

# Psychosocial Determinants of Chronic Disease: Implications for Prevention

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# Outline

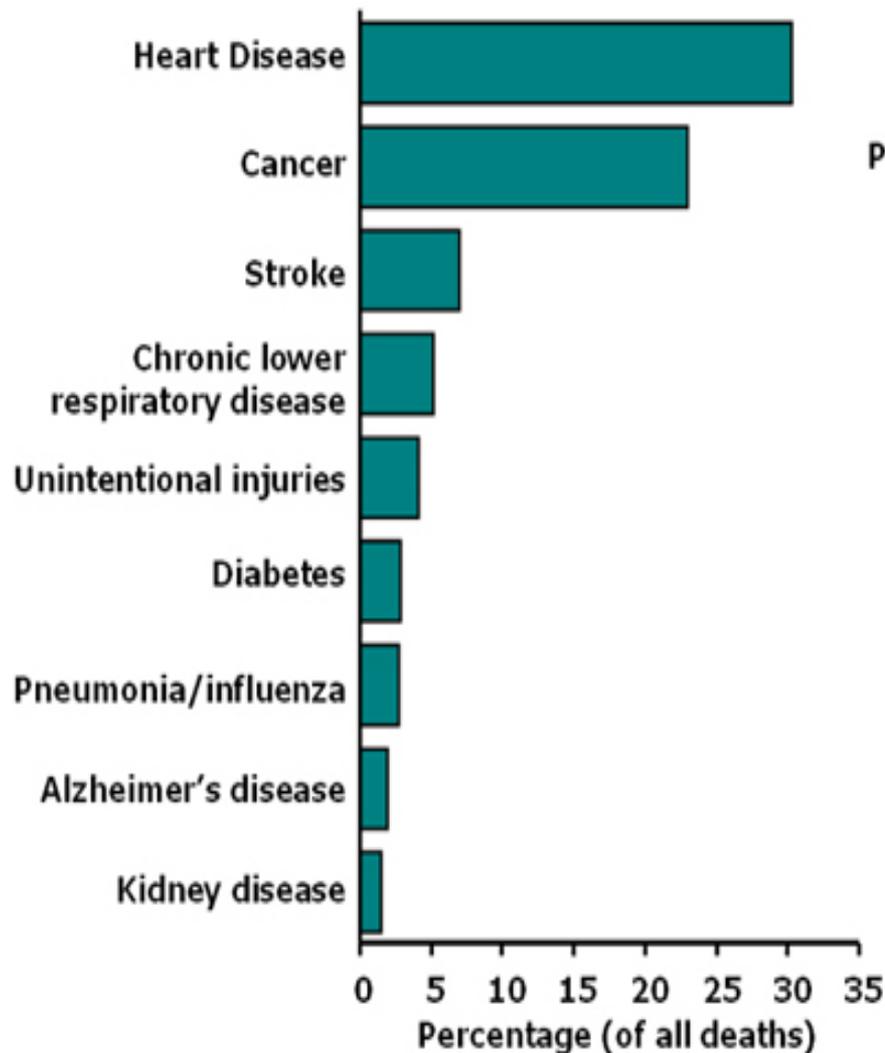
## I. Psychosocial Origins of Chronic Diseases

- A. Prenatal Factors
- B. Early Childhood Factors
- C. Community Factors

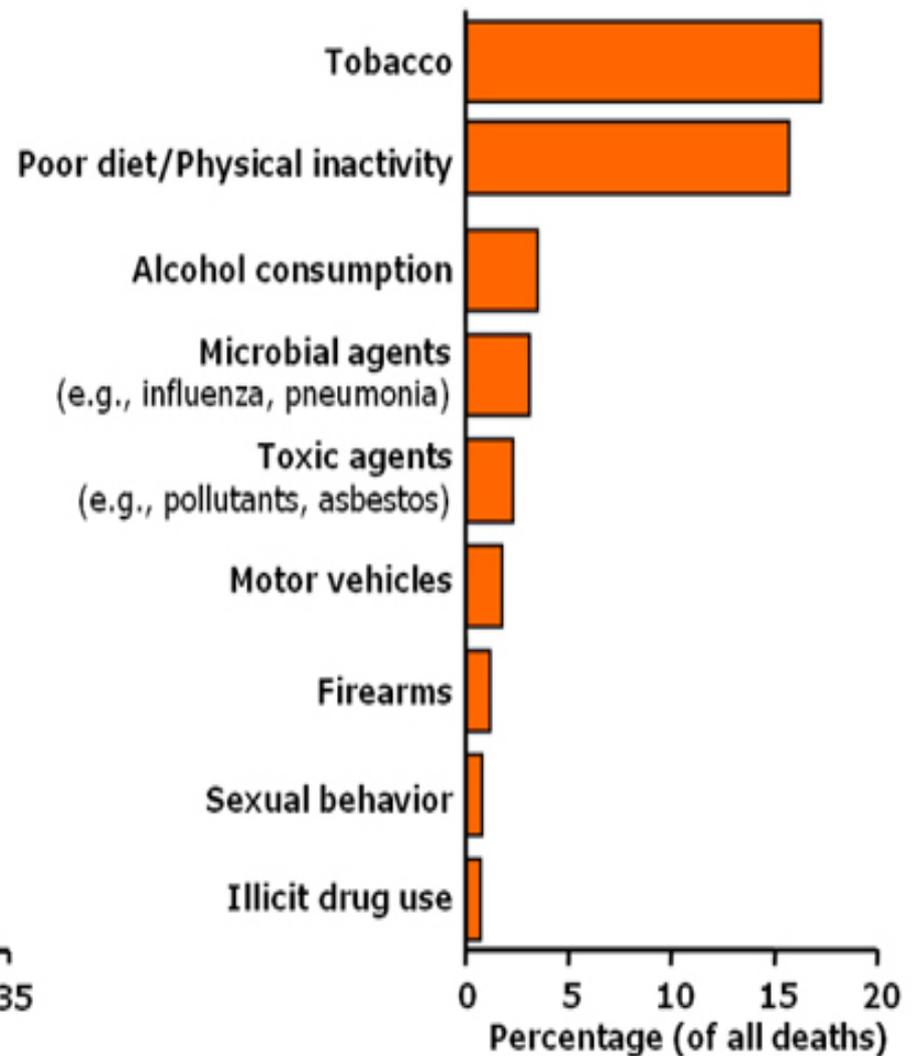
## II. Implications for Prevention

- A. For 1:1 interventions
- B. For 1:N interventions

## Leading Causes of Death\* United States, 2000



## Actual Causes of Death† United States, 2000



\* Miniño AM, Arias E, Kochanek KD, Murphy SL, Smith BL. Deaths: final data for 2000. National Vital Statistics Reports 2002; 50(15):1-120.

† Mokdad AH, Marks JS, Stroup DF, Gerberding JL. Actual causes of death in the United States, 2000. JAMA. 2004;291(10):1238-1246.

# Origins of Chronic Diseases

Prenatal Factors

# Prenatal Nutrition and Stress

- Key epidemiologic studies
  - Barker Study of birth records in UK, 1910-1930
  - Dutch famine of 1944
  - British National Birth Cohort, 1946-
- Key associations with adult disease
  - Obesity, Diabetes, Hypertension, Hyperlipidemia, Coronary artery disease mortality
  - Depression, Substance abuse, Schizophrenia

# Heart Disease and Stroke:

## You are what your mother ate

Undernutrition and/or high fat/low protein diet

- > Size of placenta, ability to transport oxygen
- > Fetal growth, fetal hypoxia
- > Fetal liver and blood vessel development
  - > Dysregulation of cholesterol, glucose, clotting
  - > Altered blood pressure regulation



# Diabetes

- Thrifty phenotype hypothesis
  - Malnutrition leads to decreased blood supply to fetal liver and pancreas resulting in thrifty metabolism
  - Adult progeny are well-adapted for reduced food supply, not abundant food supply



# Depression & Substance Abuse:

## You are how your mother coped

### Prenatal stress

- > Maternal steroid production
- > Fetal exposure to steroids
- > Fetal neural development
- > Dysregulation of HPA axis and nervous system



### Postnatal stress

- > Reduced environmental stimulation
- > Infant neural development and stress response
- > Dysregulation of HPA axis and nervous system

# Origins of Chronic Diseases

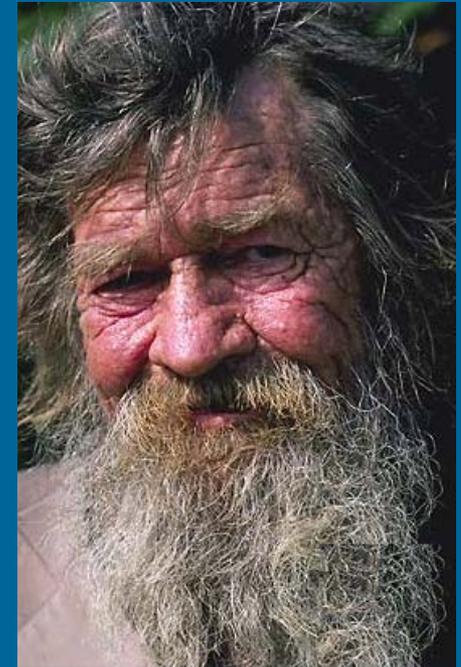
Childhood Factors

# The Adverse Childhood Experiences (ACE) Study



The largest study of its kind ever to examine over the lifespan the medical, social, and economic consequences in adults of adverse childhood experiences.

(>17,000 participants)



# 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*

17,433  
adults

## Mortality

National Death Index

## Morbidity

Hospitalization

Doctor Office Visits

Emergency Room Visits

Pharmacy Utilization

NOTE: middle class population

# Prevalence of Adverse Childhood Experiences

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	Prevalence (%)
Abuse, by Category	
Psychological (by parents)	11%
Physical (by parents)	28%
Sexual (anyone)	22%
Neglect, by Category	
Emotional	15%
Physical	10%
Household Dysfunction, by Category	
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...

*ACE Score*

*Prevalence*

0	33%
1	25%
2	15%
3	10%
4	6%
5 or more	11%*



- 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.

## **Adverse Childhood Experiences**

Abuse and Neglect (e.g. psychological, physical, sexual)

Household Dysfunction (e.g. domestic violence, substance abuse, mental illness, parental loss, incarceration)

## **Impact on Child Development**

Neurobiological Effects (e.g. brain abnormalities, stress hormone dysregulation)

Psychosocial Effects (e.g. poor attachment, poor socialization, poor self-efficacy)

Health Risk Behaviors (e.g. smoking, obesity, substance abuse, promiscuity)

## **Intermediate Consequences?**

## **Long-term Consequences**

Disease and Disability

Social Problems

# Hi ACE and Adult Outcomes (ORs)

Suicide (12.2)

Alcoholism (7.4)

Illicit Drug Use (4.7)

Depression (4.6)

STDs (2.5)

Current smoker (2.2)

Obesity  $\geq$  35 (1.6)

COPD (3.9)

Stroke (2.4)

Hepatitis or Jaundice (2.4)

Fair or poor Health (2.2)

Ischemic Heart Disease (2.2)

Any Cancer (1.9)

Diabetes (1.6)

Skeletal Fractures (1.6)

# Origins of Chronic Diseases

Community Factors

# Actual Causes of Death in the United States, 2000

Actual Behavioral Causes	No.	Actual Social Causes	No.
<b>Tobacco</b>	435,000	<b>Low Education</b>	245,000
<b>Poor Diet &amp; Physical Inactivity</b>	400,000	<b>Racial Segregation</b>	176,000
Alcohol Consumption	85,000	<b>Low Social Support</b>	162,000
Microbial Agents (e.g. influenza)	75,000	<b>Individual Poverty</b>	133,000
Toxic Agents (e.g. pollutants)	55,000	<b>Income Inequality</b>	119,000
Motor Vehicle Crashes	43,000	<b>Area Poverty</b>	39,000
Firearms	29,000		
Sexual Behaviors	20,000		
Illicit Use of Drugs	17,000		

(Mokdad et al, 2004)

(Galea et al, 2011)

# Psychosocial Protective factors

- Low-fat, high-protein nutrition
- Competent, educated mother
- Sensitive and responsive caregiver
- Affectionate bonds with alternative caregivers
- Smaller family (<5 children)
- Child characteristics: “easy” engaging temperament, intellectual competence, social-emotional maturity, internal locus of control, positive self-concept
- Scholastic achievement

# Weighting the Odds

- Poor prenatal nutrition
- Prenatal/childhood stress
  - Abuse/violence
  - FH Mental illness/substance abuse
- Depression
- Risky behaviors
- Poverty/low SES
- Obesity
- Good nutrition
- Regular exercise
- Regular sleep
- Positive relationships/  
social support
- Smaller family (<5 children)
- Educational achievement

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Morbidity/  
Early Mortality



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Healthy, Happy  
Long Life

# Implications for Prevention

For 1:1 Interventions

# U.S. Preventive Services Task Force

- An independent panel of experts in primary care and prevention that systematically review the evidence of effectiveness and develops recommendations for clinical preventive services
- Independent but government supported
- Recommendations for use in primary care health settings in patients without signs or symptoms of disease
- [www.uspreventiveservicestaskforce.org](http://www.uspreventiveservicestaskforce.org)
- Electronic Preventive Services Selector on web or application, [epss.ahrq.gov](http://epss.ahrq.gov)

# Prevention at the Doctor's Office

- Tobacco cessation interventions and counseling to prevent initiation
- Healthy diet counseling
- Obesity screening and counseling
- Depression screening
- Substance use counseling
- Intimate partner violence screening
- Heart Disease – *tobacco, obesity*
- Cancer – *tobacco, race*

# What about Screening for **Adverse Childhood Experiences** in adults?

- Would screening for ACE in adult primary care populations help to identify those at high risk for disease and improve potential for primary or secondary prevention?

# What about Screening for **Adverse Childhood Experiences** in children?

- Would screening for ACE in pediatric primary care populations help to identify those at high risk for disease and improve potential for true primary prevention?
- To do effectively will require collaboration with primary care and public health systems

# Implications for Prevention

For 1:N Interventions

# The Community Guide

- [www.thecommunityguide.org](http://www.thecommunityguide.org)
- A resource to help choose programs and policies to improve health and prevent disease in communities. Systematic reviews are used to answer these questions:
  - Which program and policy interventions have been proven effective?
  - Are there effective interventions that are right for my community?
  - What might effective interventions cost; what is the likely return on investment?

# ACEs Public Private Initiative (Washington State)

- Goal to identify evidence-based models to prevent or mitigate ACEs
- No evidence-based multi-factored risk interventions but only collections of single-focused interventions
- Need community mobilization toward multi-partner community efforts aimed at trauma-informed practices to drive an integrated public health response
- Need systematic organization around implementation and sustainability challenges

# ACEs Steering Committee (Iowa)

- Designate funds to collect, analyze and disseminate data on ACEs
- Increase awareness of ACEs and impact on health and well-being
- Increase early identification and response to ACEs across systems including health care, education, justice, social services, and public health
- Advocate for family-based strategies that support parental resilience, social connections, parenting education and concrete support in times of need
- Integrate a trauma-informed approach across child and family serving systems and organizations

# Toxic Stress Legislation (Wisconsin)

- State Assembly passed a resolution that recognizes the destructive effects of toxic stress and the profound importance of early brain development on a child's future success
- Anticipated to lead to future financial support for early intervention and other programs focused on early childhood years

# Mobilizing for Action through Planning and Partnership (Kenai Peninsula, Alaska)

- Community health assessments
  - Determine need related to issues such as economic and affordability issues, adverse childhood and family experiences, access to care, substance abuse
  - Define shared measures and goals
- Community collaborations
  - Working together to reduce trauma in the early years through supporting parents or improving resiliency in young people

# Girls Court & Safe Harbor Laws

## (Alameda Co, CA)

- Most girls participating in prostitution have a history of child abuse
- In an Alameda survey 75% of 113 sex exploited youth had experienced abuse and neglect
- Girls Court and Safe Harbor Laws encourage supervision rather than probation, case management and safe housing rather than jail

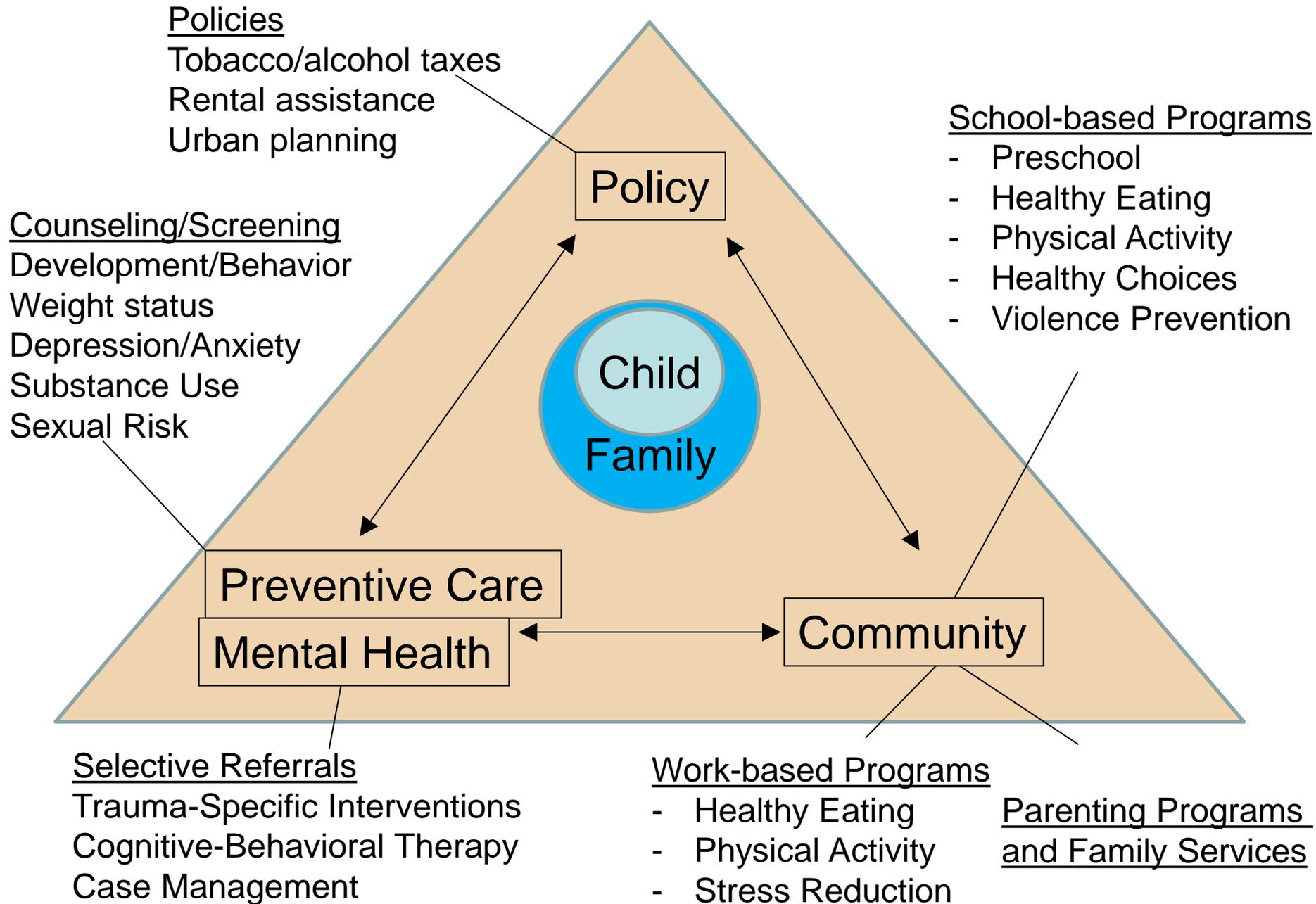
# Building a Trauma-Informed System of Care (Connecticut)

- Screening and identification in outpatient clinics and pediatric practices, child detention centers, children in child welfare system, schools, law enforcement
- Dissemination of evidence-based practices to community agencies:
  - Trauma Focused-Cognitive Behavioral Therapy (Cohen, Mannarino, & Deblinger)
  - Child & Family Traumatic Stress Intervention (4 sessions with child and caregiver (Berkowitz, Stover and Marans 2011))

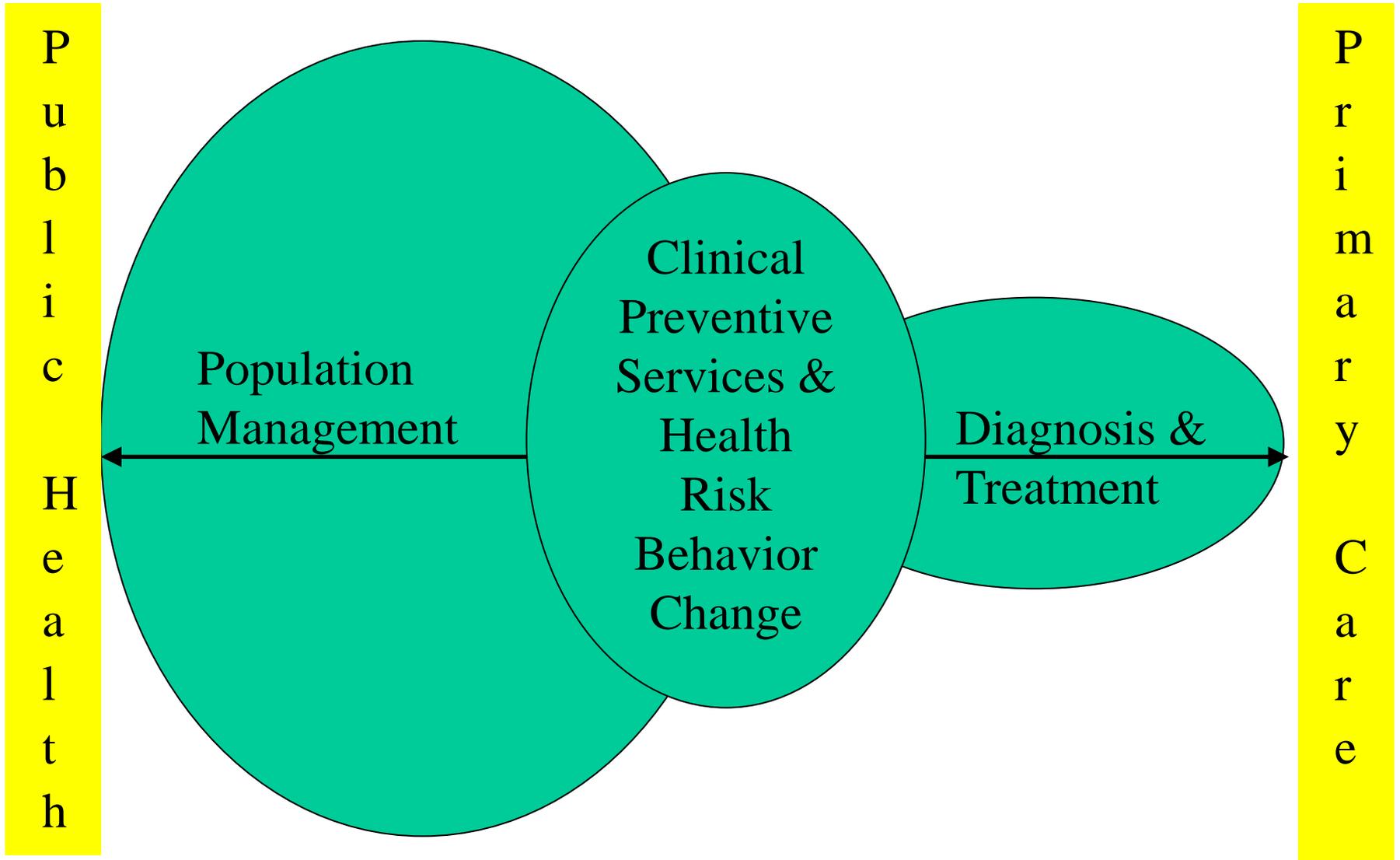
# “Trauma-Informed”

- Care provided by organizations in which every part of the service delivery system is assessed and potentially modified to include a basic understanding of how trauma affects the life of an individual seeking services
- Trauma-specific interventions are designed specifically to address the consequences of trauma in the individual and to facilitate healing

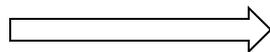
<http://www.samhsa.gov/nctic/trauma.asp>



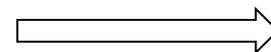
# Preventive Medicine Physicians as Inter-Disciplinary Catalysts



Primary  
Prevention



Secondary  
Prevention



Tertiary  
Prevention

# Questions?



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