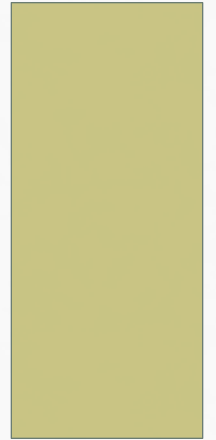


# CHILDHOOD TRAUMA & HEALTH

JENNIFER MCWILLIAMS, MD  
SEPTEMBER 2013



# DISCLOSURES

- None

# DISCLOSURES

- I'm not a statistician
  - I'm not a geneticist
  - I'm not a researcher
- 
- I'm a clinician



# AGENDA

- Why do I care?
- What is the ACE study?
- What's the connection?
- Where do we go from here?

# WHY DO I CARE?

- Interplay between physical health and mental health
- Importance of prevention and/or early intervention

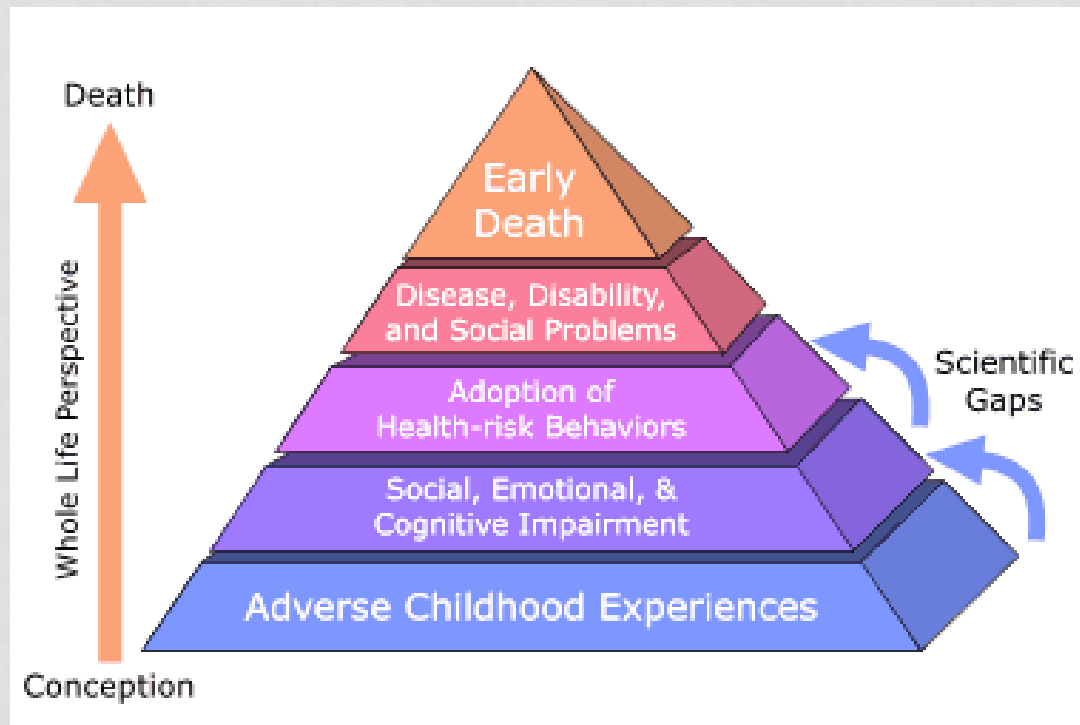


# AGENDA

- Why do I care?
- What is the ACE study?
  - Design
  - Findings
  - Conclusions
- What's the connection?
- Where do we go from here?

# ADVERSE CHILDHOOD EXPERIENCES (ACE) STUDY

- Conducted by CDC, Emory, and Kaiser Permanente in San Diego



# ACE STUDY

- Surveys sent to 13,494 patients evaluating exposure to abuse and household dysfunction
- 7 sections
  - Psychological abuse
  - Physical abuse
  - Sexual abuse
  - Substance abuse exposure
  - Mental illness exposure
  - Domestic violence exposure
  - Criminal behavior exposure



# ACE STUDY

- 10 Risk factors contributing to the leading causes of morbidity and mortality in the US
  - Smoking
  - Severe obesity
  - Physical inactivity
  - Depressed mood
  - Suicide attempts
  - Alcoholism
  - Illicit drug use
  - IV drug use
  - High lifetime number of sexual partners
  - History of a sexually transmitted disease

# ACE STUDY

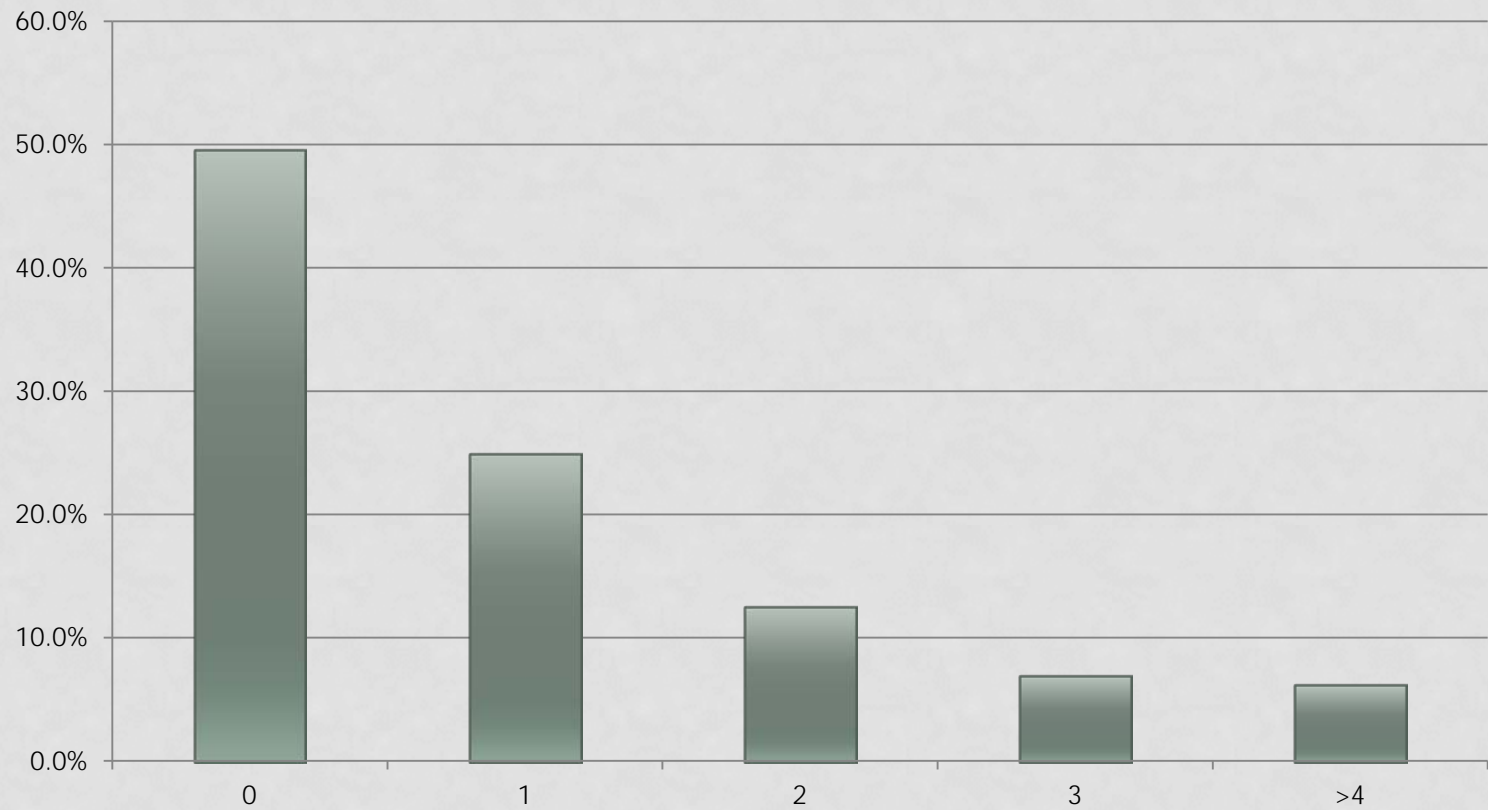
- 7 Significant causes of mortality in the US
  - Ischemic heart disease
  - Cancer
  - Stroke
  - COPD
  - Diabetes
  - Hepatitis
  - Skeletal fractures
- Self-reported assessment of health

# ACE STUDY

| <u>Category of Exposure</u> | <u>Prevalence (%)</u> |
|-----------------------------|-----------------------|
| Psychological Abuse         | 11.1                  |
| Physical Abuse              | 10.8                  |
| Sexual Abuse                | 22.0                  |
| Substance Abuse Exposure    | 25.6                  |
| Mental Illness Exposure     | 18.8                  |
| Domestic Violence Exposure  | 12.5                  |
| Criminal Behavior Exposure  | 3.4                   |

# ACE STUDY

## ACE Score

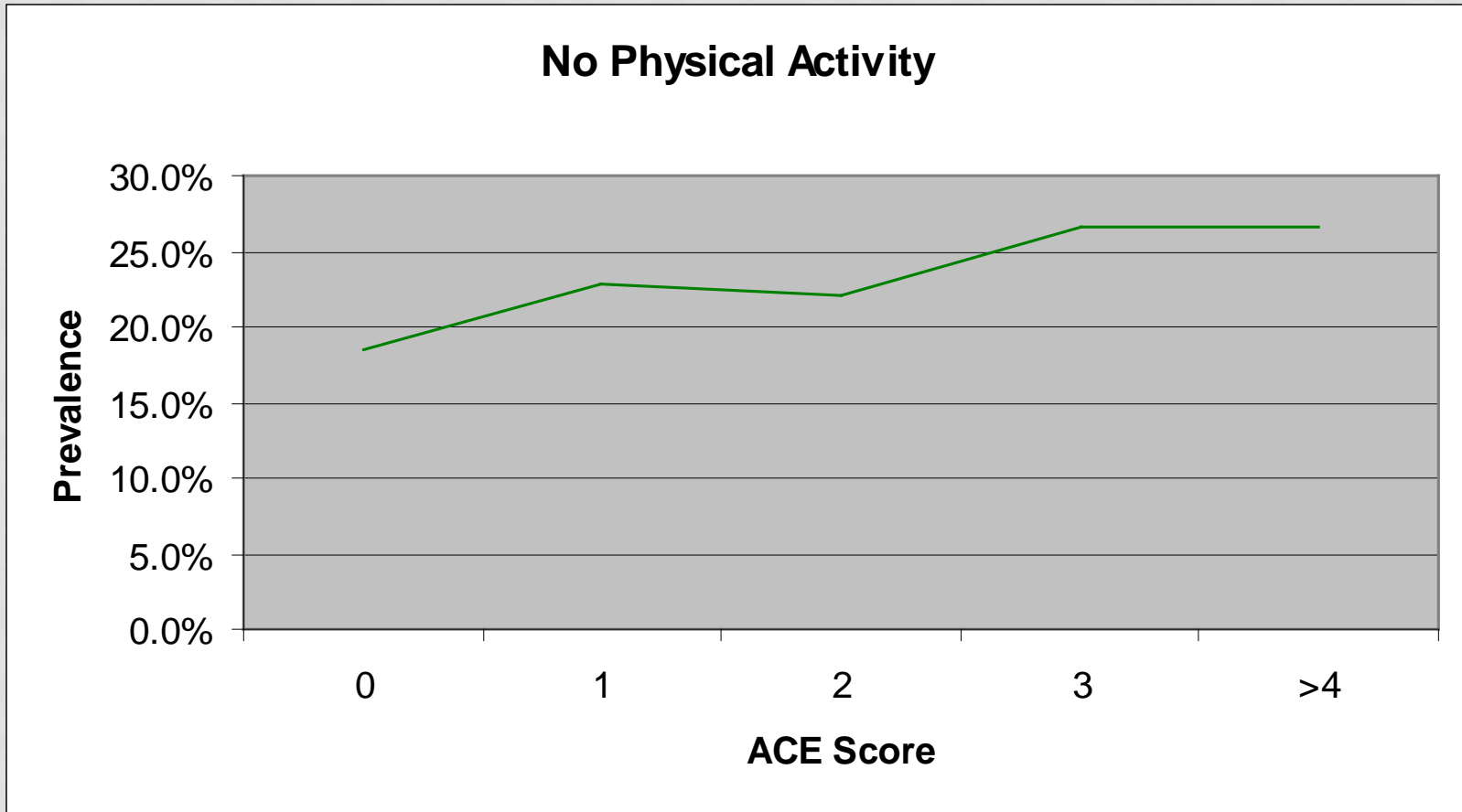


Felitti, et al 1998

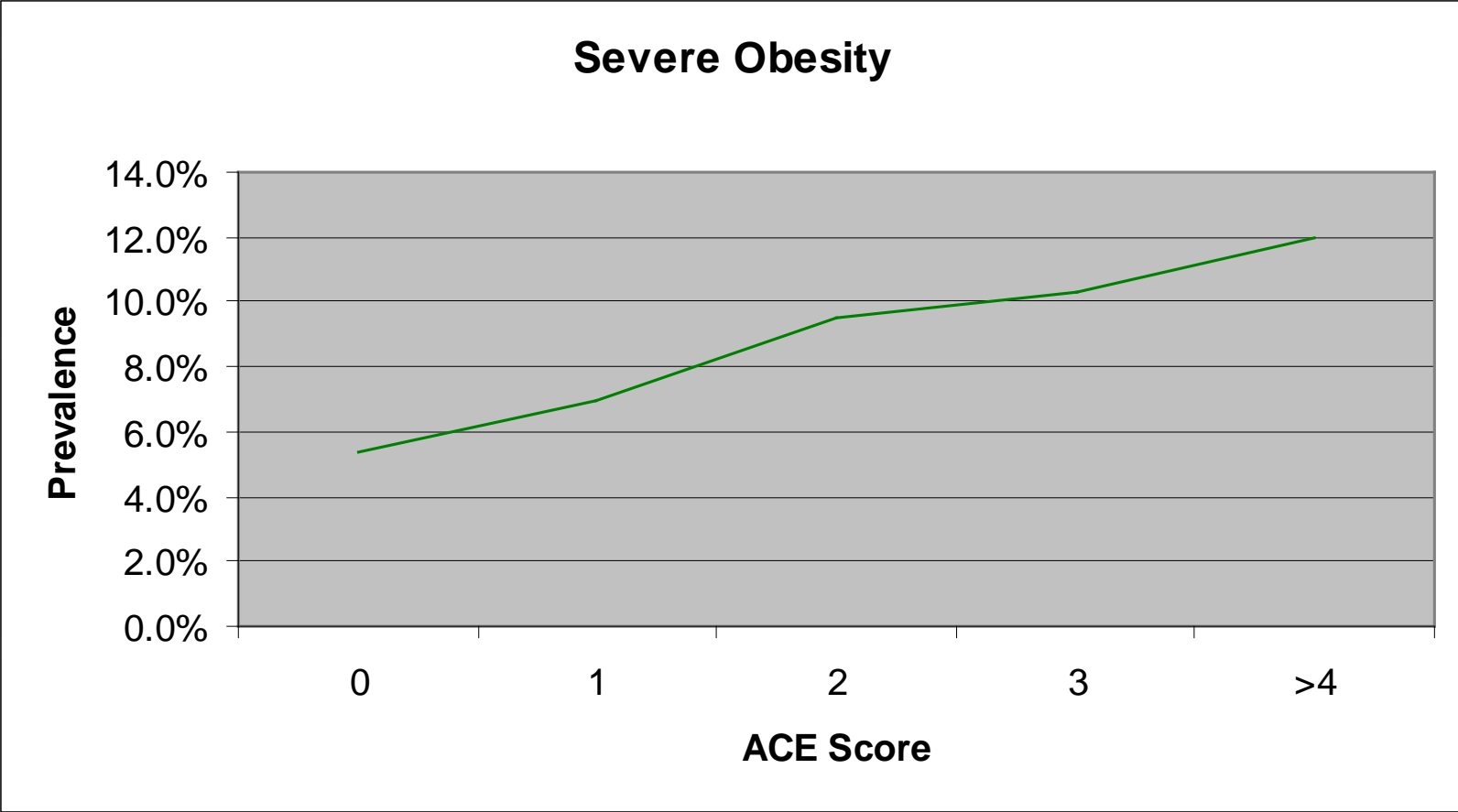
# CHILDHOOD EXPERIENCES AND RISK FACTORS

- As number of adverse childhood experiences increased, so did prevalence of **ALL** the risk factors
  - Smoking
  - Severe obesity
  - Physical inactivity
  - Depressed mood
  - Suicide attempts
  - Alcoholism
  - Illicit drug use
  - IV drug use
  - High lifetime number of sexual partners
  - History of a sexually transmitted disease

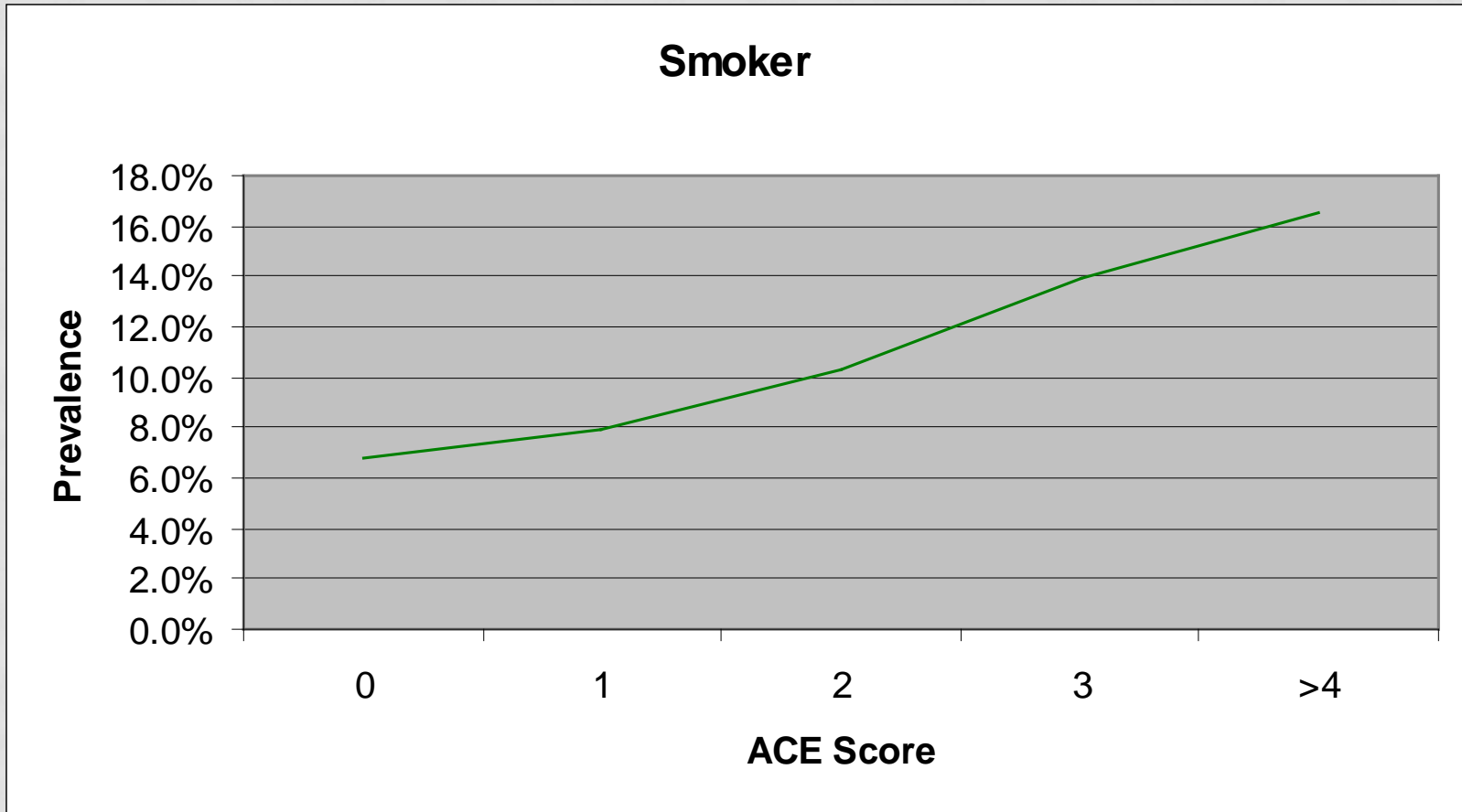
# PREVALENCE - NO PHYSICAL ACTIVITY BY SCORE



# PREVALENCE - SEVERE OBESITY BY SCORE

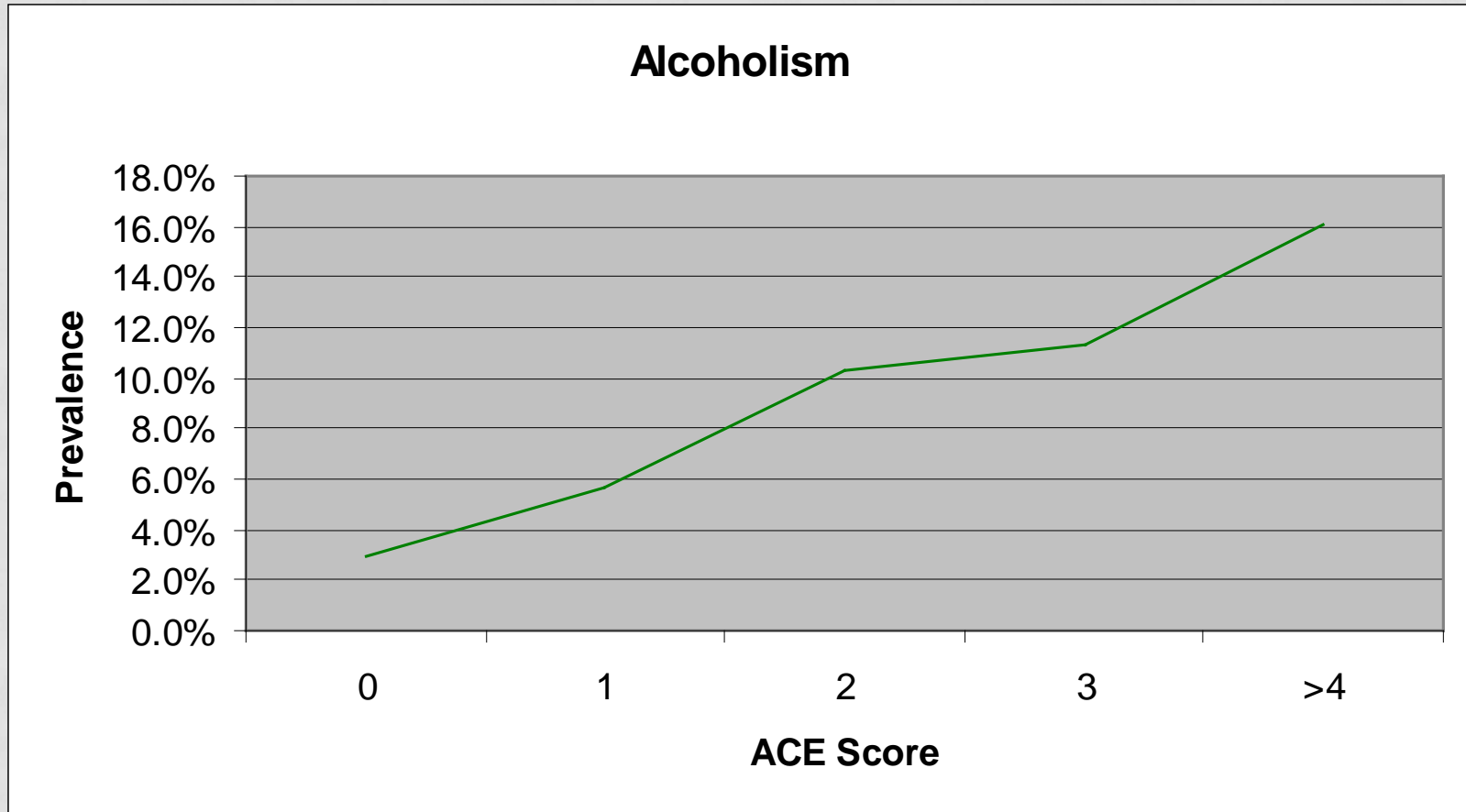


# PREVALENCE - SMOKING BY SCORE

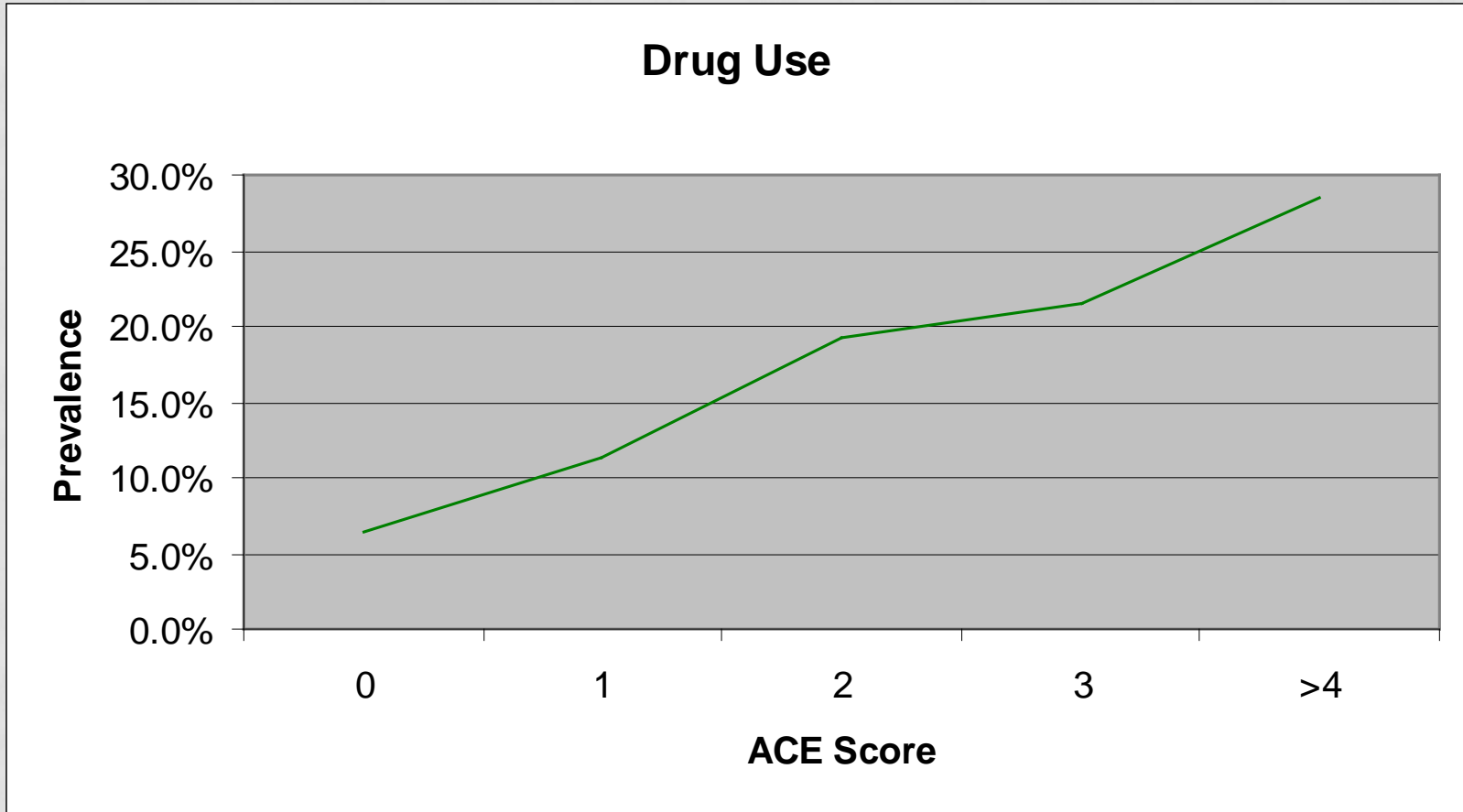




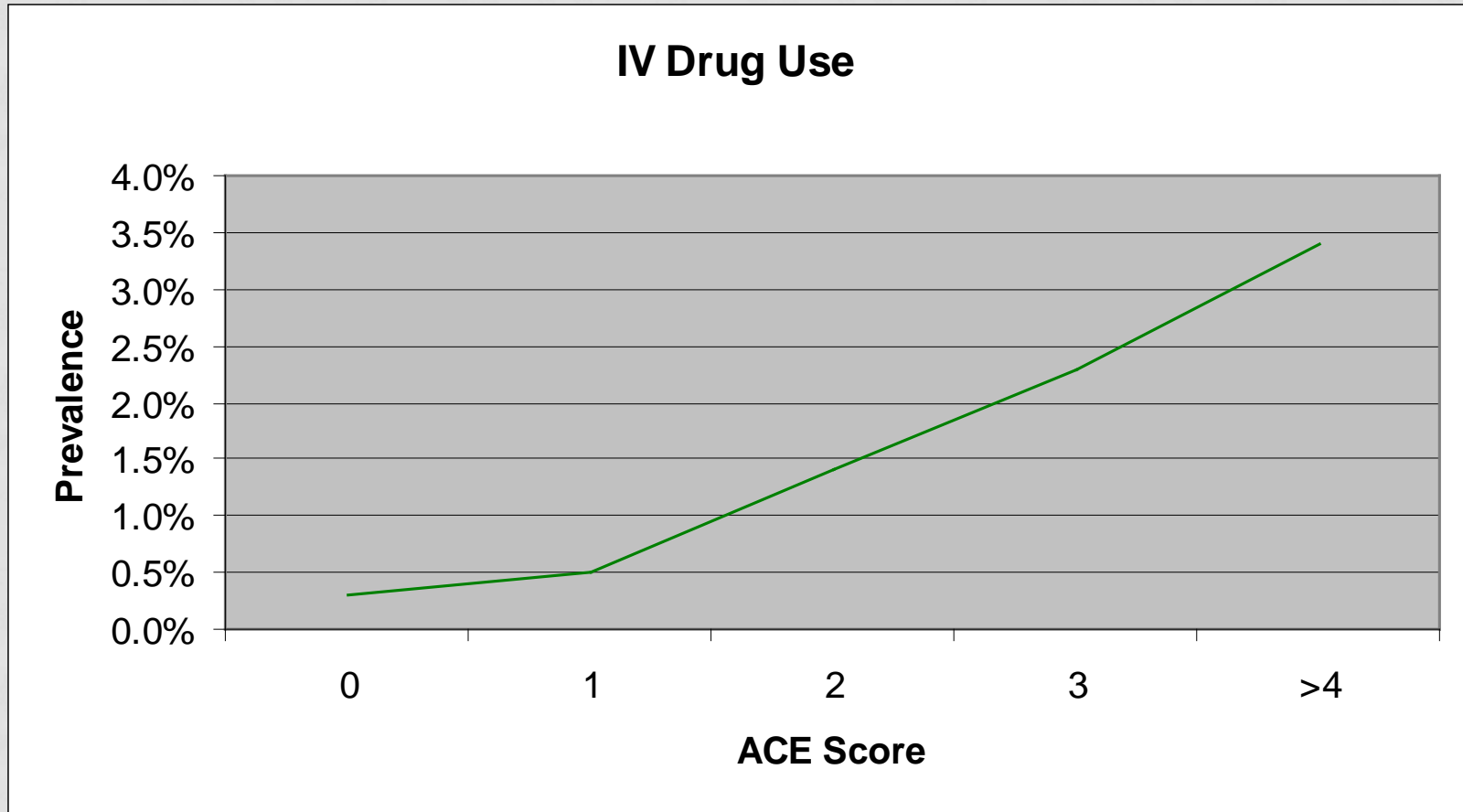
# PREVALENCE - ALCOHOLISM BY SCORE



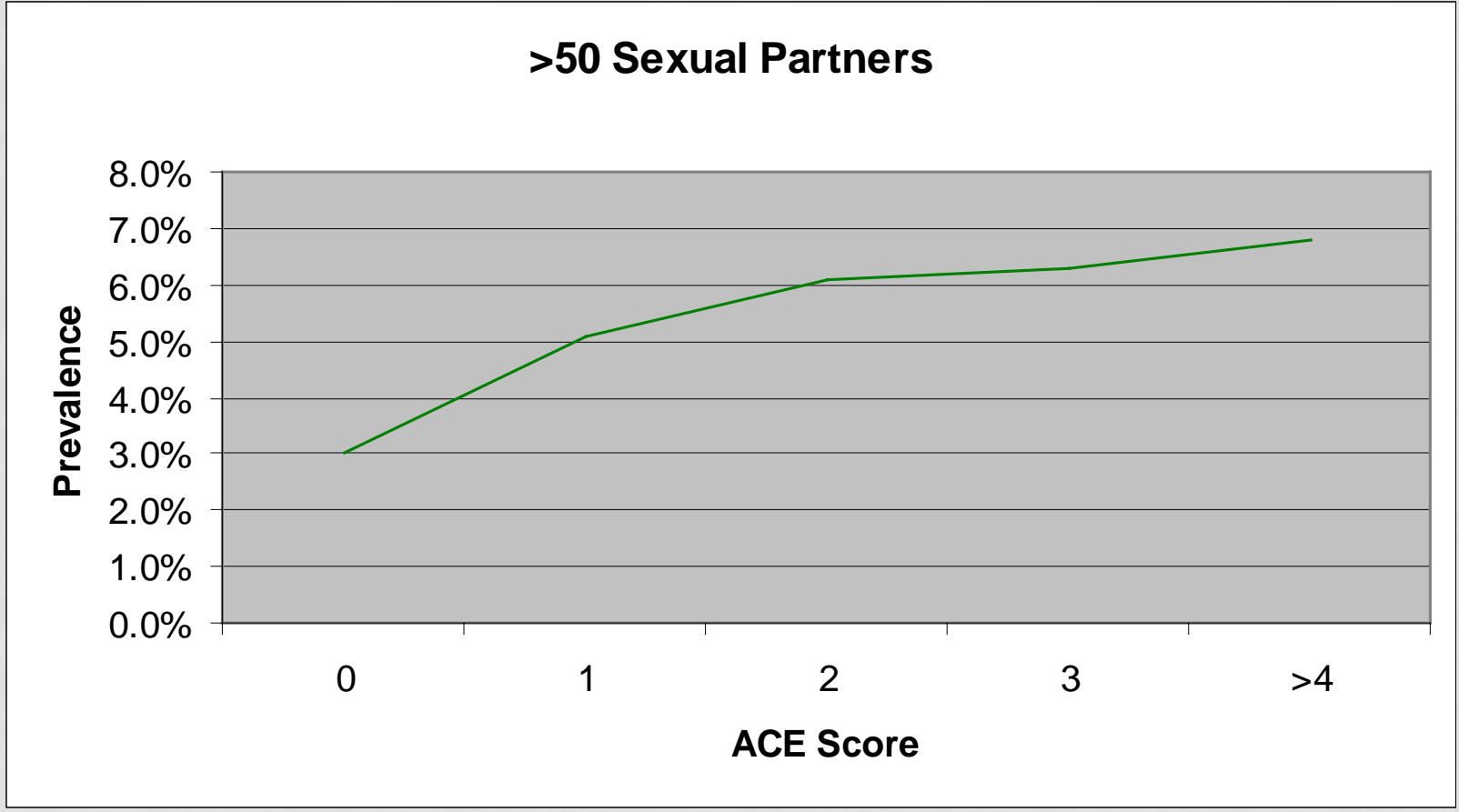
# PREVALENCE - DRUG USE BY SCORE



# PREVALENCE - IV DRUG USE BY SCORE

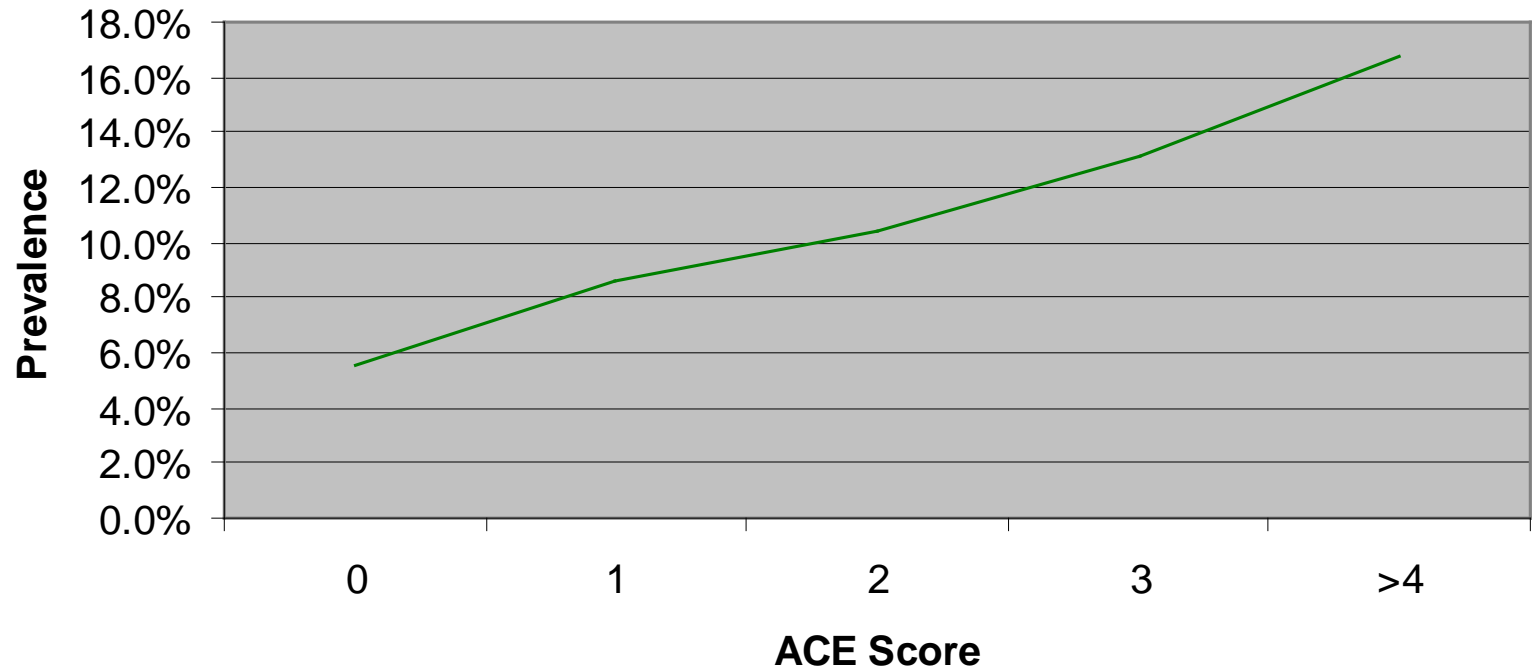


# PREVALENCE - >50 SEXUAL PARTNERS BY SCORE

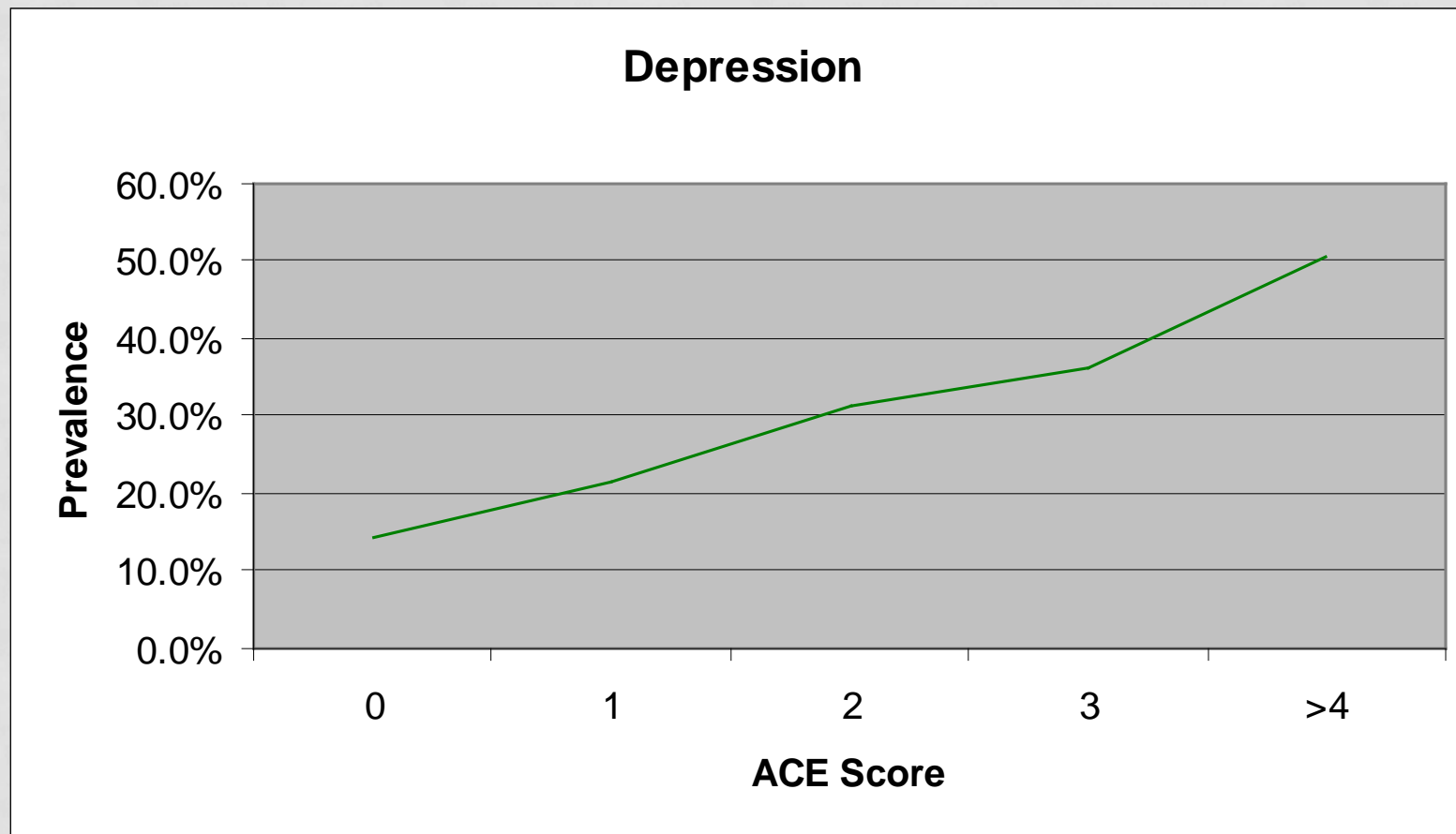


# PREVALENCE - SEXUALLY TRANSMITTED DISEASE BY SCORE

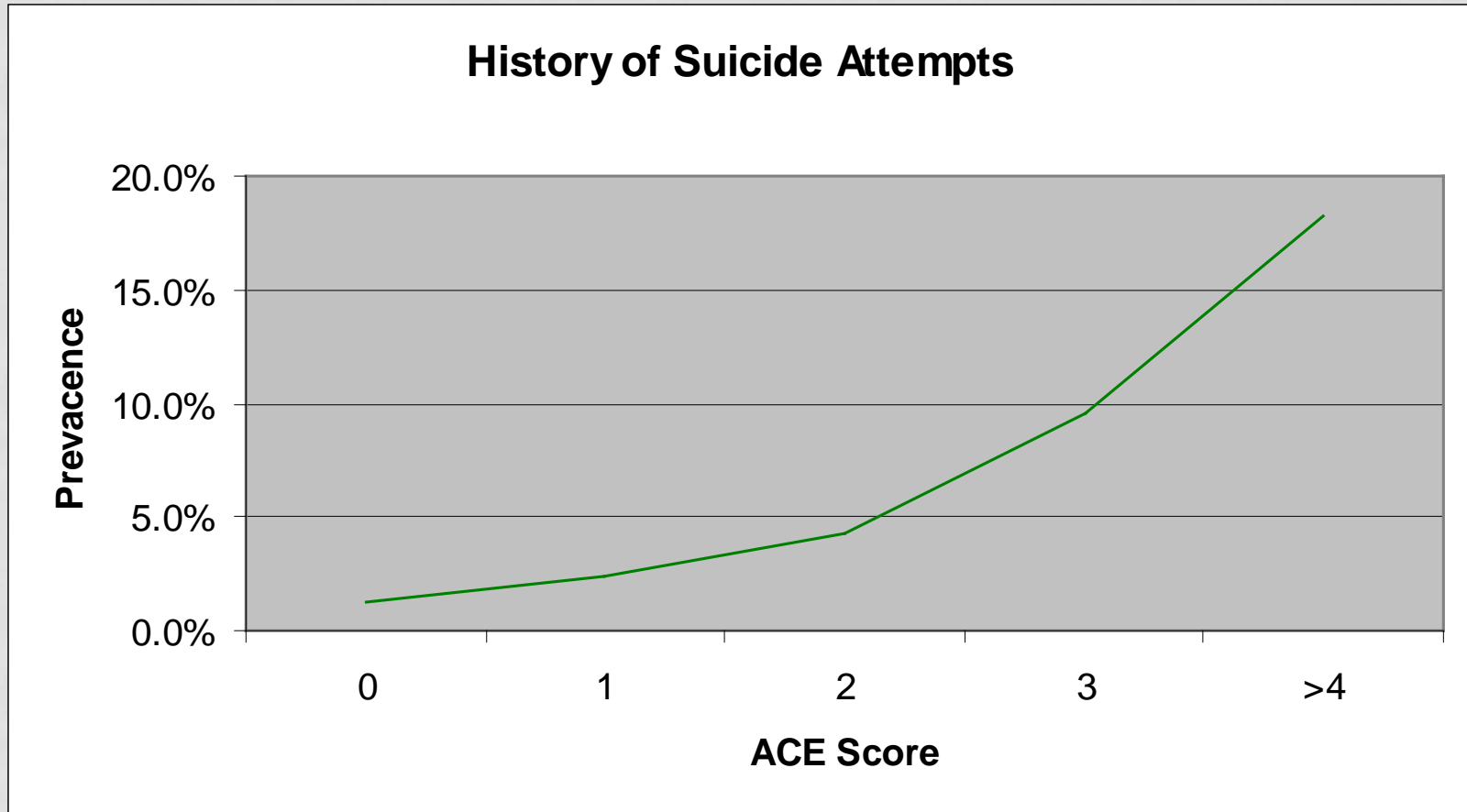
**History of Sexually transmitted disease**



# PREVALENCE - DEPRESSION BY SCORE



# PREVALENCE - SUICIDE ATTEMPTS BY SCORE

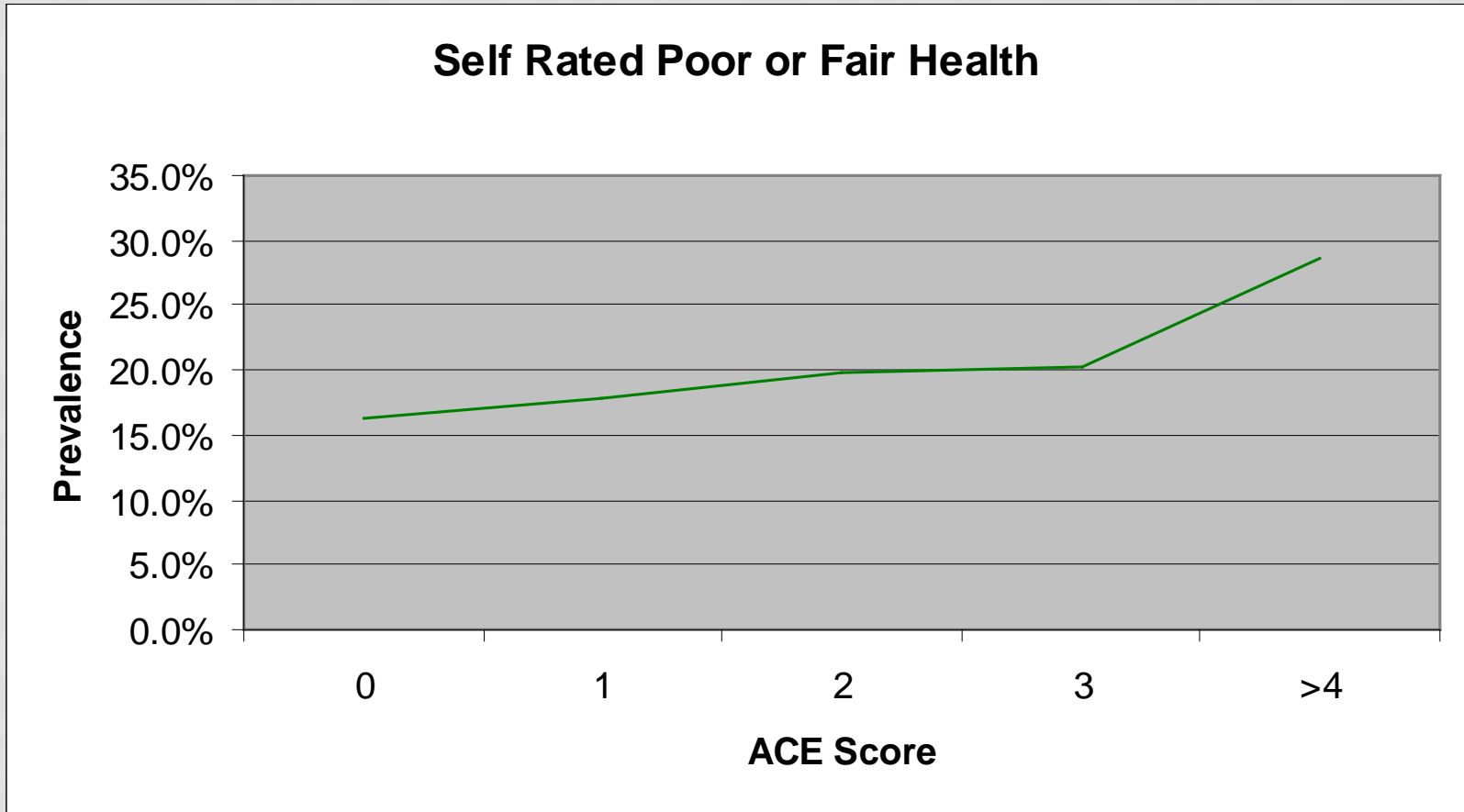


# CHILDHOOD EXPERIENCES AND DISEASE

- A statistically significant dose relationship was also identified as the number of adverse childhood experiences increased and several disease conditions
  - Ischemic heart disease
  - Cancer
  - COPD
  - Hepatitis
  - Skeletal fractures
- Also more poorly self-rated assessment of health



# PREVALENCE OF POORLY SELF-RATED HEALTH



# CONCLUSIONS OF ACE STUDY

- “The impact of these adverse childhood experiences on adult health status is strong and cumulative.” Felitti, et al 1998
- The explanation of WHY these experiences are associated with these risk factors and diseases remains elusive...

# AGENDA

- Why do I care?
- What is the ACE study?
- What's the connection?
  - Behavioral and Psychological connections
  - Biological and Physical connections
- Where do we go from here?

# BEHAVIORS AS COPING STRATEGIES

- Overeating
- Alcohol
- Smoking
- Illicit Drug Use
- Sexual Promiscuity



# GENETICS

- Different genotypes are more or less sensitive to environmental stressors
- Early life experiences can influence gene expression -- epigenetics



# DEPRESSION

- “I’d be depressed too...”
- Twin studies and functional length polymorphism in the promoter of the serotonin transporter gene
  - People with 2 “short” alleles = higher rates of depression following stressful events
  - People with 2 “long” alleles = lower rates of depression following stressful events

# INFLAMMATION AND AUTOIMMUNE DISEASE



- Autoimmune diseases and inflammation-related disorders impact up to 8% of US population
- Represent significant personal and economic burdens

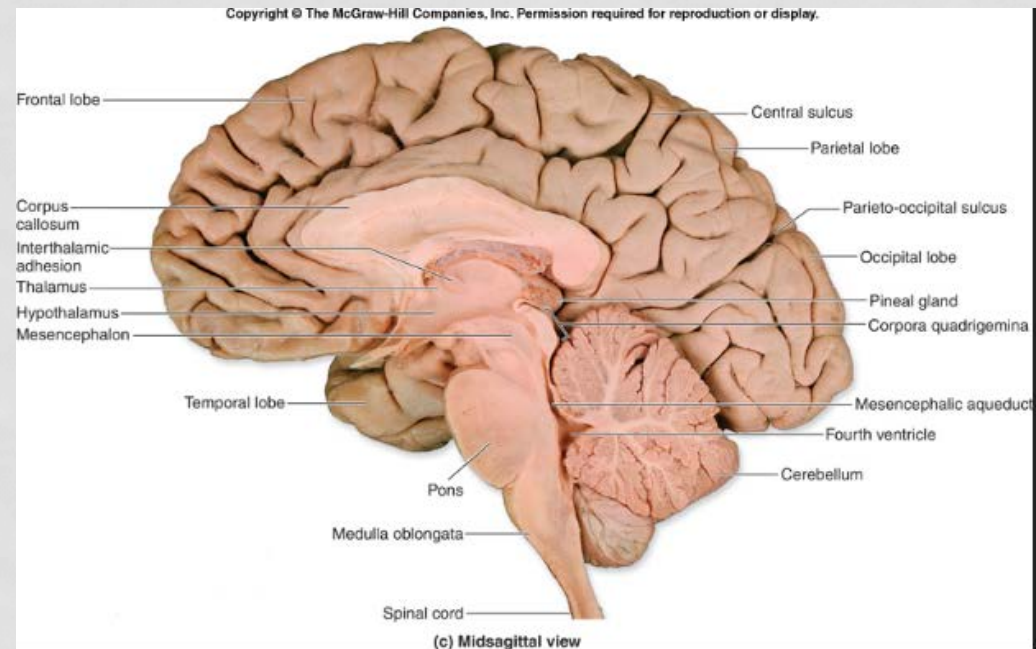
# INFLAMMATION AND AUTOIMMUNE DISEASE

- Danse, et al 2007 – Dunedin Multidisciplinary Health and Development Study
  - Birth cohort followed for 32 yrs
  - Controlled for current stress
  - ACEs associated with significantly elevated CRP levels
- Dube, et al 2009 – ACE Study
  - As ACE score increased, so did likelihood of admission with an autoimmune disease
  - Association was stronger among younger adults
  - Hypothalamic-pituitary-adrenal axis dysregulation



# NEUROBIOLOGY

- Alterations to stress-response systems leads to changes in
  - Emotional regulation
  - Somatic signal processing
  - Memory
  - Arousal
  - Aggression
  - Substance abuse



# ACE STUDY FOLLOW UP

- Anda, et al 2005
  - Hippocampus, amygdala, and medial prefrontal cortex atrophy – increased risk of anxiety and depression
  - Increased locus coeruleus and norepi activity – moderated by drug and alcohol use
  - Deficits in oxytocin – impaired bonding
  - Amygdala structural changes – increased aggressive behaviors
  - Disrupted glucocorticoid pathways – increased intra-abdominal fat deposits

# AGENDA

- Why do I care?
- What is the ACE study?
- What's the connection?
- Where do we go from here?
  - Primary Prevention
  - Secondary Prevention and Care
  - Tertiary Care

# PRIMARY PREVENTION

- Obvious.... Stop abuse and dysfunction (easier said than done...)
- Strategies
  - Home Visits
  - Parent Education
  - Parent Support Groups
  - Respite and Crisis Care

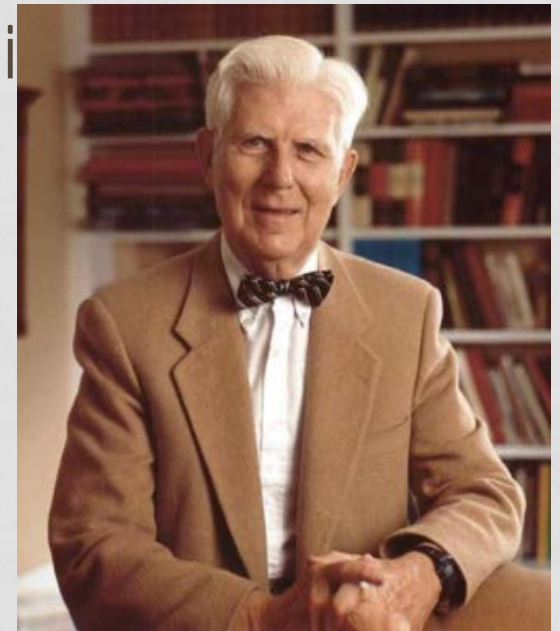
# EVIDENCE-BASED PROGRAMS

- Nurse-Family Partnership
  - Home visit program for low income moms
  - Goals: Improve prenatal care, parent training for infant and toddler care, and improving “economic self sufficiency”
  - Favorable cost-benefit ratio
  - 15-year follow up showed positive outcomes
- Triple P – Positive Parenting Program
  - Multilevel series of interventions for birth-16yo
  - Population-level
  - Direct to parent “light touch” to intensive counseling
  - Significant reductions in abuse, out-of-home placements, and ER visits



# SECONDARY PREVENTION

- We have to recognize the problem first
  - WHO has broadened the categories
- We have to understand the coping mechanisms
- We have to improve communication and care coordination
  - Primary care
  - Specialists
  - Mental health providers
  - Community and family supports



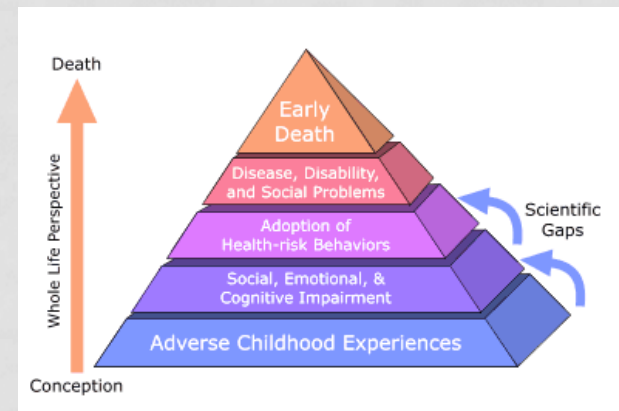
# TERTIARY PREVENTION

- We have to recognize that there may be underlying factors for our patient's behavior and health choices
- We also have to recognize that there is rarely just one issue – more often we see the cumulative effect of multiple traumas and life stresses



# CONCLUSIONS

- Adverse Childhood Events have a real and detrimental effect on behavior and health
- The effects are biological as well as psychological
- The solutions aren't clear cut, but recognition is an important first step





THANKS



# QUESTIONS

