

Childhood Stress and Urban Poverty: The Impact of Adverse Childhood Experiences on Health

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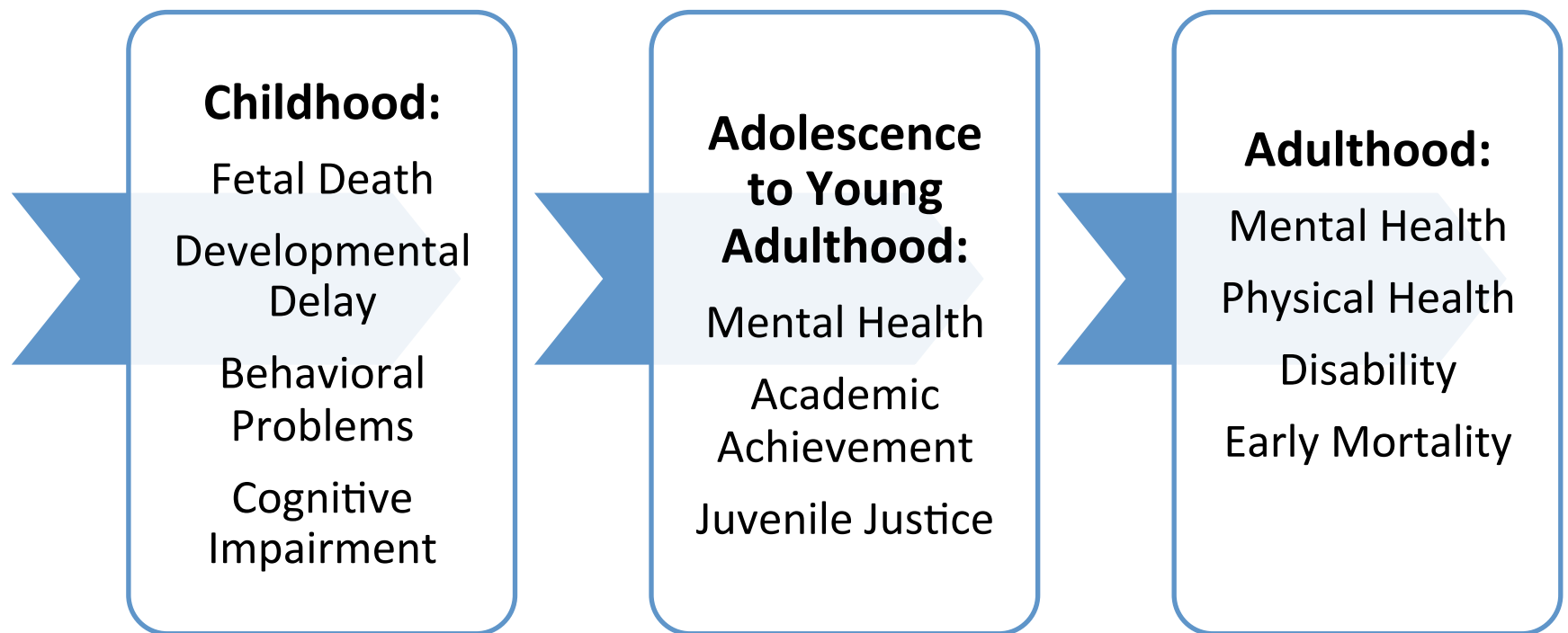
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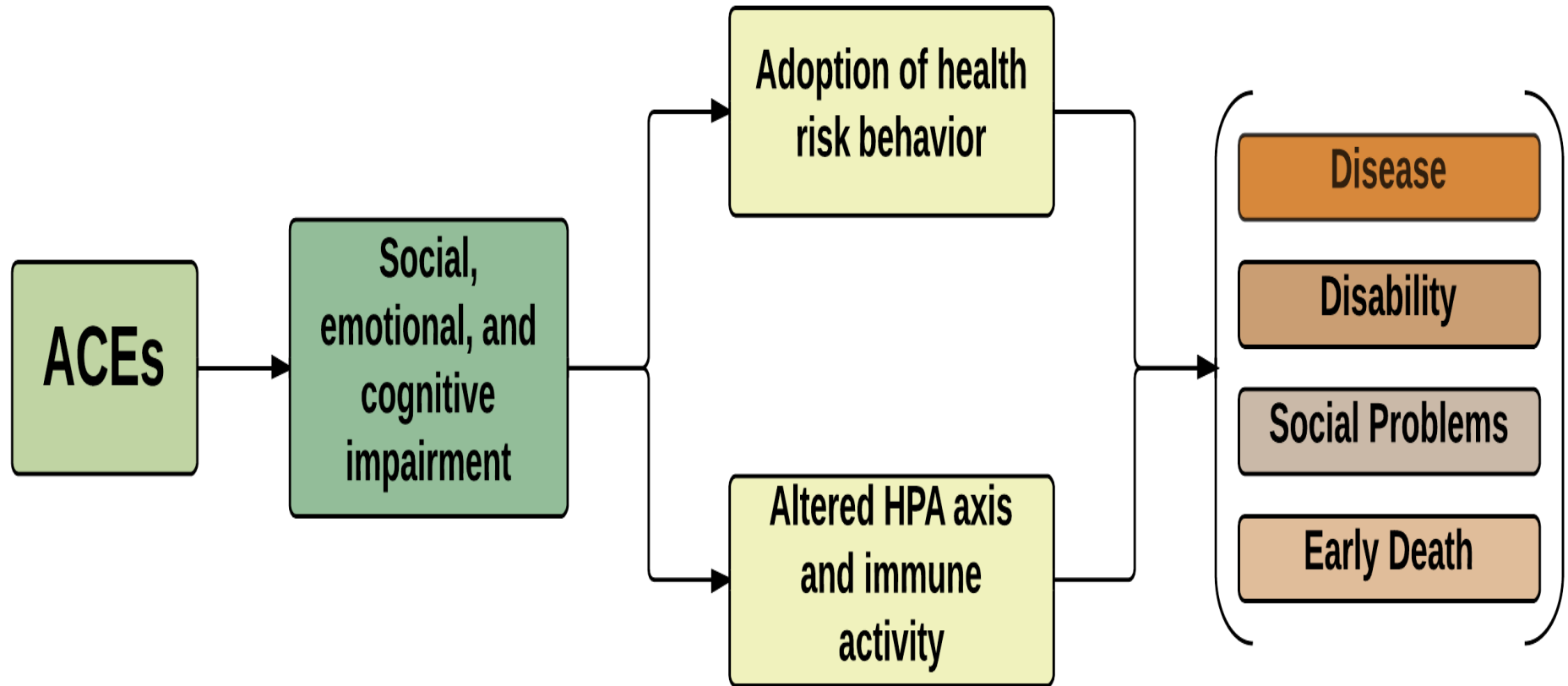
Overview

- The Adverse Childhood Experience Study
- The Philadelphia Adverse Childhood Experience Study
- Keys to Addressing Toxic Stress

Outcomes Associated with Adverse Childhood Experiences: A Life Course Perspective



How Does Childhood Stress Get Under the Skin?



Adverse Childhood Experience Study

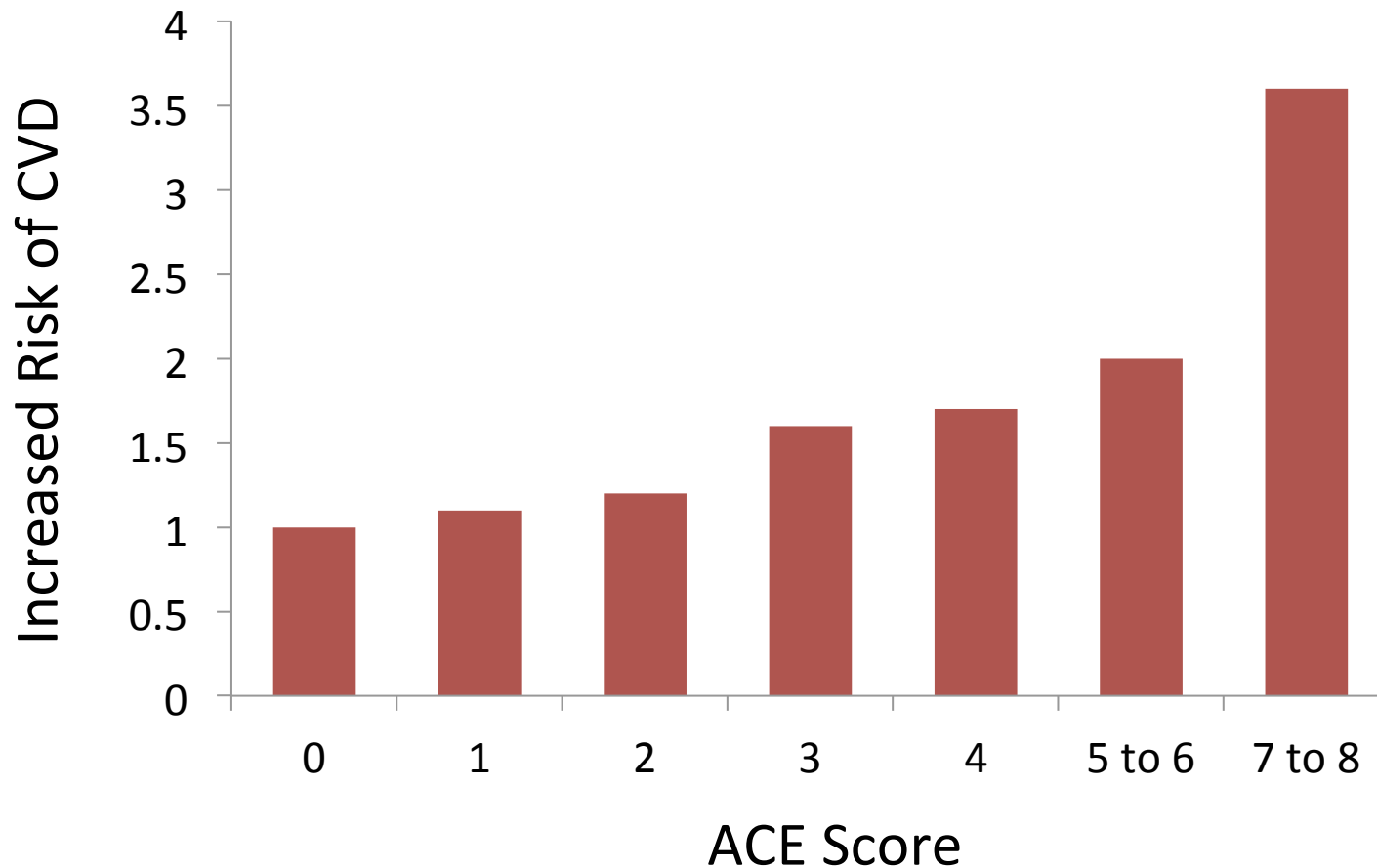
- Published by CDC/ Kaiser in 1998
- Surveyed 17,000 policy holders
- Understand relationship between childhood adversity & adult health outcomes

Adapted from Felitti et al., 1998

Childhood Exposure	Subcategory
Abuse	Psychological
	Physical Sexual
Household dysfunction	Substance abuse
	Mental illness
	Intimate partner violence
	Criminal behavior
Neglect	Divorce
	Emotional Physical

Graded Relationship Between ACE Score and Cardiovascular Disease

Association between ACE Score and Risk for Cardiovascular Disease



Graded Relationship Between ACE Score and Health Outcomes

Health Risk Behaviors	Mental Health Conditions	Physical Health Conditions
Smoking	Depression	Cardiovascular Disease
		Diabetes
Alcohol Abuse	Anxiety	Emphysema
	PTSD	Cancer
Drug Abuse/Illicit Drug Use	Hallucinations	Obesity
		Liver Disease
		Headaches
High Risk Sexual Behavior	Suicide	Autoimmune Disease
		Sexually Transmitted Infections
		Self-Reported Health Disability
		Fetal Death

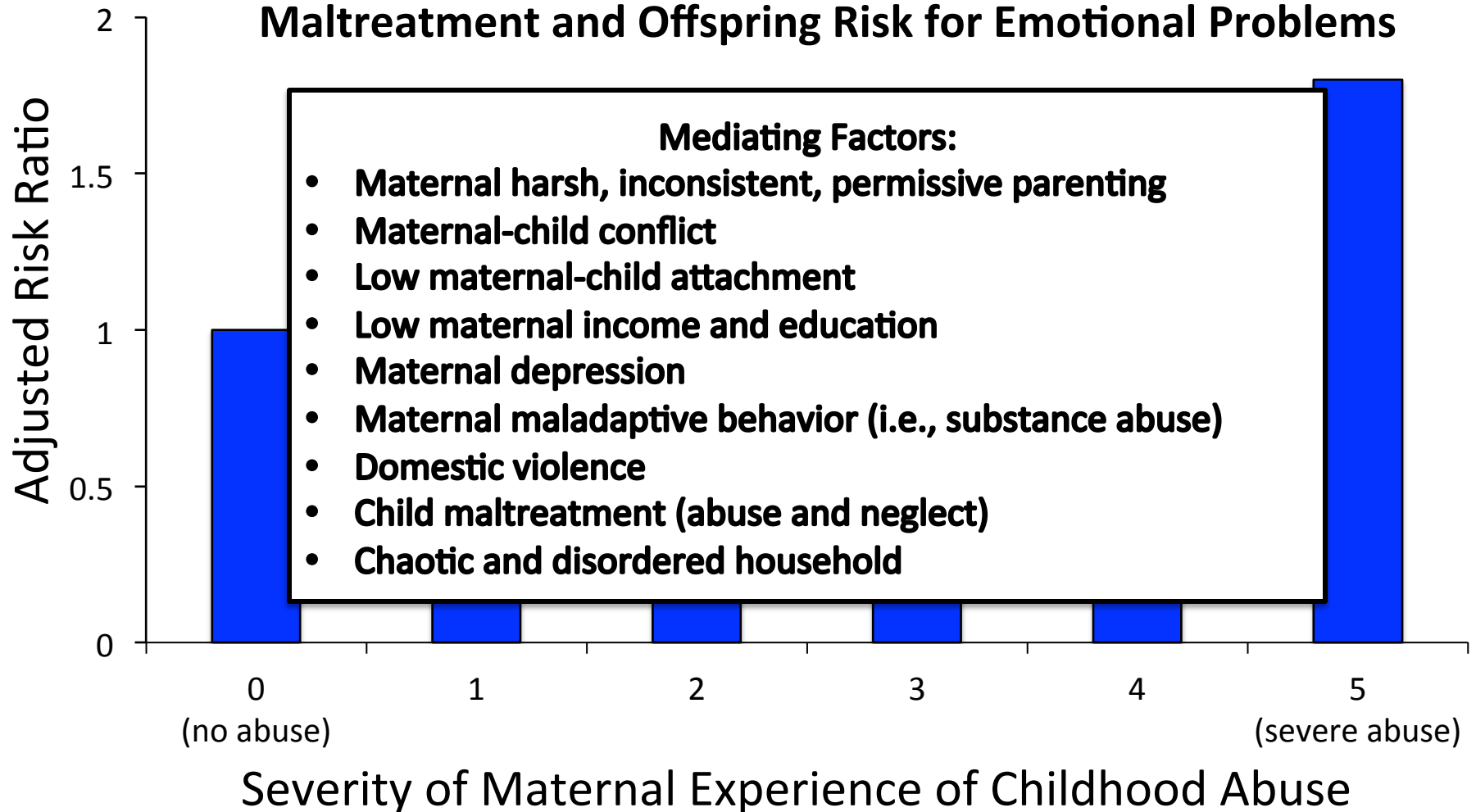
Health outcomes highlighted in red are among the top ten leading causes of death in the US

Individuals with 4 or More ACEs are at Highest Risk for Poor Outcomes

- 4- to 12-fold increased risk for health risk behaviors
- 1.4- to 1.6-fold increased risk for adult diseases

Maternal Childhood Maltreatment Associated with Offspring Emotional Problems

Association Between Maternal History of Childhood Maltreatment and Offspring Risk for Emotional Problems



Intergenerational Impact of Father's ACE on Offspring Health?

- No published studies on fathers



Pilot Study Using Data from Add Health Project to Examine Association Between Father's ACE and Offspring NCD

Father's ACE Response	Weighted %	Adjusted Odds Ratio for Offspring NCD (95% CI)
Emotionally Abused	31.6	1.4 (1.0,2.1)
Physically Abused	26.7	1.7 (1.2,2.6)

Wade et al., Pediatric Academic Societies Abstract, May 2017

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ACE Study Population is not Representative of Urban Populations

Demographics	ACE Study	Philadelphia
Mean age	56	34
Race/ethnicity	79% White	45% White
	5% African American	44% African American
	5% Hispanic	14% Hispanic
High school graduates	94%	81%
College graduates	43%	24%
Percent below FPL	Not measured	27%

ACE Scale Can Be Improved by Adding Additional Adversities to the Measure

Original

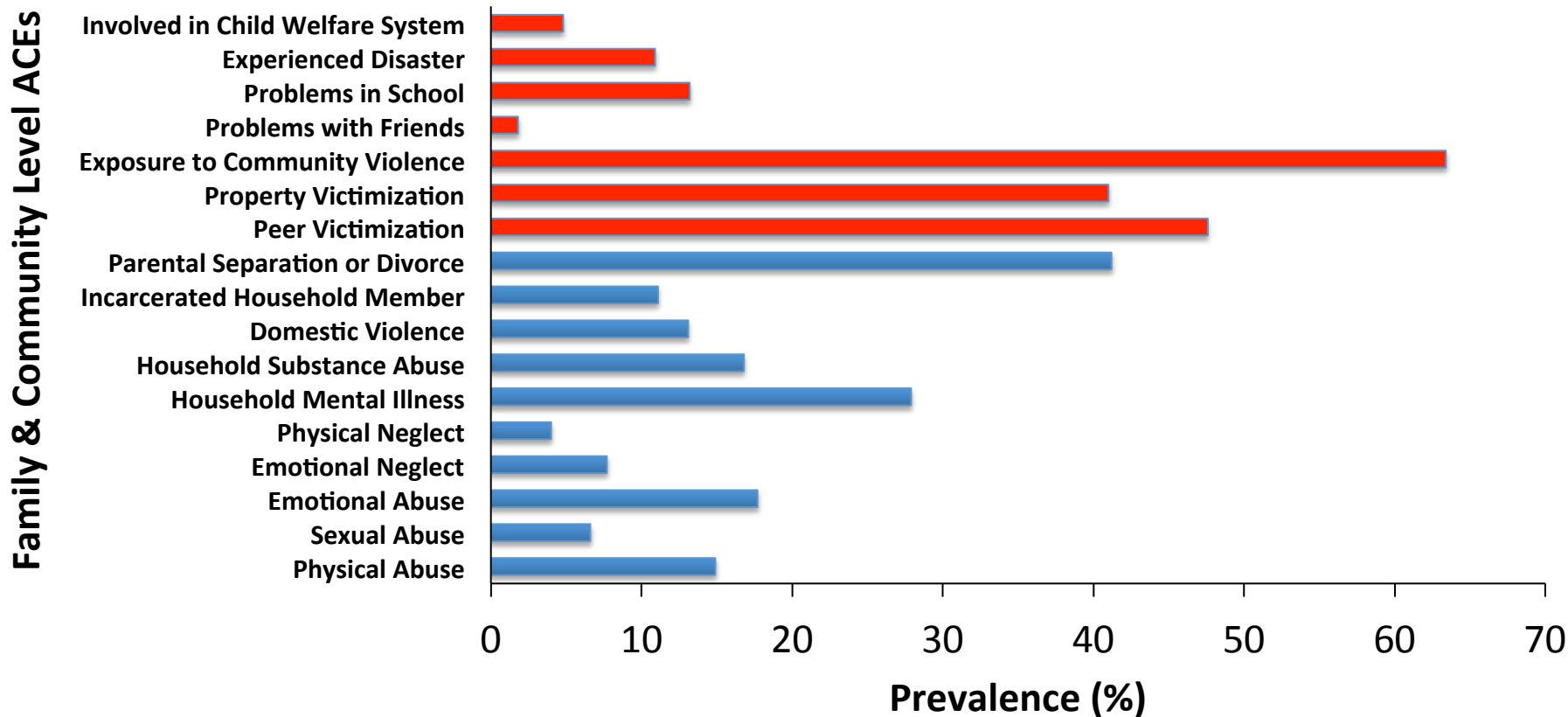
- Emotional abuse
- Physical abuse
- Sexual abuse
- Physical neglect
- Emotional neglect
- Mother treated violently
- Household substance abuse
- Household mental illness
- Incarcerated household member
- Parental separation or divorce

Additional Adversities

- Property victimization
- Peer victimization
- Exposure to community violence
- Socioeconomic status
- Someone close had a bad accident or illness
- Below-average grades
- Parents always arguing
- No good friends

Exposure to Community Level ACEs is Common Amongst Youth

Prevalence of Family & Community Level ACEs Amongst a Nationally Representative Sample of Youth (N = 2030)



Blue – Family Level ACEs

Red – Community Level ACEs

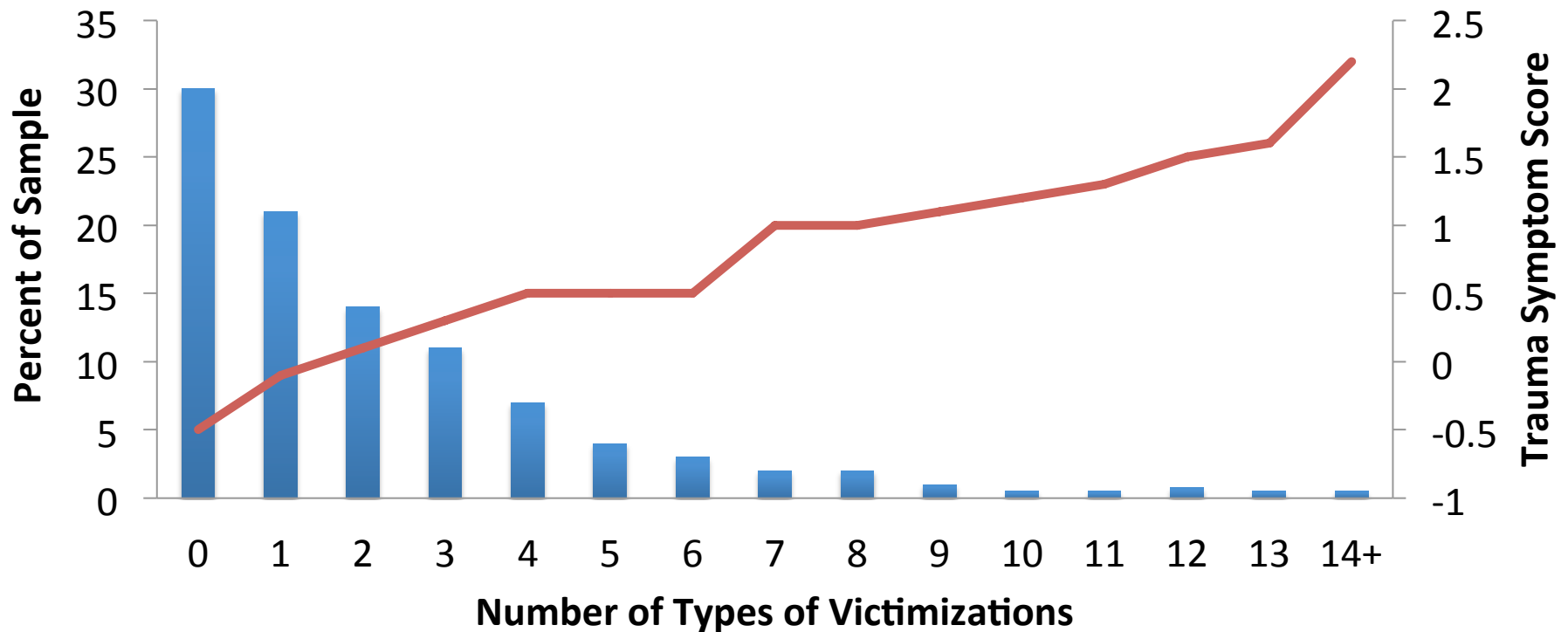
Adapted from Finkelhor et al., *Arch Pediatr Adolesc Med* 2013

Childhood Exposure to Community Level ACEs Associated with Poor Health

- Community level stressors associated with childhood behavior problems and mental health conditions
 - Childhood exposure to community violence associated with adolescent depression, anger, anxiety, and posttraumatic stress (explains ~30% of variance) - Singer et al., *JAMA* 1995.
- Association of community level ACEs with child physical health outcomes unclear
 - Adolescent perceived racial discrimination associated insulin resistance among African American girls but not boys – Chambers et al., *J Natl Med Assoc* 2004.
 - Perceived neighborhood safety associated with adolescent obesity in some studies but not others – Lumeng et al., *Pediatrics* 2010; Romero et al., *JAMA Pediatr* 2001.
- Few studies examining impact of childhood stressors across the life course
 - Adolescent exposure to community violence associated with poor health among women but not men – Olofsson et al., *BMC Public Health*, 2012

Childhood Exposure to Multiple Forms of Victimization is Common

Relationship Between Multiple Types of Victimization and Trauma Symptom Scores in the Past Year



Adapted from Finkelhor et al., *OJJDP Bulletin* 2011

The Philadelphia ACE Study

A collaborative, led by the Institute for Safe Families (ISF), to develop and implement research, practice, and policies in urban pediatric settings based on the Adverse Childhood Experiences (ACE) study.



Survey Methods

- Survey was completed as a follow up to the Southeastern Pennsylvania Household Health Survey (SEPA HHS).
 - Survey of over 13,000 children and adults in Southeastern Pennsylvania
 - Comprehensive survey on a broad range of topics
- Philadelphia ACE Survey re-contacted original SEPA HHS Philadelphia respondents who were 18 years or older
- Telephone survey (landline and cell phones)
- Completed by trained male and female interviewers
- Interviews were conducted in English and Spanish
- Interviewed 1,784 Philadelphia adults age 18 and older
- Response rate 67.1%

Philadelphia ACE Study Questions

Conventional ACEs	Expanded ACEs
Physical Abuse	Witnessing Violence
Emotional Abuse	
Sexual Abuse	Living in Unsafe Neighborhoods
Emotional Neglect	
Physical Neglect	Experiencing Racism
Domestic Violence	
Household Substance Abuse	Living in Foster Care
Incarcerated Care Provider	
Mental Illness in the Home	Experiencing Bullying

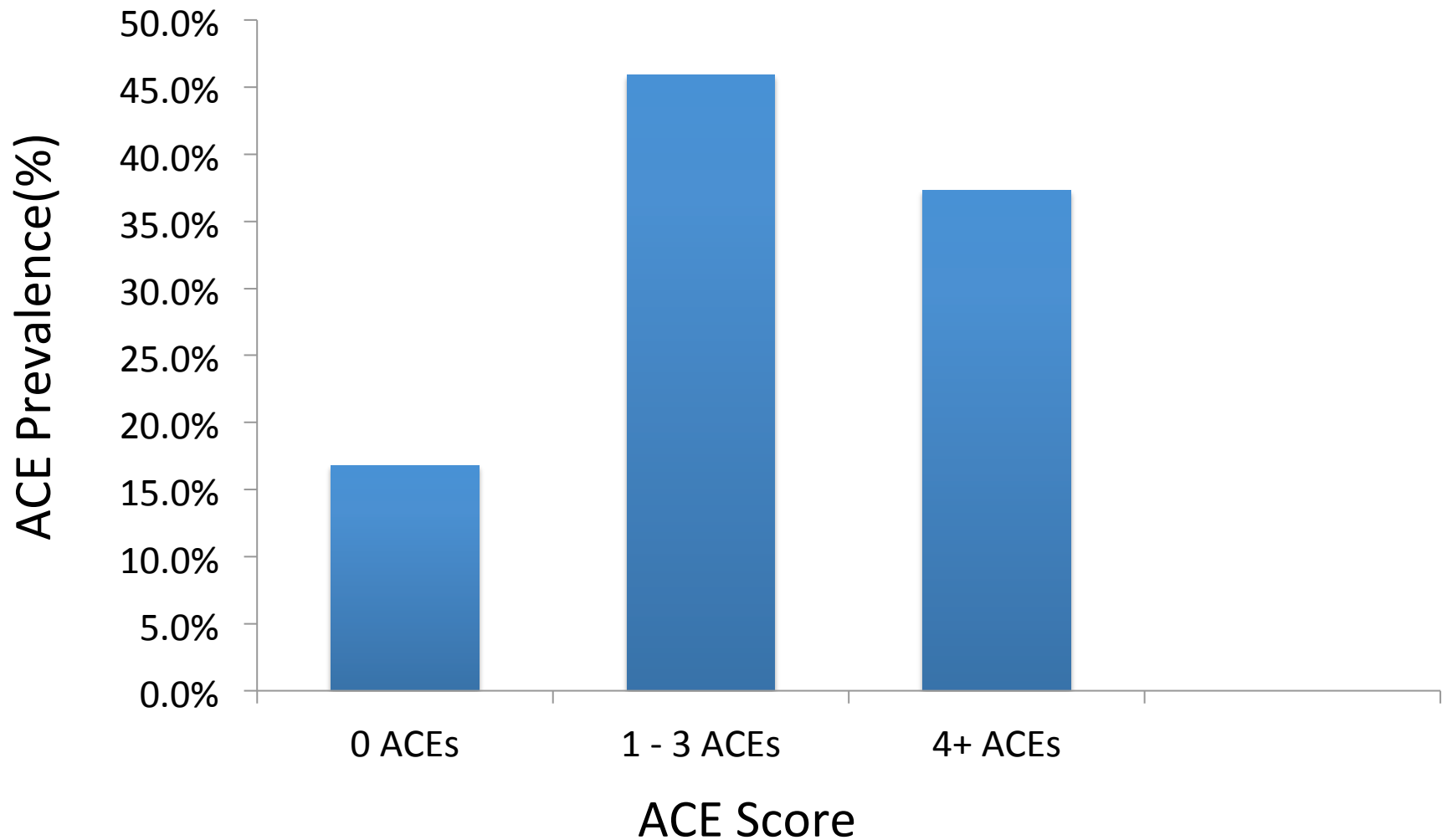
Many of the Traditional ACEs are More Prevalent in an Urban Setting

	Philadelphia ACE Study (N = 1,784)	CDC-Kaiser ACE Study (N = 17,337)
Emotional abuse	33.2%	10.6%
Physical abuse	35.0%	28.3%
Sexual abuse	16.2%	20.7%
Physical neglect	19.1%	14.8%
Emotional neglect	7.7%	9.9%
Substance abusing household member	34.8%	26.9%
Mentally ill household member	24.1%	19.4%
Witnessed domestic violence	17.9%	12.7%
Household member in prison	12.9%	4.7%

Prevalence of Expanded ACEs

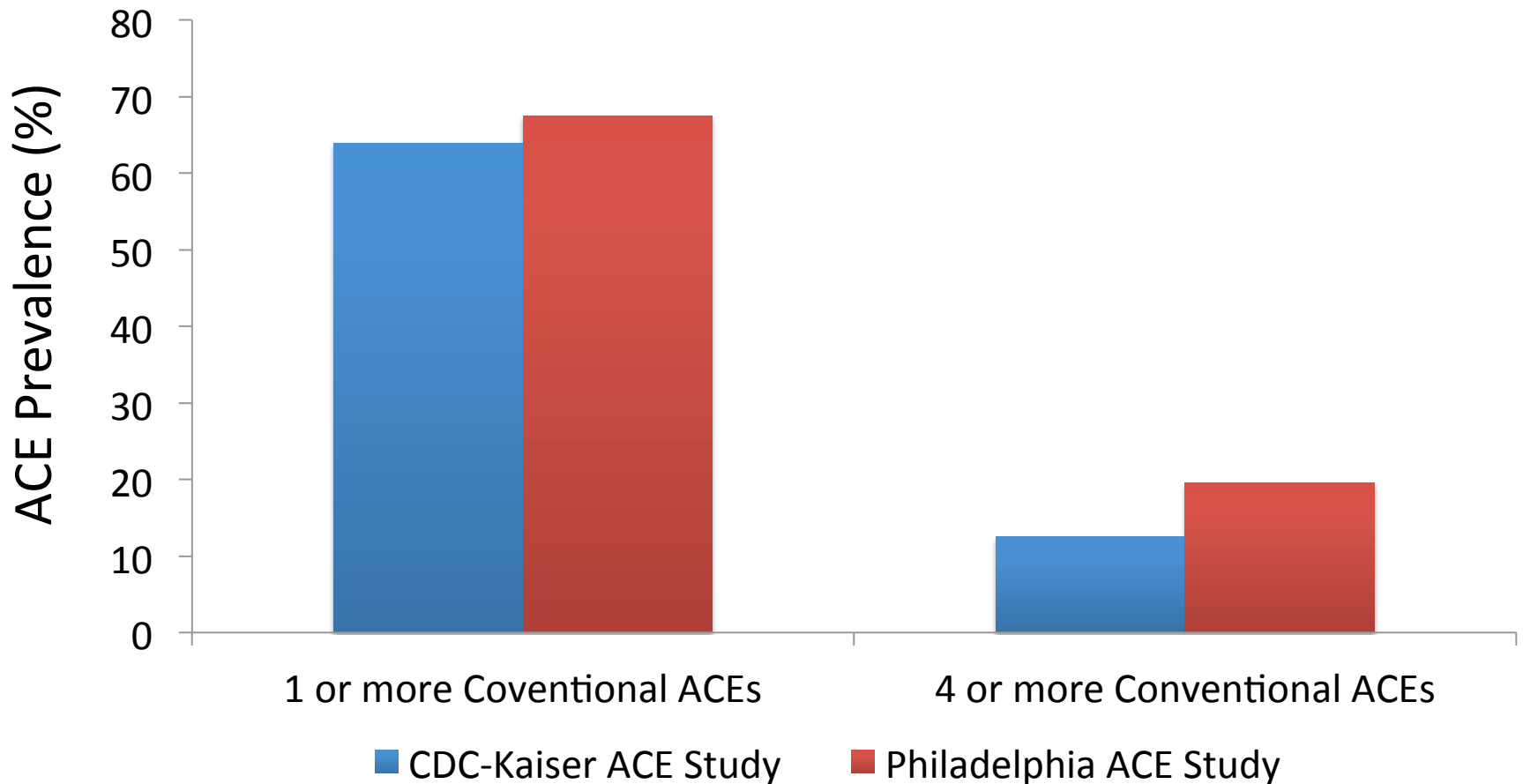
Expanded ACE Indicators	Respondents (N = 1,784)
Witnessed violence	40.5%
Felt discrimination	34.5%
Adverse neighborhood experience	27.3%
Bullied	7.9%
Lived in foster care	2.5%

Distribution of Total ACE Scores

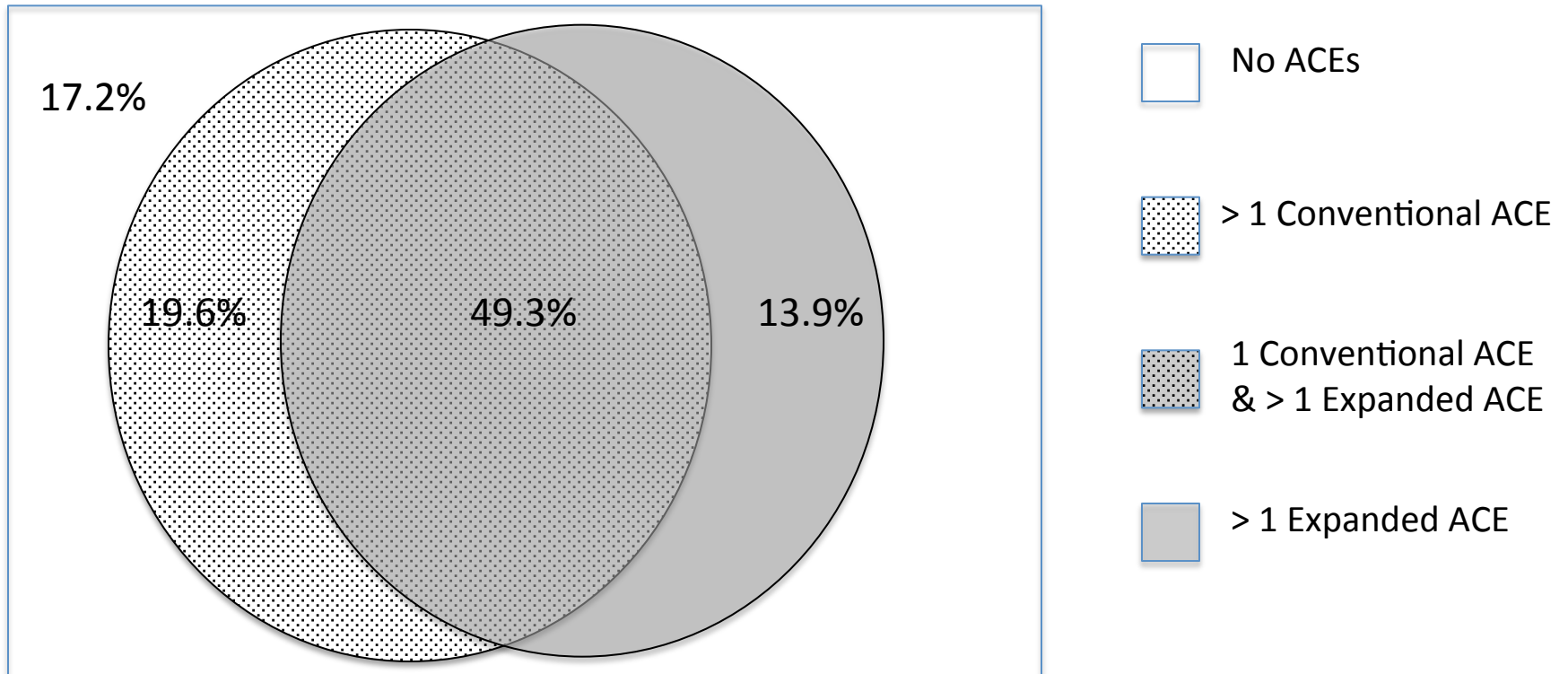


Prevalence of Conventional ACEs

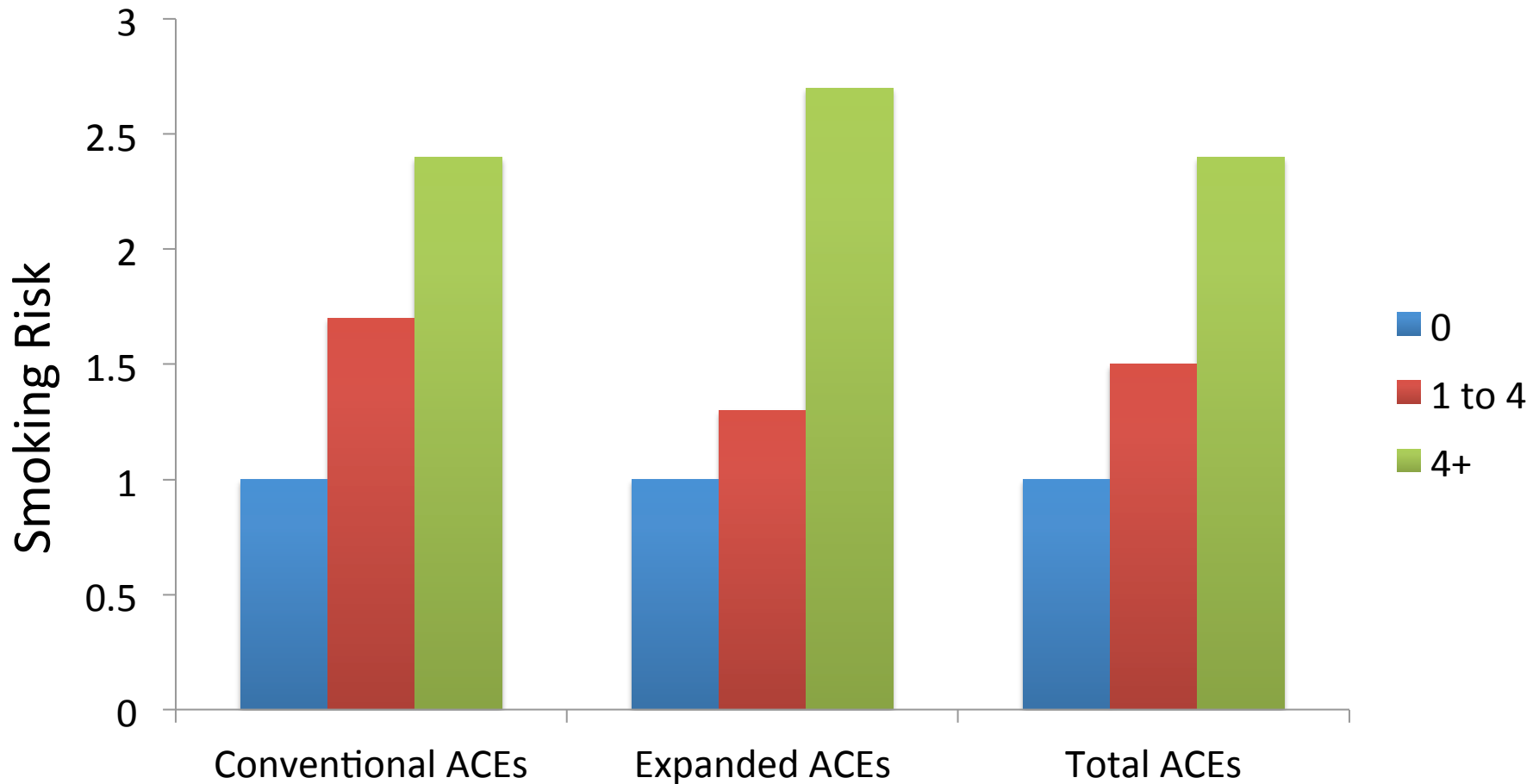
CDC-Kaiser vs. Philadelphia ACE Study



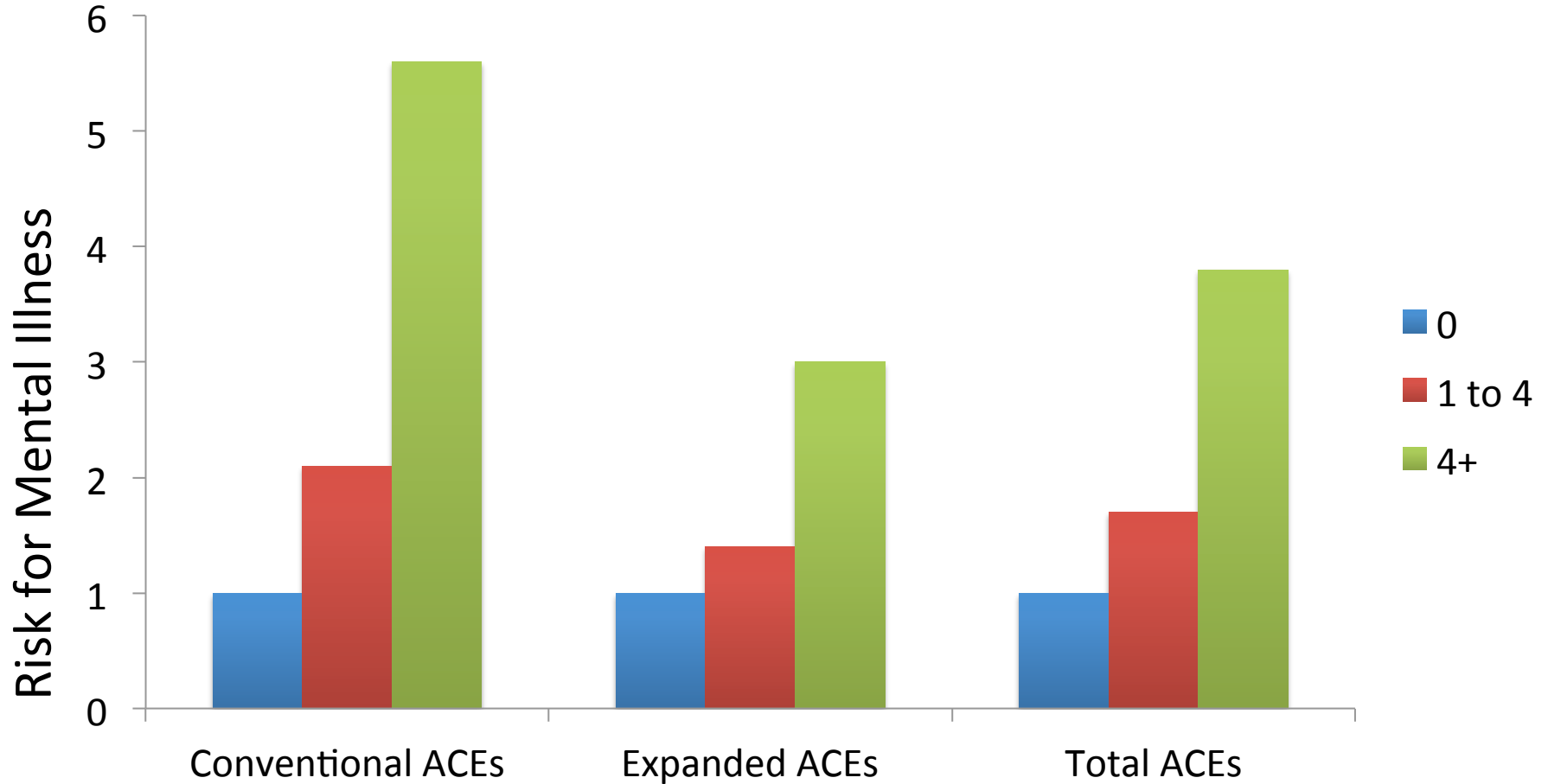
Overlap Between Exposure to Conventional and Expanded ACEs



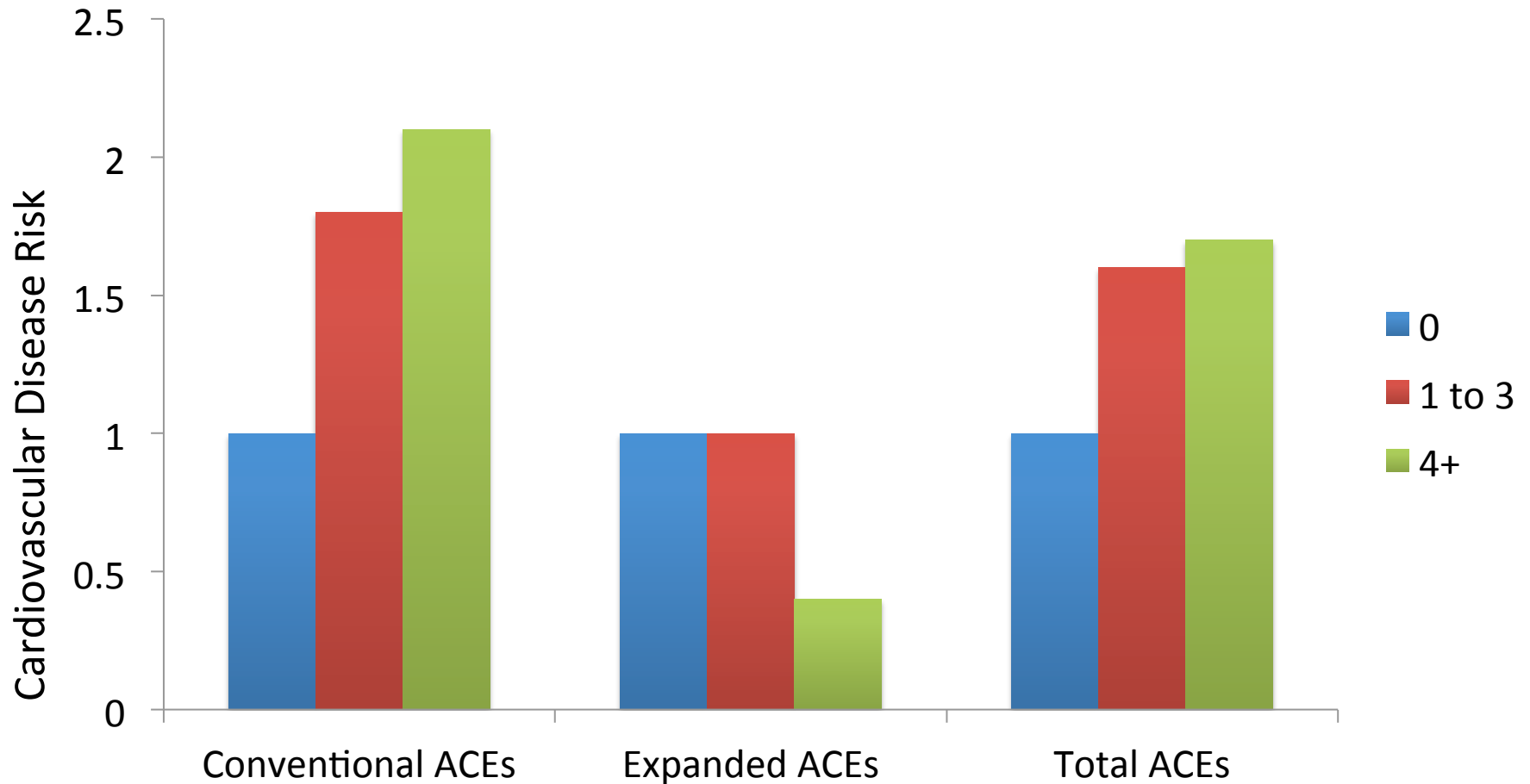
Relationship Between Philadelphia ACE Score and Smoking History



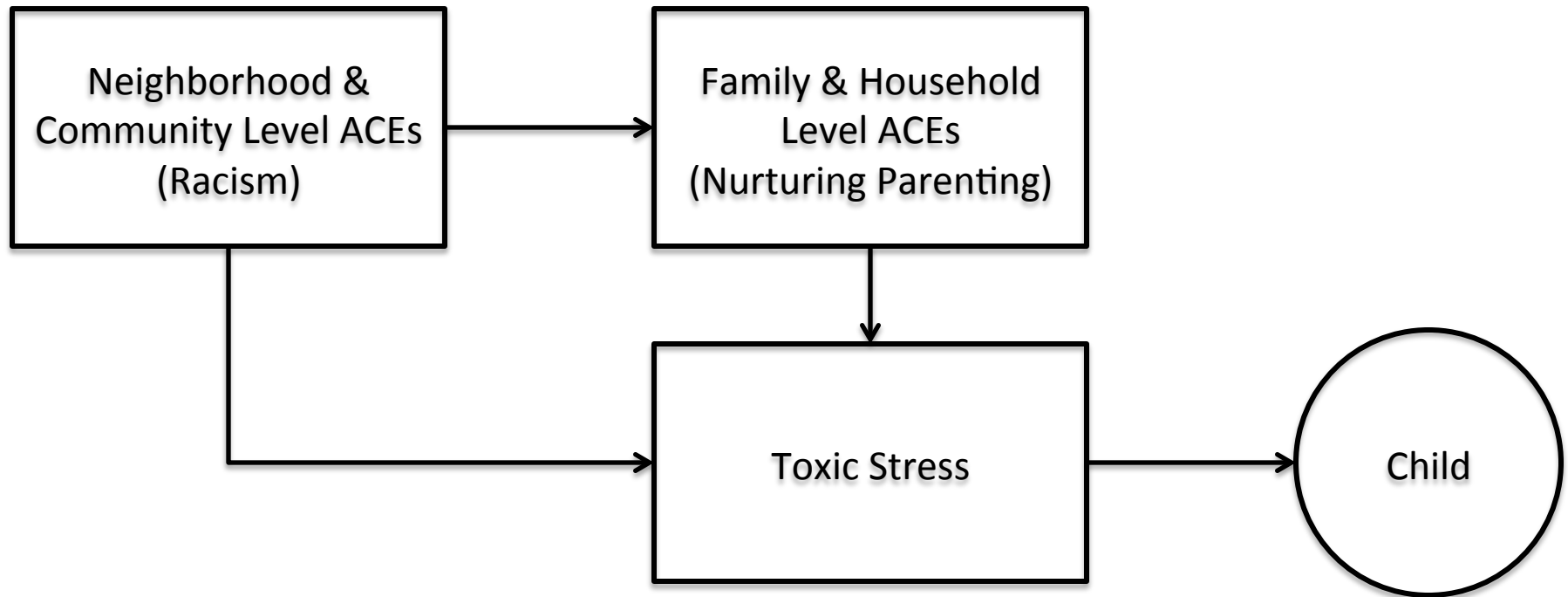
Relationship Between Philadelphia ACE Score and Mental Health



Relationship Between Philadelphia ACE Score and Cardiovascular Disease



Direct and Indirect Influences of Neighborhood ACEs on Toxic Stress



Perceived Discrimination Decreases the Quality of Mother-Child Relationships

Maternal perceived racial discrimination	Maternal stress (life events, financial strain, job stress)	Maternal psychological functioning (anxiety and depression level)	Nurturing mother child relationship
No	↓	↓	↑
No	↑	↑	↓
Yes	↑	↑↑	↓↓

Adapted from Murry et al., *Journal of Marriage and Family* 2001

Demographic Characteristics for Philadelphia Adults with Four or More ACEs

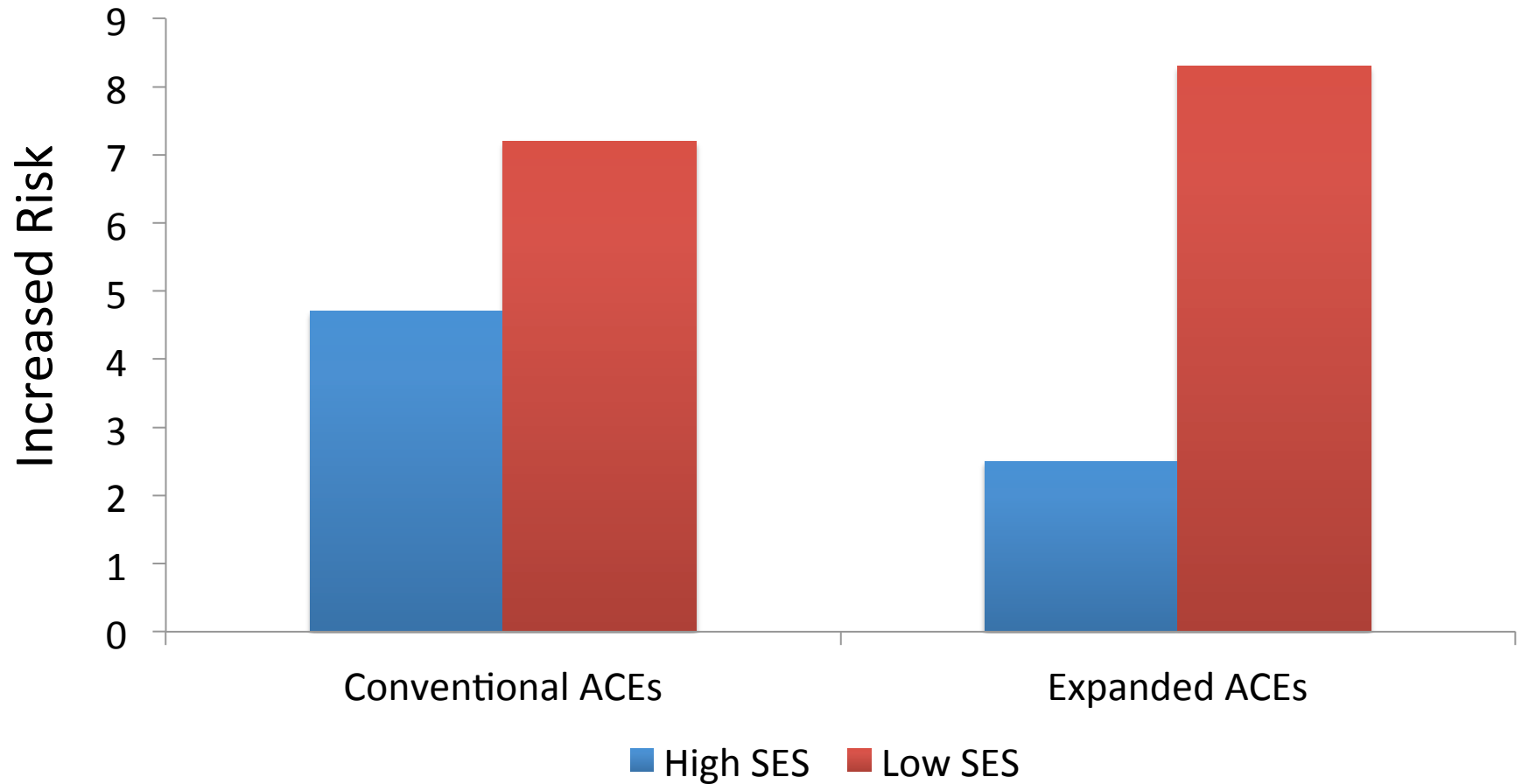
Demographics		Respondents (N = 1,784)
Sex**	Male	58.2%
	Female	41.8%
Race***	Black	48.6%
	White	34.0%
Poverty Level***	Below 150% of poverty guidelines	68.2%
	Above 150% of poverty guidelines	31.8%

*p<0.05; **p<0.01; ***p<0.001

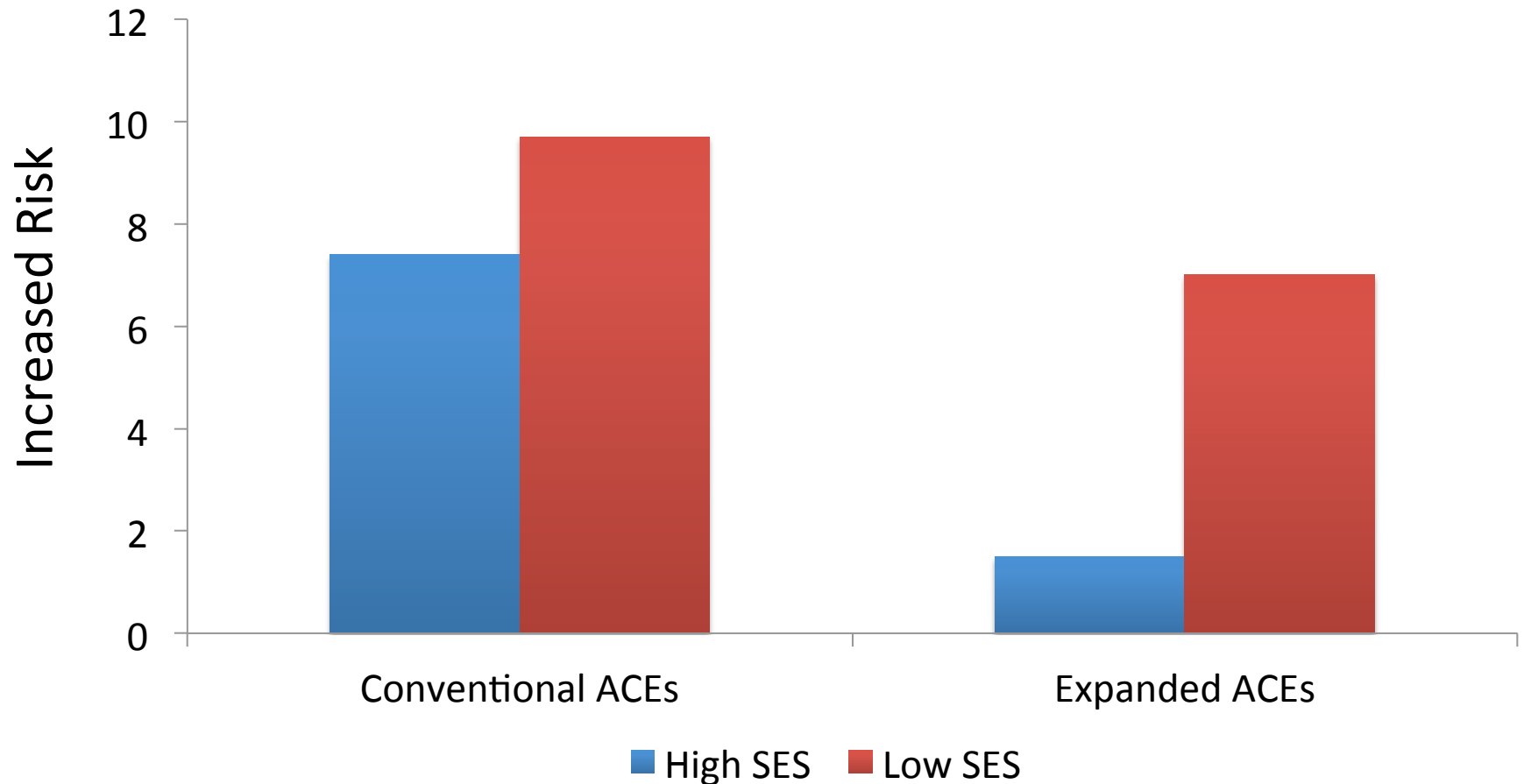
Socioeconomic status, ACEs, & Health

- ACEs increase risk for adult poverty
- Adult SES and ACEs have separate influences on poor health
- Low SES adults with a significant history of childhood adversity may be at increased risk for poor health outcomes

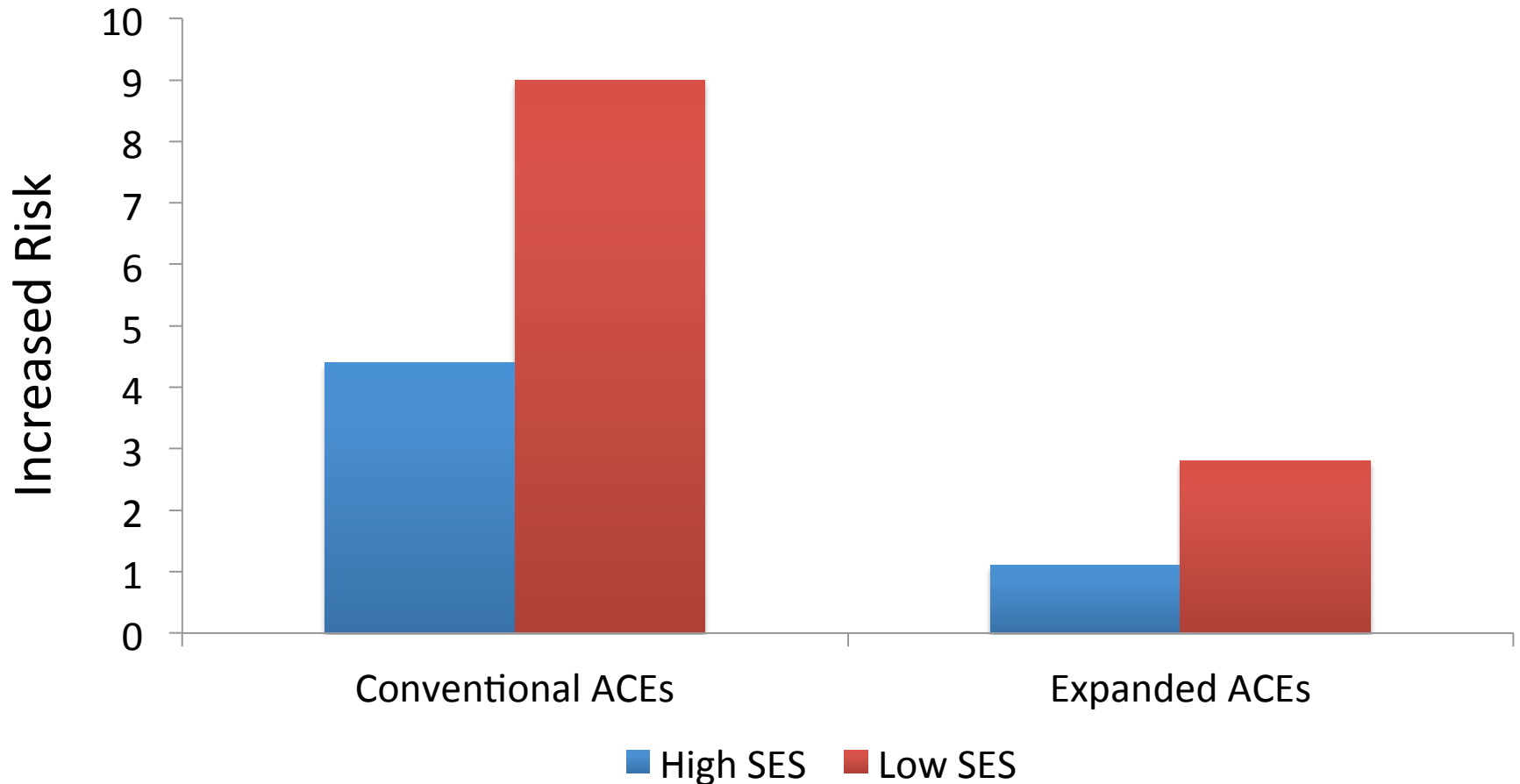
SES Magnifies Risk for Sexually Transmitted Infections Among High ACE Individuals



SES Magnifies Risk for Substance Abuse Problems Among High ACE Individuals



SES Magnifies Risk for Mental Illness Among High ACE Individuals

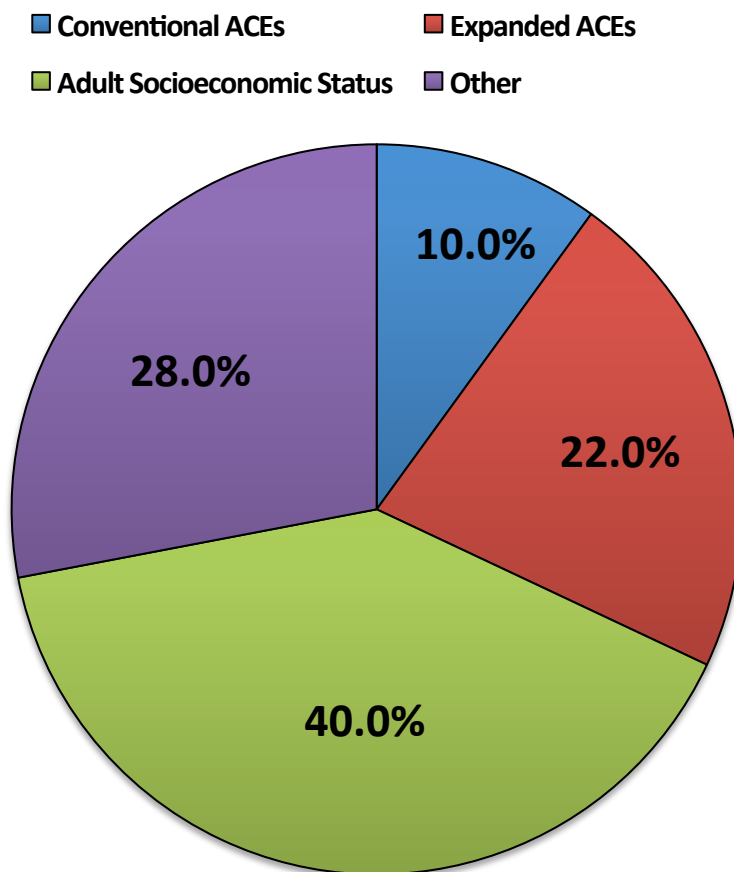


ACEs Explain Racial Disparities in Health Outcomes

Prevalence of Health Outcomes by Race - Philadelphia

Health Outcome	Blacks	White	p-value
Sexually transmitted infections	21.4	7.1	<0.01
History of substance abuse problems	16.5	7.6	<0.01
Diabetes	23.2	11.7	<0.01
Obesity	46.6	26.1	<0.01

Percentage of black-white difference in adult substance abuse attributable to ACEs & SES



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Three Levels of Stress

Positive Stress:

Brief increases in heart rate, mild elevations in stress hormone levels

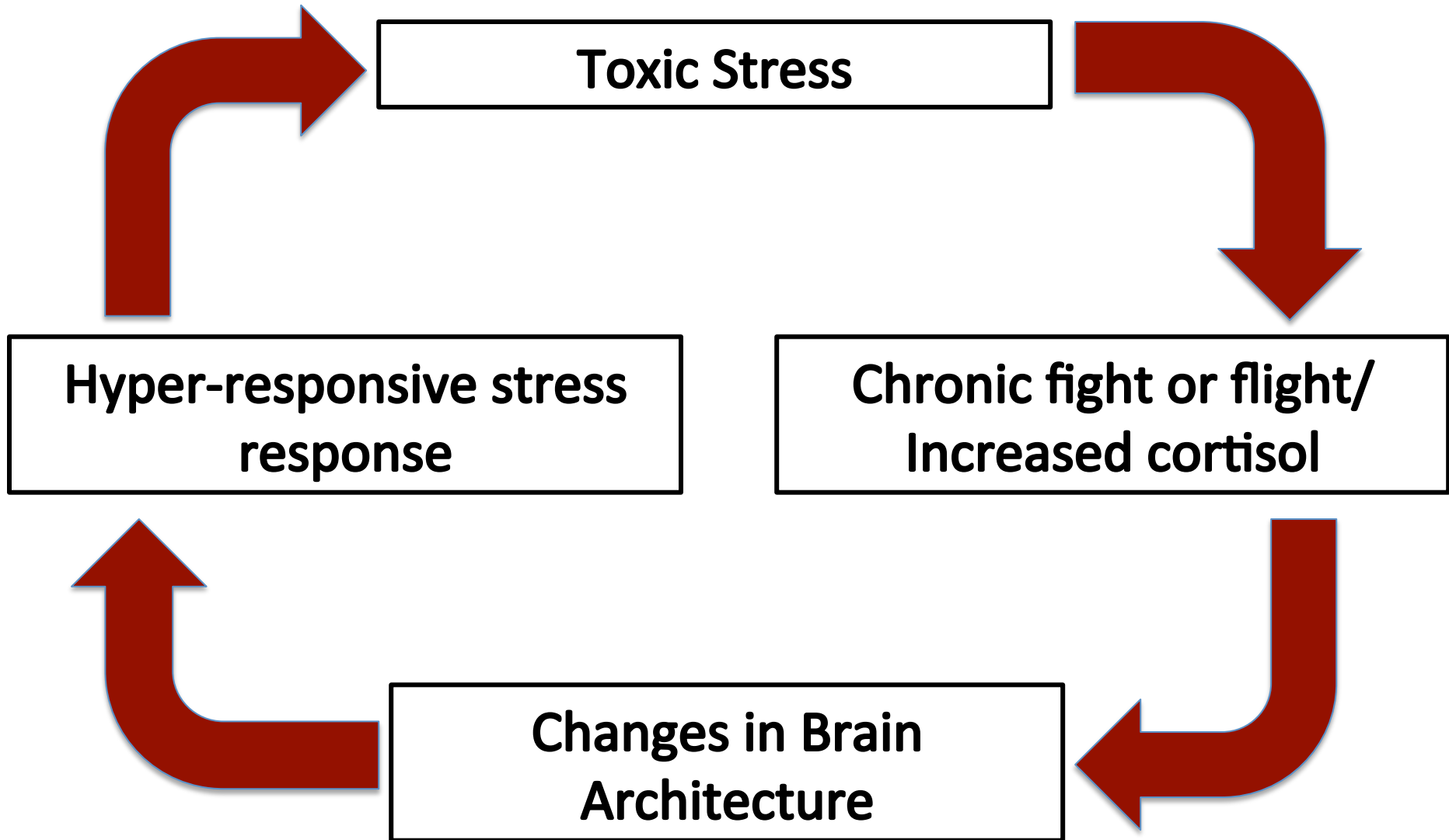
Tolerable Stress:

Serious, temporary stress responses buffered by supportive relationships

Toxic Stress:

Prolonged activation of stress response systems in the absence of protective relationships

Impact of Toxic Stress



Breaking the Cycle of Trauma

Nurturing Supportive Relationships



Approaches to ACE Informed Care

- Assessment
- Anticipatory guidance
- Promoting awareness
- Referral to community services
- Training for providers
- Guidance on decision making

The Importance of ACEs Knowing

- Trauma informed approaches
 - Adjusting office/provider processes to decrease patient stress
 - Morning huddles to anticipate patient needs
 - Provider mindfulness
- Helping patients rewrite their narrative
- Helping patients build capacity for emotional control
 - Learn self regulations skills
 - Identify triggers
 - Effective use of mindfulness and exercise
- Collaborative care plans

Strategies to Address Toxic Stress

- Parenting programs
 - Home Visiting programs
 - Parent Child Interaction Therapy
- Trauma Focused Cognitive Behavior Therapy
- Mindfulness training
- Promoting Non-Cognitive skills

AAP Policy Statement on ACE

POLICY STATEMENT

Identifying children at high risk for toxic stress is the first step in providing targeted

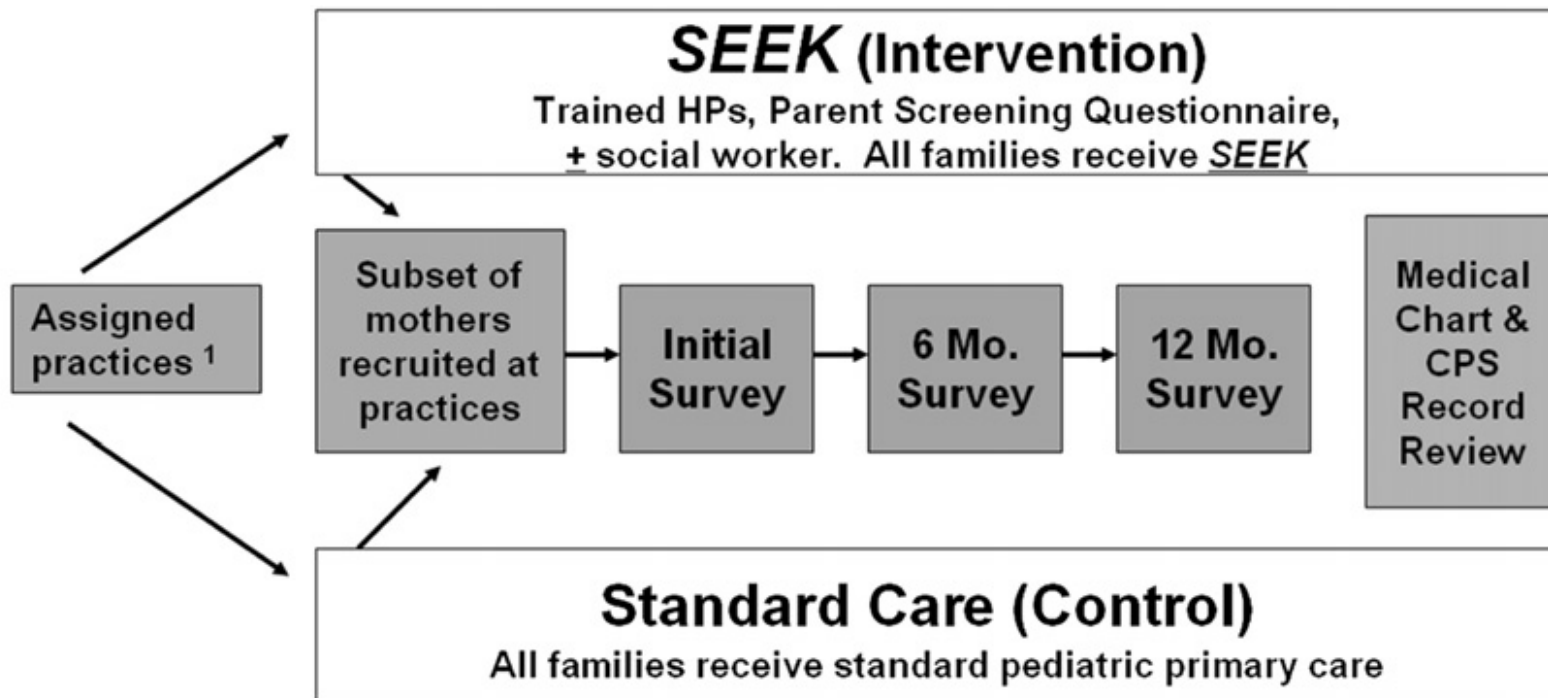
the Role of
Science

... Pediatric practices have been asked to consider implementing standardized measures to identify other family- or community-level factors that put

... the AAP and others have encouraged pediatric providers to develop a screening schedule that uses age-appropriate, standardized tools to identify risk factors that are highly prevalent or relevant to their particular practice setting.

innovative strategies to reduce the precipitants of toxic stress in young children and to mitigate their negative effects on the course of development and health across the life span. *Pediatrics* 2012;129:e224–e231

The Safe Environment for Every Kid Model



Adapted from Dubowitz et al., 2012

Decreased CPS Reports and Physical Assault in SEEK Intervention Group

	Intervention (N = 308)	Control (N = 250)	Odds Ratio	p
Families With at Least 1 CPS Report, n(%)	41 (13.3)	48 (19.2)	1.5	0.045
Physical assault severe or very severe, Mean (SD)*	0.11 (0.75)	0.33 (1.96)	--	0.04

* Scores from Parent-Child Conflict Tactics Scale

- Health professionals endorsed increased comfort in screening and addressing risk factors for ACEs
- Intervention increased clinic screening rates for risk factors for ACEs – 25% increase
- Addressing patient psychosocial problems DID NOT require additional provider time
- Implementation of SEEK cost approximately \$5.12 per family

A Youth Informed Approach to Assessing ACEs

- Series of focus groups with young adults
- Nominal Group Technique
 - Generate list of adverse childhood experiences
 - Prioritize items on list based on relative significance
- Analyze ranked lists for common themes
- Develop final ranked list of adverse experiences
- Member checking process & discussion of context surrounding each theme

Study Participant Demographics

Demographics		Percent of Individuals (N = 119)
Sex	Male	55%
	Female	45%
Race/Ethnicity	Caucasian	5%
	Hispanic	18%
	Non-Hispanic Black	71%
	Other	6%
	Unknown	0%
Neighborhood Poverty Level (100% FPL)	Less than 10%	5%
	10 to 20%	11%
	20 to 40%	51%
	Greater than 40%	33%

Domains of Most Stressful Experiences

Domain	Number of Responses
Family Relationships	195
Community Stressors	119
Personal Victimization	72
Economic Hardship	67
Peer Relationships	35
Discrimination	23
School	22
Health	17
Child Welfare/Juvenile Justice	8
Media/Technology	5

Family Relationships

Family Relationship Subdomains	Number of Responses
Family Members Abusing Alcohol & Drugs	37
Lack of Love & Support in the Family	33
Single Parent Homes	30
Death & Illness of Family Members	21
Violence in the Home	20
Poor Parenting & Lack of Guidance	20
Criminal Activity by Family Members	15
Having to Take on Adult Responsibilities	14
Violent Victimization of Family Members by Individuals Outside of the Home	4

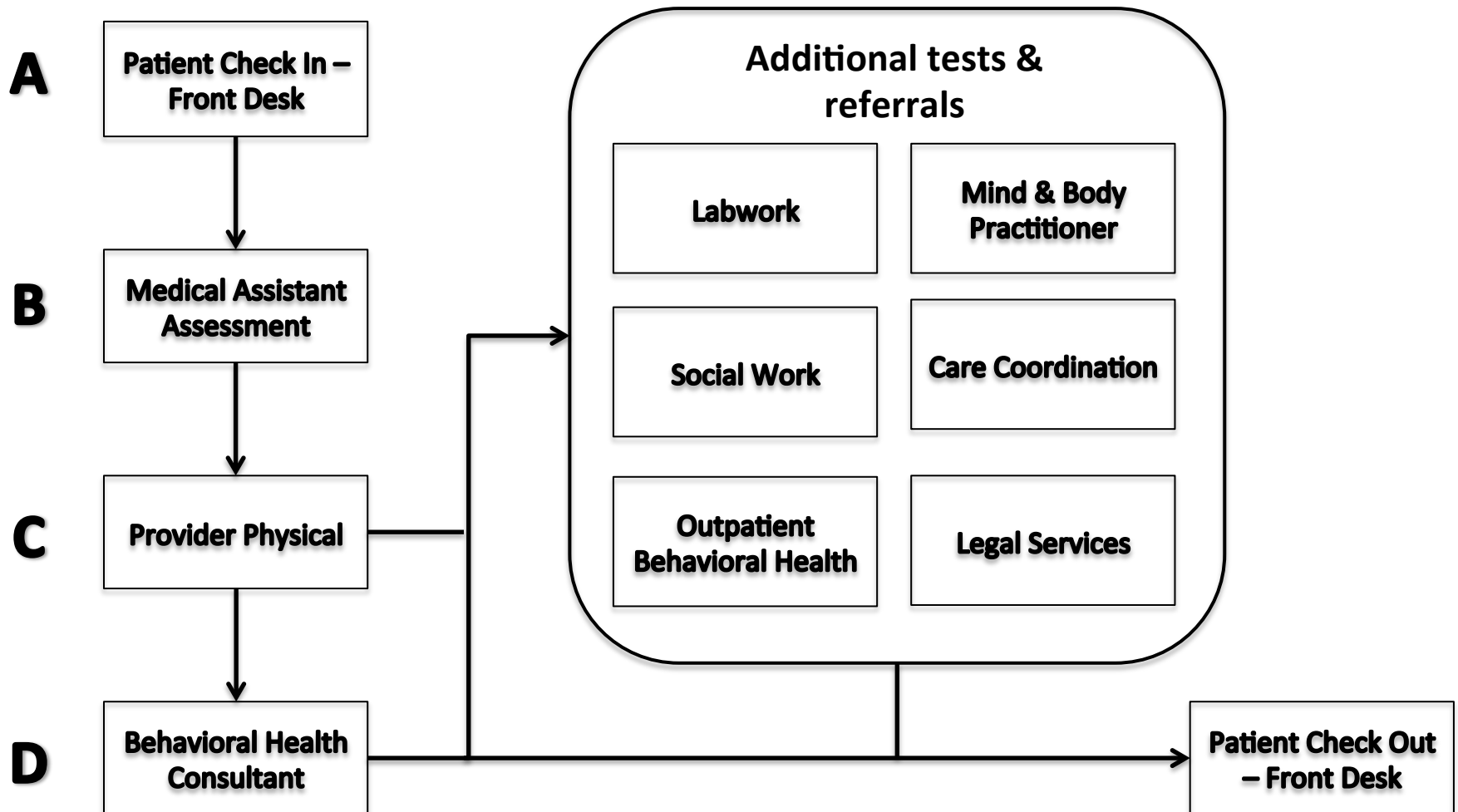
Barriers to Universal Childhood Adversity Assessment

- Limited time
- Limited skills in addressing ACEs
- Concerns for patient confidentiality and privacy
- Respondent honesty to screening questions
- Lack of education in assessing childhood adversities

Developing an ACE Screening Tool

- CDC state survey of ACEs 2011 – 2012
- Total respondents 71, 412
- 97% of individuals with four or more ACEs endorsed
 - Living with anyone who was a problem drinker or alcoholic
 - Parents or adults in home swore at them, insulted them, or put them down more than once
- Tool composed of these two items shows equivalent odds ratios to full measure when tested for association with health outcomes

Implementation of Childhood Adversity Screening in Primary Care



What is the best way of measuring childhood adversity?

- Three approaches tested
 - ☐ Patient answers questions on paper survey
 - ☐ Medical assistant asks survey questions
 - ☐ Provider asks survey questions
- Track positive screens
- After visit assessment with all involved participants to determine acceptability of approach

Key Findings

	Self-Administered	MA Administered	NP Administered
Total individuals surveyed	92	88	87
Total respondents identified with ACEs	36	14	29
% respondents with identified ACEs	39.1%	15.9%	33.3%

- Overall none of the approaches slowed down visit or caused anxiety
- Most accurate approaches are self and NP administered
- However, nurse practitioners felt NP administered approach slowed down visit and interrupted patient flow
- Self administered and medical assistant approach are most strongly associated with improved quality of health care visit

Summary

- ACEs are common across sociodemographic backgrounds
- ACEs impact outcomes across sectors and throughout the lifecourse
- Important to broaden understanding of childhood adversity
- Certain populations at higher risk for ACEs
- Numerous approaches to addressing ACEs & building trauma informed systems of care

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