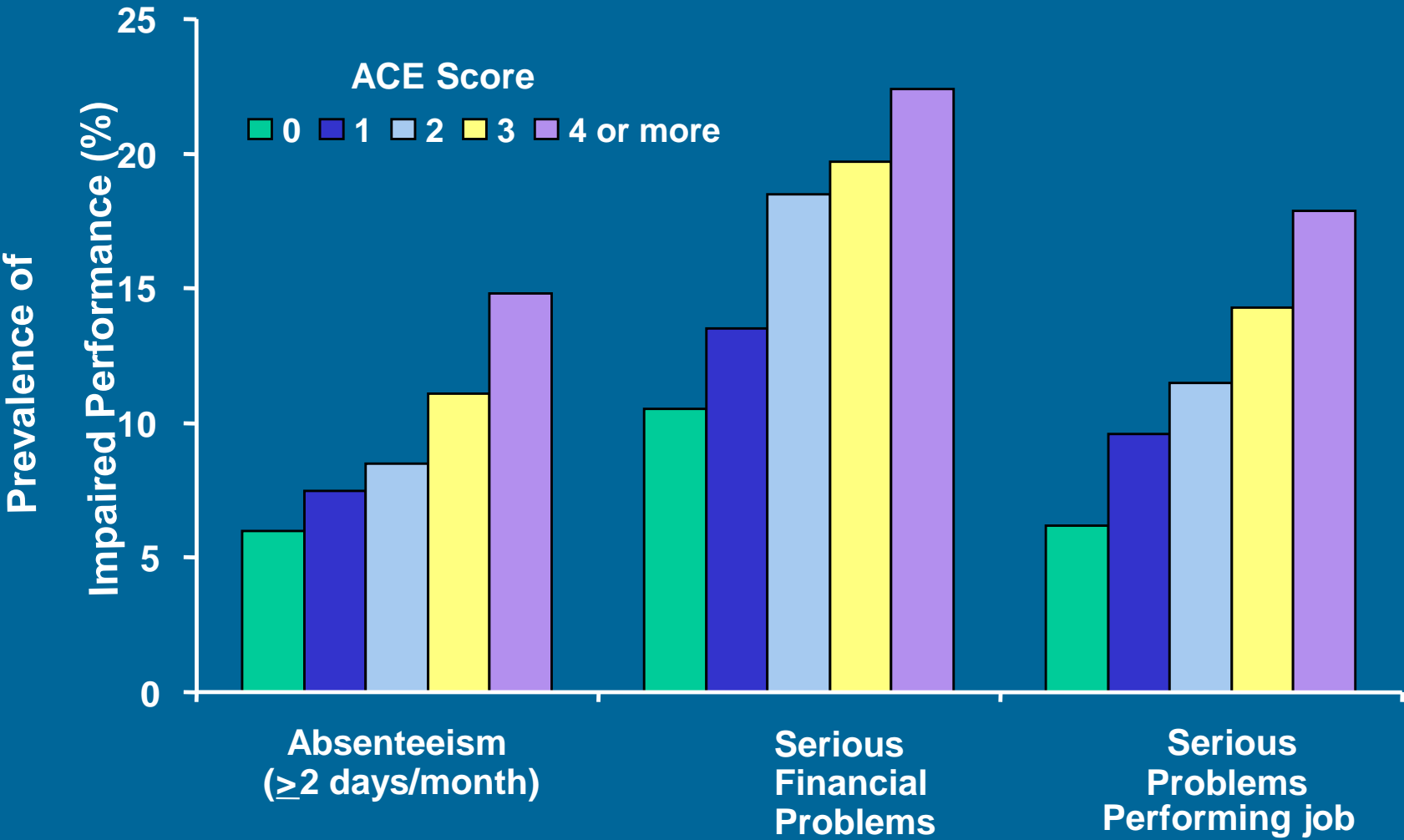


## Social function:

# **ACE Score and the Likelihood of *Perpetrating* Domestic Violence**

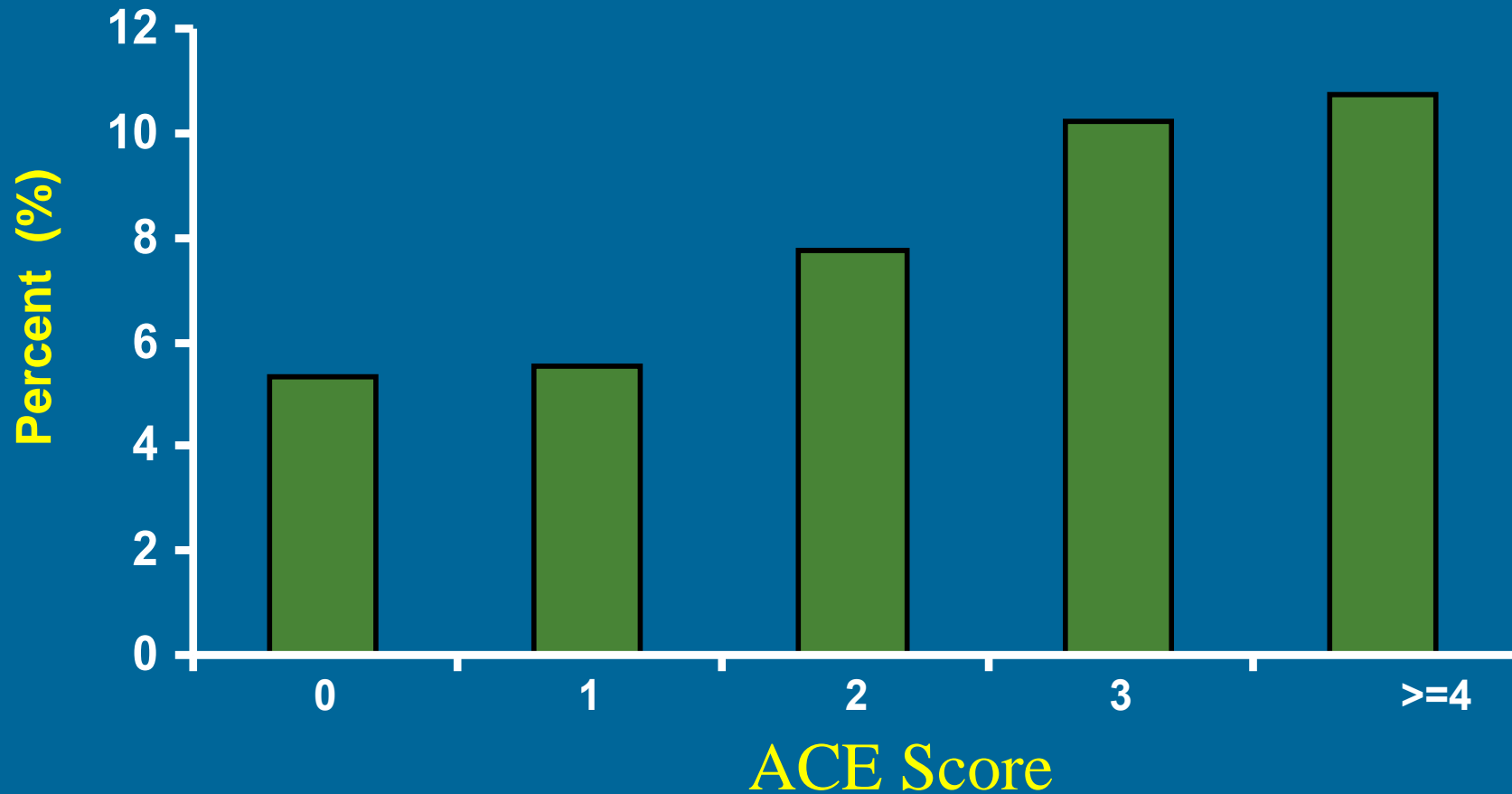


# ACE Score and Indicators of Impaired Worker Performance



# Biomedical Disease

## The ACE Score and the Prevalence of Liver Disease (Hepatitis/Jaundice)



# Biomedical 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.

# A Complex Point



*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

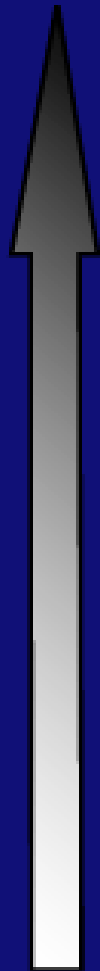
## An Abused Brain

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.

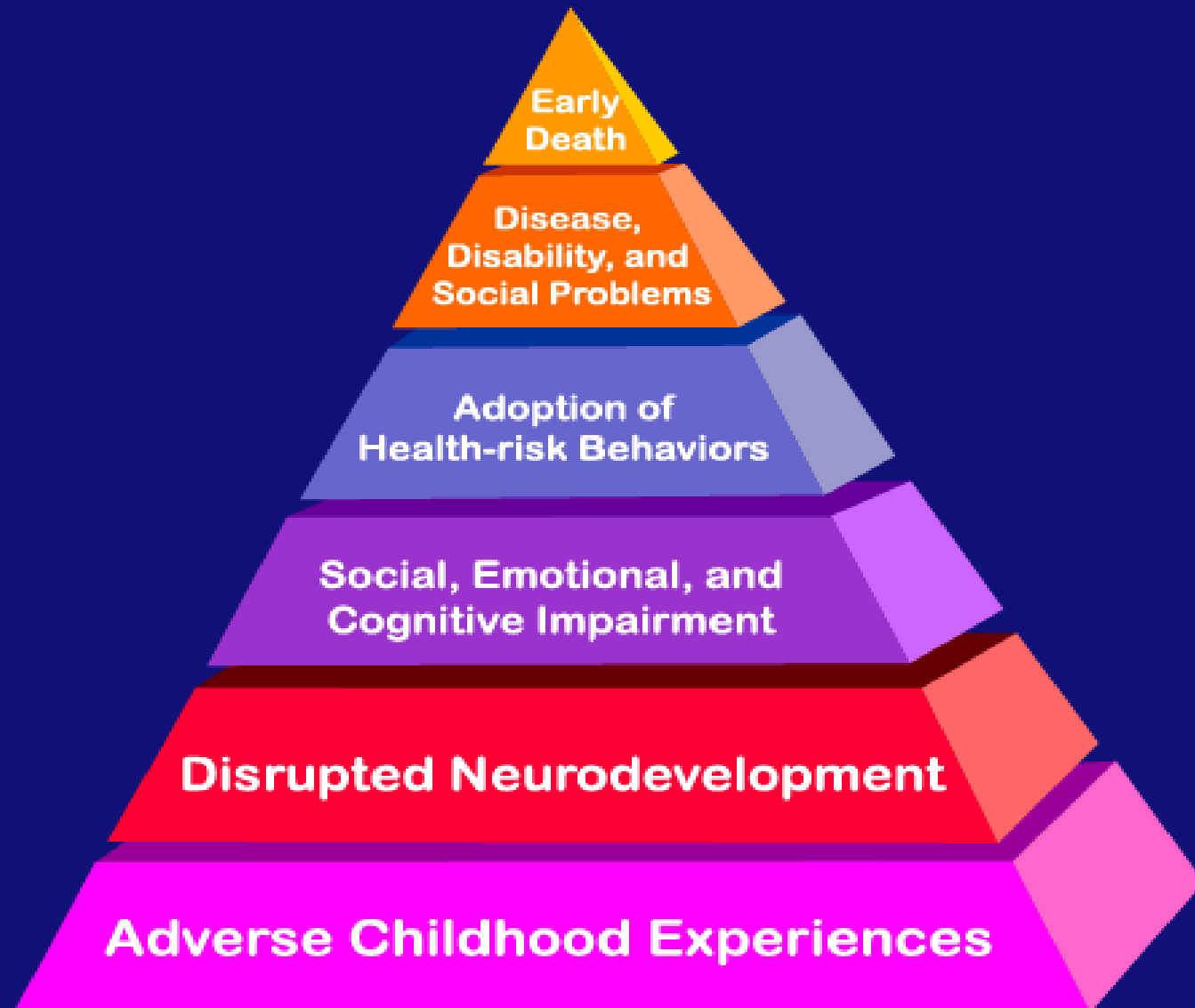


MOST ACTIVE: [red] [orange] [yellow] [green] [blue] [black]  
LEAST ACTIVE: [blue] [black]

**Death**



**Conception**



**Mechanisms by Which Adverse Childhood Experiences  
Influence Health and Well-being Throughout the Lifespan**



## In Summary, the ACE Study shows:

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

## A Public Health Paradox

What are conventionally viewed as Public Health *problems* are often an individual's attempted *solutions* to long concealed adverse childhood experiences.

# A Former Pediatric Patient's Insight

Frontiers of Treatment  
in Obesity and Smoking

## Interventions

# Translating Research into Practice

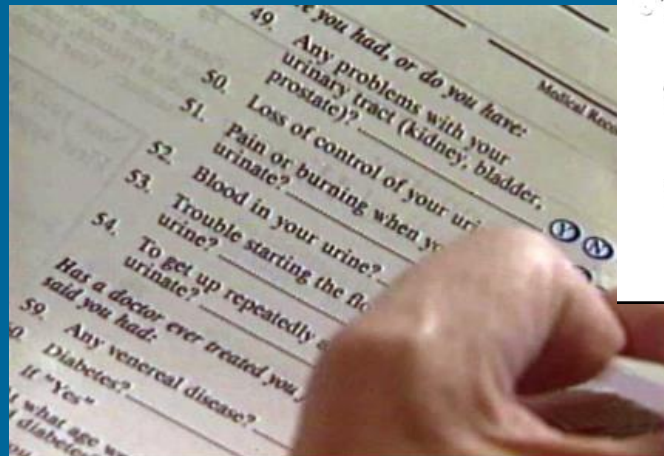
a beginning



1.3 million comprehensive medical 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.



69. Depression or feel "down in the dumps"? ..... ☐ Y ☐ N —
70. Much trouble with nervousness? ..... ☐ Y ☐ N —
- Do you:*
71. Sometimes drink more than you think is good for you? ..... ☐ Y ☐ N —
72. Use street drugs? ..... ☐ Y ☐ N —
- Have you ever:*
73. Been raped, or sexually molested as a child? ..... ☐ Y ☐ N —
- 73a. As a child, been physically abused? ..... ☐ Y ☐ N —
- 73b. As a child, been verbally abused? ..... ☐ Y ☐ N —

Includes ACE Questions

# 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 ever molested as a child?
- Have you ever been held prisoner?
- Have you ever been tortured?
- Have you been raped?

## Effect of Interventions

# Benefits of Incorporating a Trauma Approach

Biomedical evaluation:  
(Control group)

11% reduction in DOVs  
in subsequent year.  
(700 patient sample)

Biopsychosocial evaluation:

35% reduction in DOVs  
in subsequent year.  
(**130,000** patient sample)

# What Can We Do Today?

- Routinely seek a history of adverse childhood experiences from all patients and 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 & typically unrecognized.
- Their link to 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 be someone's attempted solution.
- Treating their solution may be threatening and cause flight from treatment.
- Change will be resisted in spite of huge personal and economic benefits.

# **Further Information**

[www.AVAHealth.org](http://www.AVAHealth.org) (4-hour DVD on the ACE Study)

[www.ACEsTooHigh.com](http://www.ACEsTooHigh.com) and [ACEsConnection.com](http://ACEsConnection.com)

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

[www.HumaneExposures.com](http://www.HumaneExposures.com) (3 insightful books)

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