

Toxic Stress, Behavioral Health and the Next Major Era in Public Health

September 8, 2014
12:00-1:30pm EDT

Thank you for joining us. The webinar will begin shortly.

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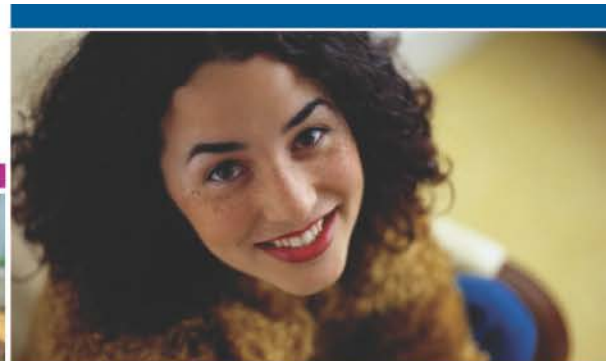




Richard Moore
Acting Deputy Director
Center for Substance Abuse Prevention



Toxic Stress, Behavioral Health and the Next Major Era in Public Health



David L. Shern, Ph.D.

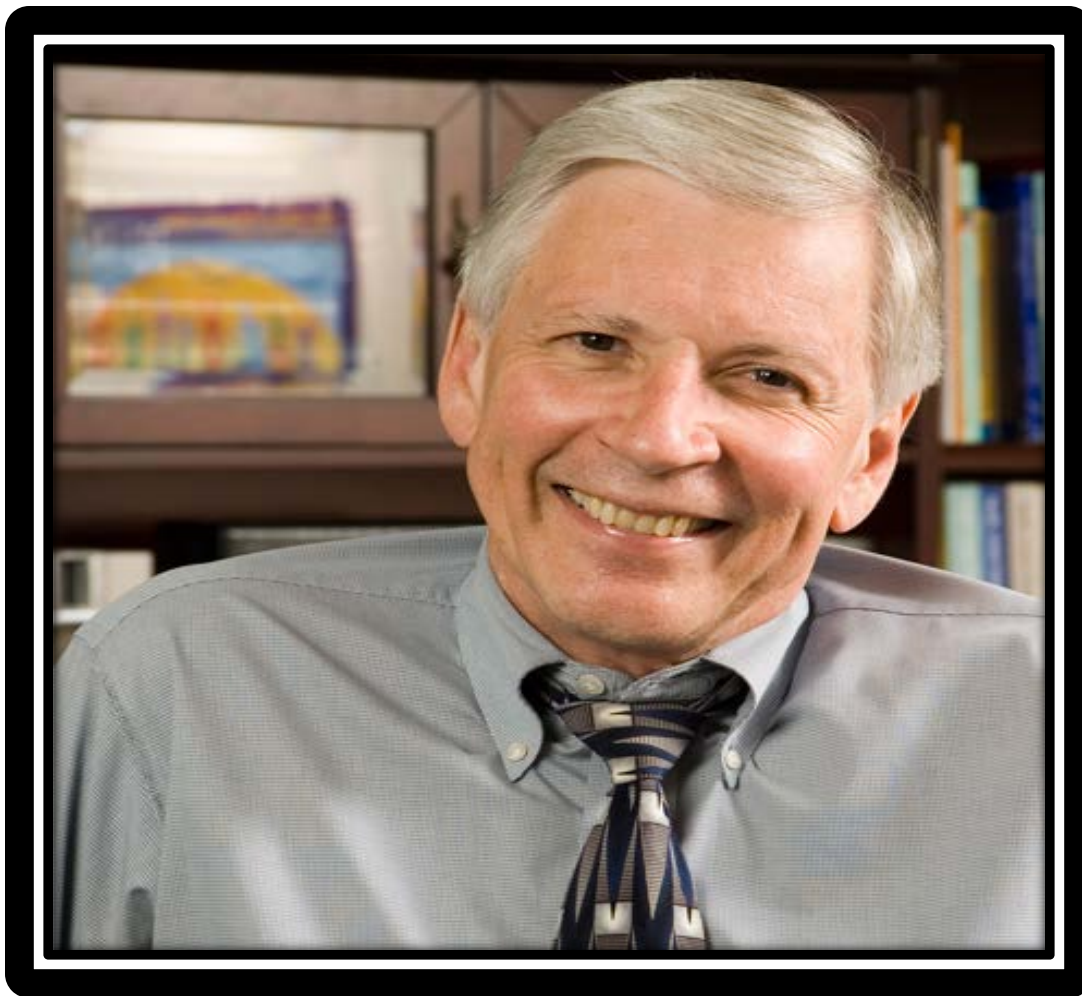
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DISCLOSURE STATEMENT

- This work was supported by a contract from the Substance Abuse and Mental Health Services Administration
- The views, opinions, and content of this publication are those of the authors and do not necessarily reflect the views, opinions, or policies of SAMHSA or HHS. Any references to any specific commercial products, process, service, manufacturer, or company does not constitute its endorsement or recommendation by the U.S. Government or HHS.

The Next Major Era in Public Health

Outline of presentation

- The Last Major Era in Public Health
- Today's Threat to our Health and Human Capital
- Understanding Causes – Vulnerability and Toxic Stress
- Intervention Strategies - Prevention and Treatment
- Implementing the Next Major Era
- Public Health Strategies and Infrastructure
- An Action Agenda



The Last Major Era in Public Health

Infectious Illness

Public Hygiene Movement

Germ Theory of Disease

- Prior to the Germ Theory infectious illnesses were the major source of disease and disability.
- Snows work was 'observational' and later confirmed by a better understanding of the causal factors.
- Our science about contemporary problems is better than Snow's.



Public Hygiene – Implementing the Germ Theory

- New infrastructure was constructed at the community level to:
 - Deliver clean water, safe food and dispose of waste
 - Deliver mass vaccinations.
 - Increase sanitation in medicine (hand washing)
 - Treat infections with antibiotics
- Legislation was passed
- Standards were set
- The public's health was dramatically improved



The Next Major Era in Public Health

Today's Health Crises - Loss of Human Capital

Mortality

Two decades ago
the United States ranked 28th
in global life expectancy.

Today, the United States is
36th.

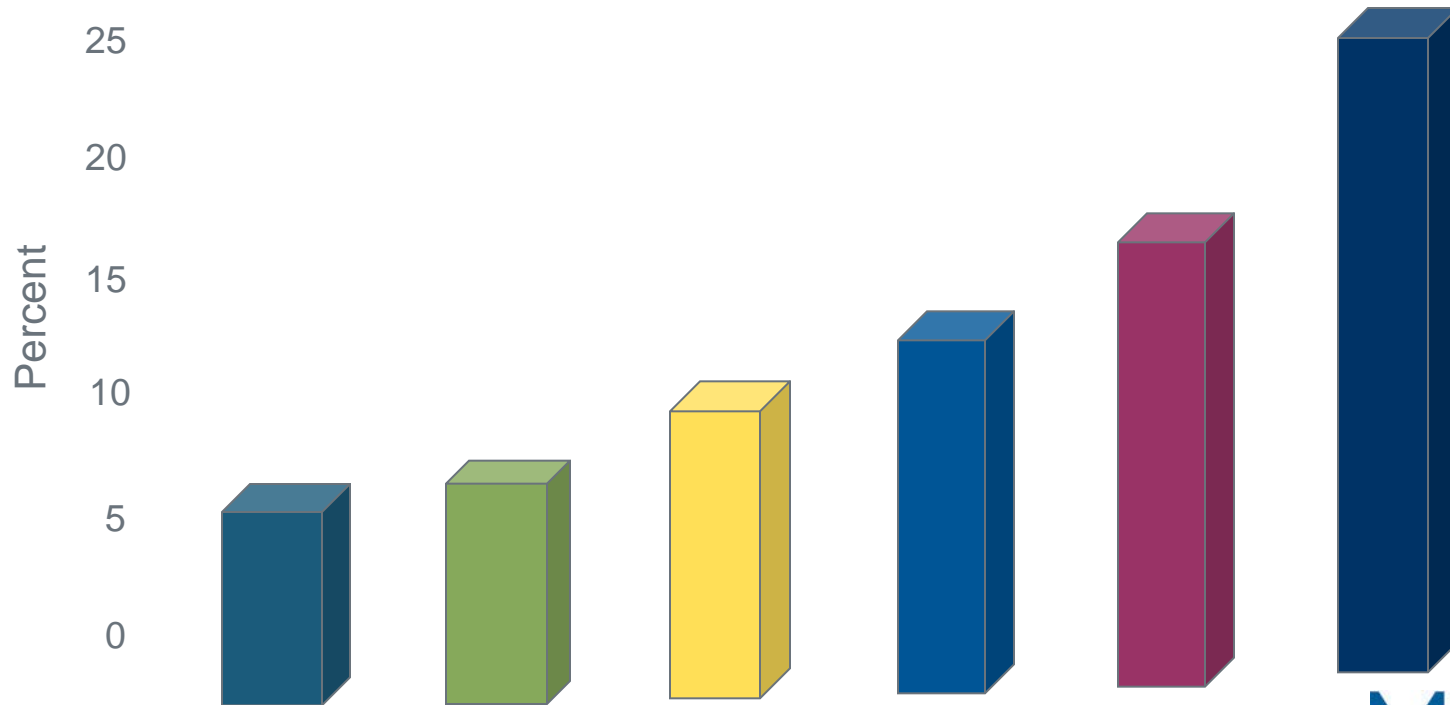
While we spend twice as
much per person than our
economic competitors



Highest Rates of Mental Illness in the World

Annual Prevalence of Mental Health Conditions

Italy Germany Belgium Netherlands France U.S.



Like Losing a Fortune 5 Company Each Year

Today's Epidemic Equivalent Indicators

- **Loss of Human Capital**
 - In 2009, the IOM estimated that the 2007 costs of mental, emotional and behavioral disorders in children exceeded **\$247 billion** each year.
 - Approximately \$ 296 billion in 2013 dollars
 - In 2002 serious mental health conditions are associated with **\$193.2 billion** in lost earnings per year.
 - Approximately 267 Billion in 2013 dollars
 - Only Wal-Mart and Exxon had greater earnings in 2012

Academic Achievement

Academic Performance Indicators

- Postsecondary graduation rates fell from 2nd to 16th by 2005
- Since 2009 the U.S. has dropped from
 - 10th to 20th in Reading
 - 24th to 30th in Math
 - 19th to 23rd in Science compared to Other OECD Nations



Poverty

- We have 44 million living in poverty
- Sixth highest child poverty rate and
- Highest income inequality of OECD Nations
- 15 million live in poverty but are employed
- Research suggests our mobility “in & out of poverty” is lower than any other “rich” country



Violence

- U.S. has the highest rates of violent deaths of 16 comparable countries.
- U.S. accounts for 80% of firearm deaths of OECD nations
 - 8 times that of our economic counterpart
- U.S. homicide rate for males 15-24 years old is the highest of 22 developed countries,
 - More than four times the rate of the next highest country.



Rates of Incarceration

- With a prison population of 2.3 million, we have the highest rate of incarcerations in the world:
 - U.S. 700/100,000 people**
 - China 110/100,000 people
 - France 80/100,000 people
- Increasing awareness of persons with mental and addictive disorders in prisons and jails



** Overrepresentation of minorities in juvenile Justice, as well as, the adult prison system



The Next Major Era in Public Health

So How Did We Get Here?

How Did We Get Here?

- Causal Factors in the Development of Illness - involve the interaction of risk & protective factors that produce health & illness
 - **Risk factors**
 - Genetic Vulnerability
 - Toxic Stress and Trauma
 - **Protective Factors**
 - Personal Skills and Resources
 - Environmental Buffers



Role of Toxic Stress and Trauma

Toxic Stress Defined

“...strong, frequent, and/or prolonged adversity—such as physical or emotional abuse, chronic neglect, caregiver substance abuse or mental illness, exposure to violence, and/or the accumulated burdens of family economic hardship—without adequate adult support. This kind of prolonged activation of the stress response systems can disrupt the development of brain architecture and other organ systems, and increase the risk for stress-related disease and cognitive impairment, well into the adult years.”

http://developingchild.harvard.edu/key_concepts/toxic_stress_response/

Biological Embedding

Exposure to Toxic Stress and Trauma

- Leads to
 - Neurological
 - Endocrine, &
 - Immune system changes that underlie health & mental health conditions
- In interaction with genetic predispositions and impacts on genetic expression
- Ultimately impacts behavioral health, the development of chronic illness and disability

Effects of Toxic Stress

ACE Study

- Seminal Role of the Adverse Childhood Experiences Study
- CDC/Kaiser Retrospective/Prospective Study of 17,000 Kaiser enrollees
- Reported adverse experiences in childhood in 10 categories of abuse, neglect and household disruption and
- Current health status
- Has resulted in 82 publications

ACE Study

Persons with Four or More Categories of Childhood Adverse Experiences Compared to Those with None had :

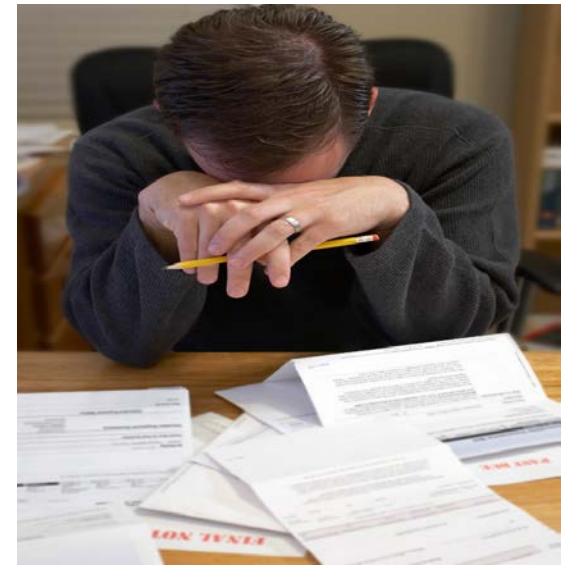
- 7.4 Fold Increase for **Alcoholism**
- 10.3 Fold Increase for **Drug Abuse**
- 4.6 Fold Increase for **Depression**
- 12.2 Fold Increase in **Suicide Attempts**
- 2.2 Fold Increase in **Ischemic Heart Disease**
- 1.9 Fold Increase in **Cancer,**
- 3.9 Fold Increase in **Chronic Lung Disease**
- 1.6 Fold Increase in **Skeletal fractures**
- 2.4 Fold Increase in **Liver Disease.**



Beyond the ACE Study - Toxic Stress and Adult Health and Wellbeing

Recent meta-analysis showed childhood abuse – in addition to increased behavioral health problems -

- related to neurological and
 - musculoskeletal problems as well as a
 - host of other conditions – including
 - most common/expensive chronic illnesses.
- Adversity, especially sexual abuse, increases suicide risk
 - Exposure to violence as a child increases risk of perpetrating violence as an adult
 - Abuse increases risk of criminality by 50%
 - Adversity increases risk for employment problems



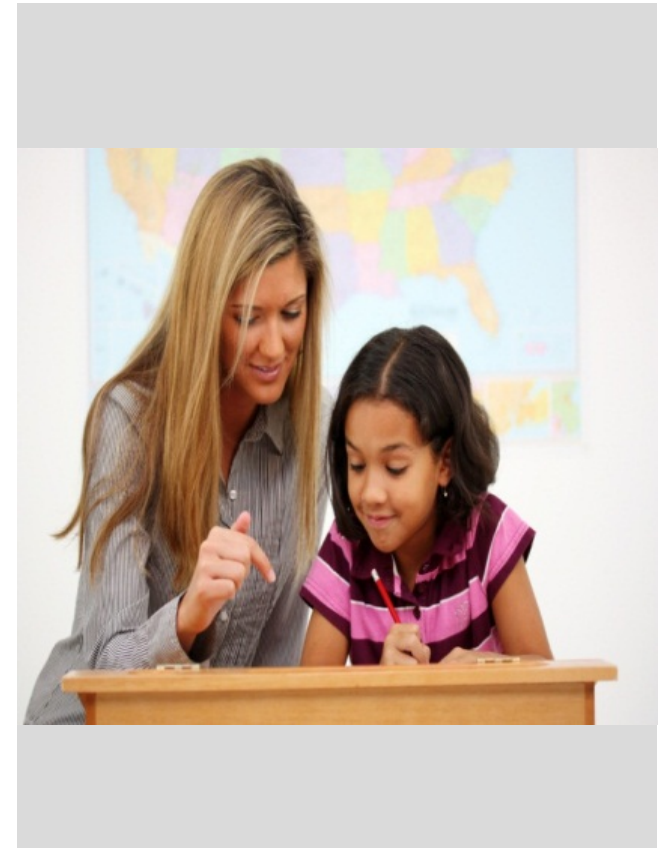
Beyond the ACE Study - Toxic Stress and Childhood Health

- One review found “overwhelming” evidence that maltreatment affects the development of mood and anxiety disorders, aggression, social skills deficits, peer relations and substance abuse in children and youth.
- Meta analysis concluded that adversity doubles rate of developing psychosis
- Children exposed to adversity
 - Start using substances earlier
 - Have higher lifetime rates
 - Perform more poorly in language, memory and executive control
 - Have higher rates of asthma and obesity

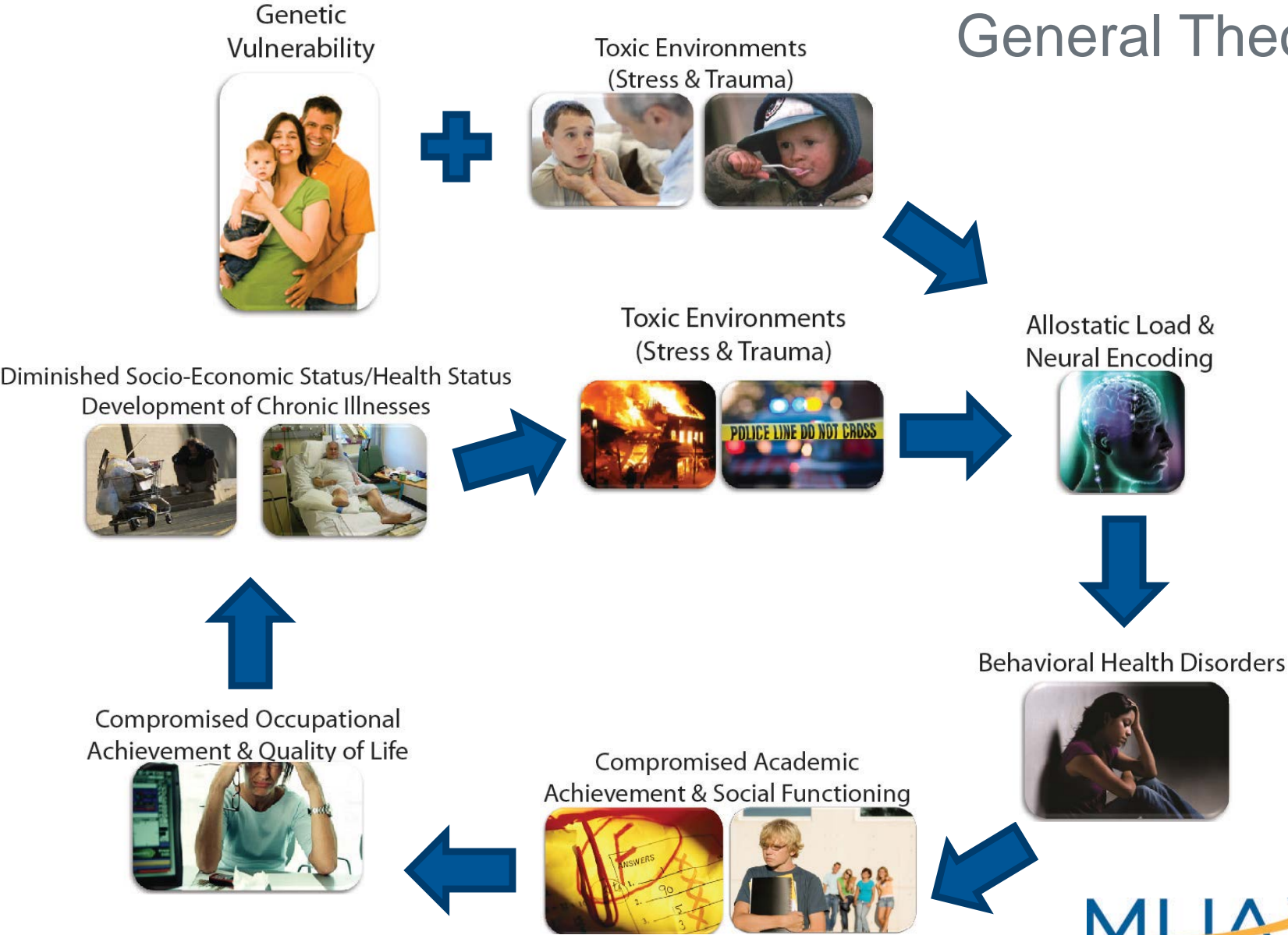
Romano, E. Babchishin, L, Marquis, R. & Frechette, S. (2014) Childhood maltreatment and educational outcomes. *Trauma, Violence and Abuse*, NEED Vol, 1-20.

The Foundations for Developmental Problems

- Half of all adolescents who will have a lifetime diagnosis of mental illness will have that diagnosis by age 14
- On average – they will not receive treatment until age 24
- Children with mental health conditions are likely to perform poorly in class, miss school, drop out, abuse drugs/alcohol, have poorer occupational goals & achievements



General Theory





The Next Major Era in Public Health

What Can We do?

What Can We Do?

Preventive Interventions

Implement evidence-based prevention & early intervention

- Reduce the community risk factors of trauma & toxic stress
- Increase resiliency in individuals & communities

Longitudinal data indicate that we have interventions that act like “behavioral vaccines”

- Nurse Family Partnership
- Seattle Social Development Project
- Good Behavior Game

Reduce Risk Factors

- **Implement evidence-based prevention & early intervention**
 - Home Visitation Programs have reduced child maltreatment by as much as 40%
 - Positive Parenting Programs (Triple P) have demonstrated a 28% reduction in child maltreatment at the **county** level
 - Olweus Bullying Prevention Program has reduced school violence by as much as 70%

Enhance Protective Factors

What Can We Do?

- **Implement evidence-based prevention & early intervention**
 - **Good Behavior Game**
 - First grade intervention program incentivizing & rewarding positive group behaviors significantly improves classroom management
 - At 13 year follow-up, study demonstrated:
 - 36% reduction in special education placements
 - 21% increase in high school graduation
 - 61% increase in college attendance
 - 35% less likely to abuse alcohol

Intervention Show Net Social Savings

Intervention	Total Benefit	Taxpayer Benefit	Cost	Net Value	Benefit to Cost Ratio
Seattle Social Development	\$15,238	\$4,591	\$3,081	\$12,157	\$4.94
Good Behavior Game	\$8,890	\$2,655	\$158	\$8,732	\$56.34
Strengthening Families (10-14)	\$4,259	\$1,061	\$1,098	\$3,160	\$3.89
Communities that Care	\$2,079	\$626	\$574	\$1,505	\$3.70

WSIPP. (2014). Benefit-Cost Results - General Prevention.
<http://www.wsipp.wa.gov/BenefitCost?topicId=6>



THE NEXT MAJOR ERA IN PUBLIC HEALTH

A Public Health Framework and Action Strategy

Basic Public Health Functions

Focus on population health

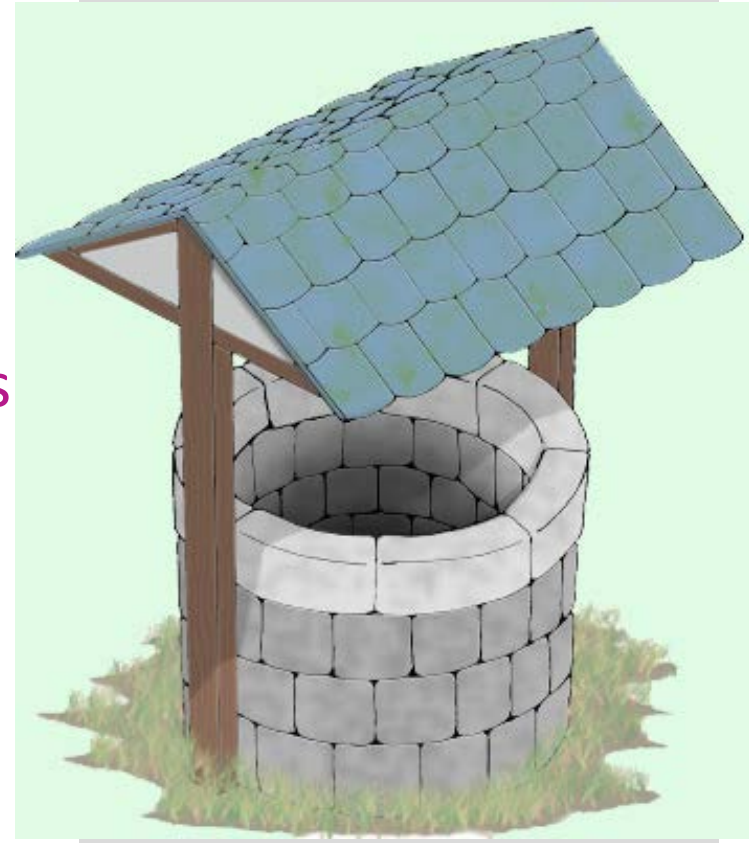
Assess, monitor and respond to at-risk populations

Use public policy to address problems

Integrated:

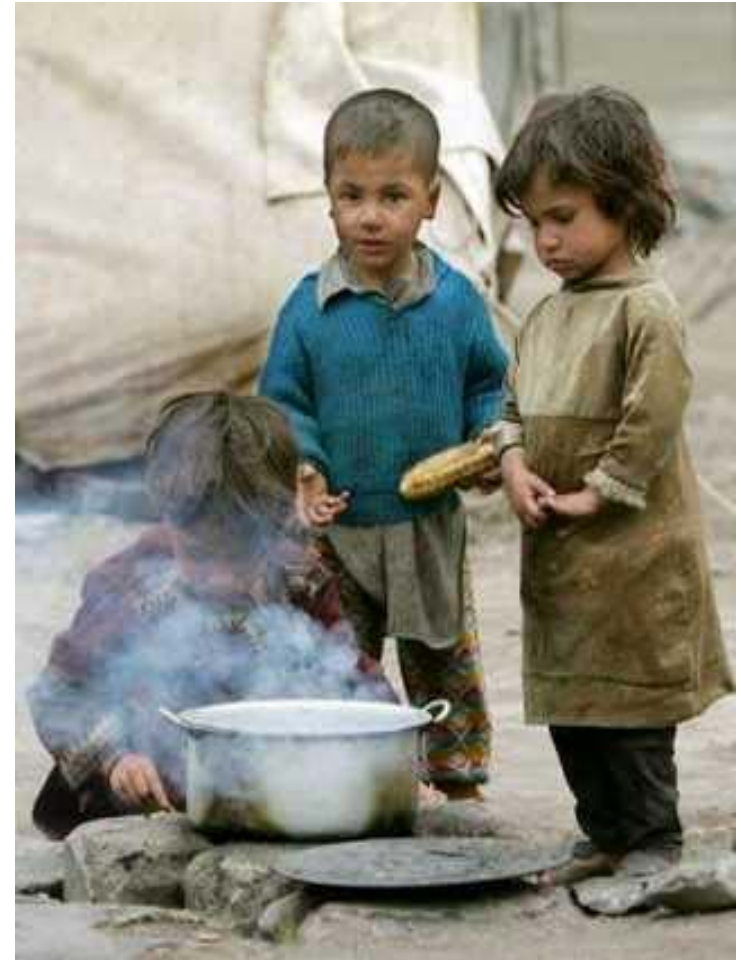
- Promotion
- Prevention
- Care and treatment

Research and development



Public Health Goals to Promote Wellness

- Safe, nurturing early childhood environment for all
- Freedom from all forms of violence across the lifespan
- Increased resilience of individuals, families and communities
- Effective treatment and supports to reduce the impact of trauma and reduce risk factors



Public Health Involves all Levels and Sectors of Society



- Citizens
- Communities
- Local Government
- Professionals
- Private Enterprise
- State Government
- Federal Government
- National Coalitions

Changes at the Individual/Family Level

Public awareness

Parent education and support

Preventing exposure to trauma

Resilience-building for:

Populations

At-risk groups

Access to trauma treatment

Evidence-based

At-risk groups



Changes at the Community Level

Community coalitions of citizens and providers

Place-based initiatives, anti-drug coalitions, community prevention

Trauma-informed services & communities

Health, education, citywide and statewide efforts

Local planning, monitoring & response

Geo-mapping hotspots

Identifying and responding to high risk situations

Environmental modifications



Changes at the Societal Level

Setting and monitoring public health goals

- National well-being index
- Monitor population ACE scores

Social policy levers

- Changing norms on violence against women
- Clean air and water acts as examples
- Affordable Care Act focus on prevention and population health integrated care

- New tax, family leave policies
- New funding models

New institutional knowledge base

- Professional training
- Practice standards





THE NEXT MAJOR ERA IN PUBLIC HEALTH

Getting Into Action

Building a National Movement

- Developing a common language and framework
- Citizen involvement
- Continued innovation in the field
- Higher education and professional organizations
- Public/private partnerships
- Foundation Leadership
- National coalitions of prevention and treatment advocates



Action Plan and Leadership Opportunities

Strategic partnerships
National reform agenda
Research and development
Disseminate knowledge
Leadership at all levels





THE NEXT MAJOR ERA IN PUBLIC HEALTH

Thoughts from Reactors

Commissioner Arthur C. Evans, Jr.



CITY OF PHILADELPHIA



DEPARTMENT of BEHAVIORAL HEALTH
and INTELLECTUAL disABILITY SERVICES

Toxic Stress Behavioral Health and the Next
Major Era in Public Health > Sept. 8, 2014

Recovery • Resilience • Self-Determination



@ArthurCEvans



DBHIDS



Public Health Approach:
A Call to Action

The call needs to:

- Make the case
- Point the way forward
- Anticipate the issues



Threats to a Public Health Approach for Behavioral Health:

Conceptual • Practical • Political

The background of the slide features a large, multi-tiered fountain with water cascading down. In the background, a tall, ornate building with a dome is visible, likely a government or institutional building. The scene is set in an urban environment with trees and other buildings.

Other Considerations

- Need for a Framework for Change
- Connecting the Dots
- “Brain Disorders” and the Unintended Consequences of How we Frame Things
- Metrics
- Developing Interventions



Sandra Bloom, M.D.
Associate Professor
School of Public Health
Drexel University



THE
85 RICHEST
PEOPLE
OWN THE SAME
WEALTH AS THE
3.5 BILLION
POOREST PEOPLE.



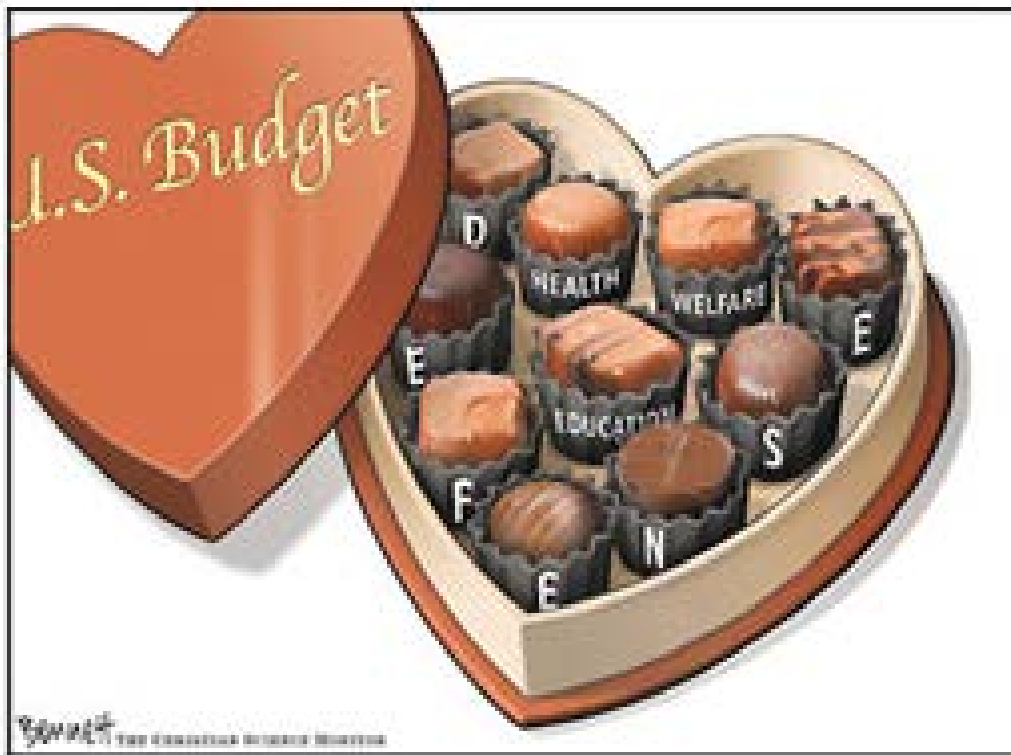
OXFAM



In 1979, the top 5% of families had average incomes that were 11.4 times larger than that of the bottom 20%;

By 2005, the ratio had risen to 20.9 times greater.

Mishel, L., J. Bernstein & S. Allegretto. 2007. *The State of Working America 2006/2007. An Economic Policy Institute Book*. ILR Press, an imprint of Cornell University Press, Ithaca, NY. Retrieved on December 1, 2008 from Inequality.org at <http://www.stateofworkingamerica.org/tabfig/01/SWA06 Fig1J.gif>



The Self-Sufficiency Standard measures how much income a family of a certain composition in a given place needs to adequately meet their basic needs—without public or private assistance.

<http://www.selfsufficiencystandard.org/index.html>



"The Self-Sufficiency Standard shows that, for most parents, earnings that are well above the official Federal Poverty Level are nevertheless far below what is needed to meet their families' basic needs", p.35.

The Self-Sufficiency Data for New York State, 2010

<http://www.selfsufficiencystandard.org/index.html>

ALLOSTATIC LOAD



Growing up in families facing economic hardship can produce elevated cortisol levels

Even infants and young children are affected by significant stresses that negatively affect their family and caregiving environments

Abnormal cortisol production may continue even after conditions improved

RELENTLESS STRESS = ALLOSTATIC LOAD



The wear-and-tear on the body and brain resulting from chronic over-activity or inactivity of physiological systems that are normally involved in adaptation to environmental challenge

INEQUALITY AND SOCIAL HEALTH



Most of the important health and social problems of the rich world are more common in unequal societies.

Using data from 23 rich countries and 50 US states, they found problems are anything from three to 10 times as common in more unequal societies.

Again and again, the Scandinavian countries and Japan are at one end of the scale as the most equal, while the US, UK and Australia are at the other.

The Spirit Level: Why Greater Equality Makes Societies Stronger.

by Richard G. Wilkinson and Kate Pickett,¹



Leah Harris

Director of the *National Coalition for Mental Health Recovery* and Communications and Development Coordinator at the *National Empowerment Center*

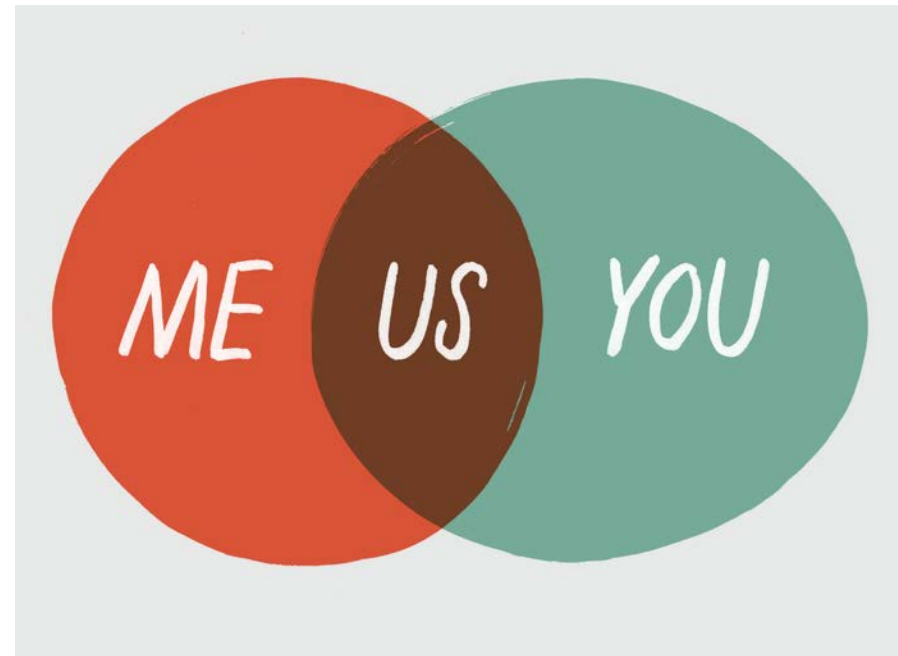
Implications of the ACE Study

“The findings from the ACE Study provide a remarkable insight into how we become what we are as individuals and as a nation. They are important medically, socially, and economically. Indeed, they have given us reason to reconsider the very structure of medical, public health, and social services practices in America.” – Drs. Felitti and Anda



Moving from Silos to Collaboration

- To prevent and reduce the impacts of trauma, we must move beyond all our silos.
- “There is no such thing as a single issue struggle, as we do not lead single issue lives” – Audre Lorde
- Reforming any one of our systems alone won’t make the necessary impact; the changes must be holistic and cross-systems.



Trauma Informed Peer Support

Collaborative, trauma informed approaches honor the central role of people with lived experience of trauma in individual, family, and community healing.

Examples: peer-to-peer support in mental health, recovery coaches in addictions, HIV/AIDS, homelessness, criminal justice, juvenile justice, vet-to-vet support, family-to-family support



For more on Trauma Informed Peer Support...

- **September 9, 2014: Trauma and its Impact/Cultural Considerations**
Darby Penney and Cathy Cave
- **September 16, 2014: Peer support basics/Trauma-informed Practices**
Darby Penney and Leah Harris
- **September 23, 2014: Applying Trauma-Informed Practices to Peer Support**
Darby Penney and Michael Skinner

All webinars are 1:00 -2:15 pm Eastern time

- **Weblink (no advanced registration needed): <http://nasmhpd.adobeconnect.com/tips/>**
- **[Or connect by audio: 1-888-727-2247](tel:1-888-727-2247) Conference ID 9638527**



Comments on “Next Era in Public Health”

Mady Chalk, Ph.D., M.S.W.
Policy Center Director
Treatment Research institute

Spectrum of Prevention and Public Health

The framework could usefully include:

THE SPECTRUM OF PREVENTION



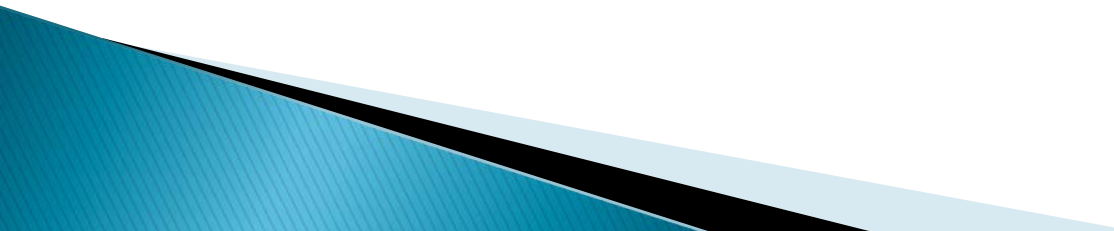
Framework

- ▶ It would be helpful if there was significantly more discussion about the existing, effective programs in this country that can serve as examples:
 - CADCA,
 - Harlem Children's Zone,
 - the Prevention Institute in CA Profiles of Community Transformation,
 - National Quality Forum Framework and Measures of Population Health
- ▶ Without them it seems diffuse

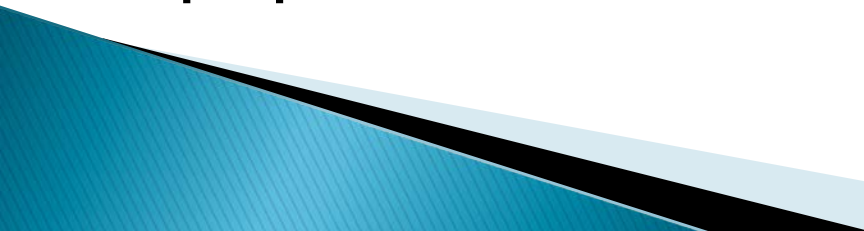
Terminology

- ▶ I am disturbed by the use of the term “toxic stressors” and the overuse of the term “adversity”
- ▶ While we understand today, much better than we have in the past, how various types of trauma impact health, behavioral health, and population health I am not sure of the utility of the use of these terms in the discussion--
--what does it add?

Cost Savings and Investments

- ▶ Cost savings/returns on investment need to be emphasized
 - ▶ Focusing prevention investments on communities with the most compromised health status could potentially lead to even greater returns---health disparities at the population level need to be a focus in this discussion
 - ▶ Intervention in partnership formation (public health, health care, and community organizations) requires a long-term, planned, involvement with appropriate funding---particularly Federal government funding and, where available, Foundation funding
- 

Outcomes and Payment

- ▶ Additional focus would be useful on potential outcomes of clinical/community population health interventions e.g., improved health, cost savings and,
 - ▶ Consideration of outcome-based payments for BOTH integrated health care delivery systems and balanced investments across the multiple other determinants of health needs to be discussed as part of advancing population health
- 



Elizabeth Hudson, LCSW
Director of the Wisconsin
Office of Children's
Mental Health

SHIFT



YOUR PERSPECTIVE

Apply Trauma-Informed Care

EMPOWERING. ENGAGING. EFFECTIVE.



SHIFT

YOUR PERSPECTIVE

Trauma-Informed Care

Elizabeth Hudson

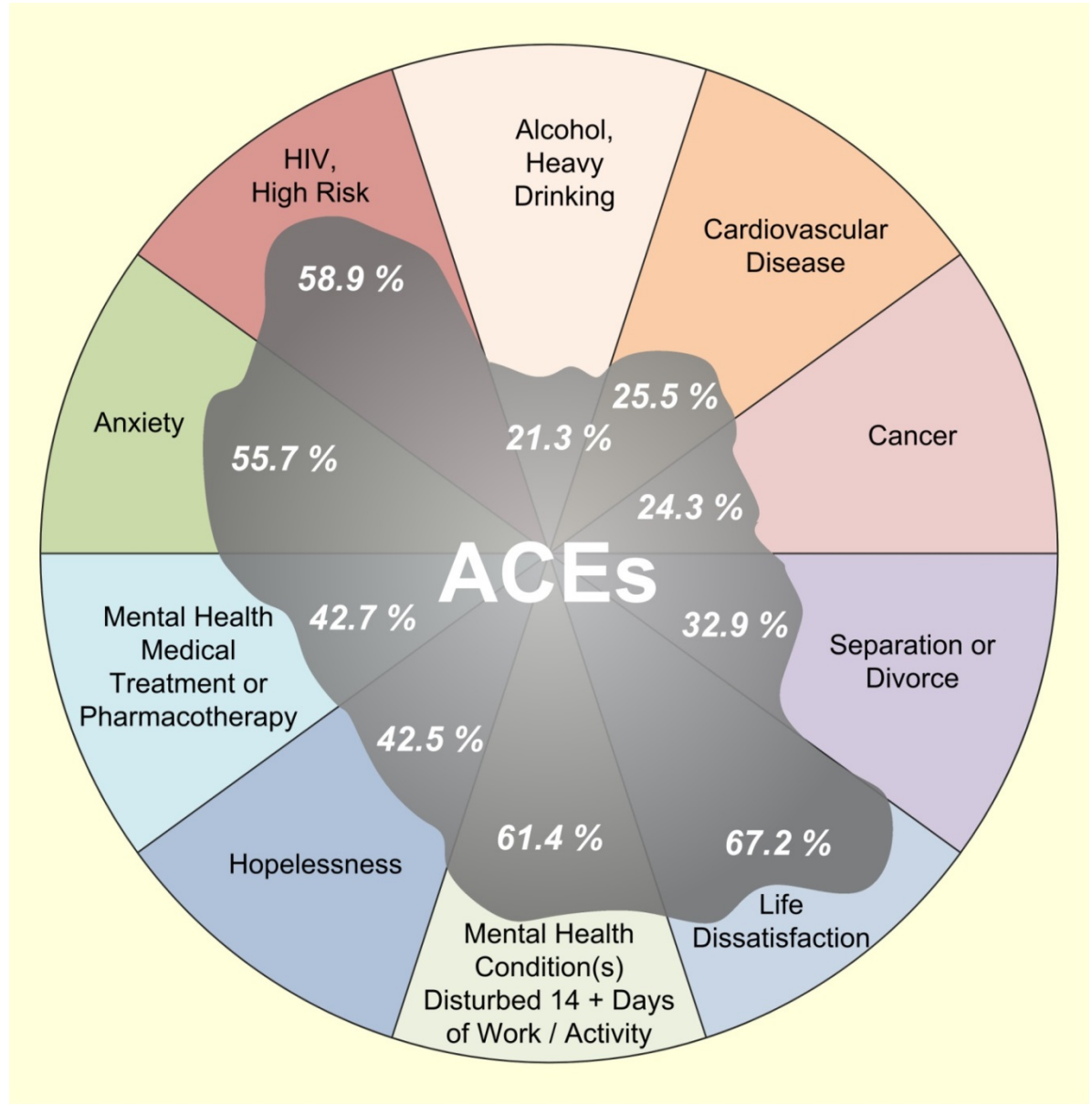
Director, WI Office of
Children's Mental Health

Elizabeth.Hudson@wi.gov

608-266-2771

Population Attributed Risk

Percentage of health, safety and prosperity conditions attributable to Adverse Childhood Experiences (ACEs)



Shift the Perspective from 'Mental Illness' to 'Adaptation'

Early experiences are biologically embedded in the development of the brain and other organ systems leaving a lifelong impact on learning, behavior and both physical and mental health. (Harvard Center on the Developing Child)

ACEs alone may explain 45% of all childhood-onset mental health issues and 29% of adult-onset mental health issues. (Green et al 2010)

In Wisconsin 47% of children (birth-17yo) have experienced 1+ ACEs and of those, 11% have experienced 3+. (Child Trends, 2014)

Shift the Perspective by Using a Public Health Approach as the Conceptual Framework

Behavioral Health
Providers

Trained **Coaches**
across multiple settings

Youth and Parent **Peer Specialists**

Supportive and Skilled
Child-and Family Serving **Workforce**

Shift the Perspective from 'Programs' to 'Systems' Thinking by Using Collective Impact

Common Agenda

Shared Measurement Systems

Mutually Reinforcing Activities

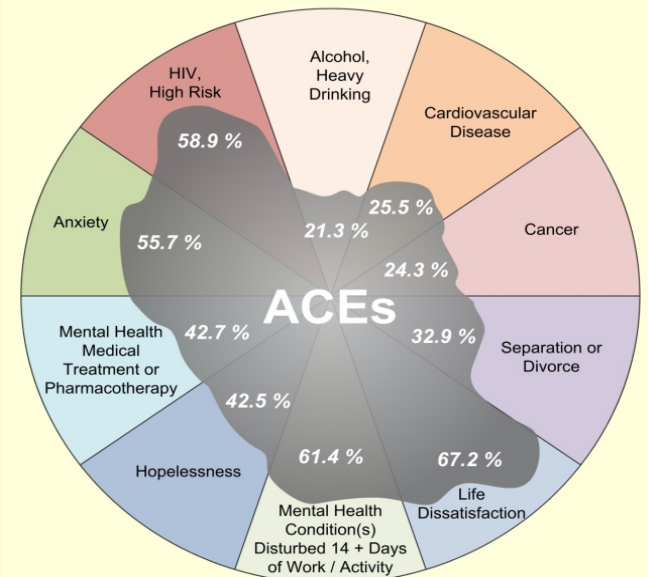
Continuous Communication

Backbone Support Organization



What is Predictable is Preventable

Reducing early adversity will simultaneously decrease all of these conditions.



WI Office of Children's Mental Health Vision:

Address and prevent root causes of mental health issues.

Help all children optimize their social and emotional well-being.



Dennis Embry, Ph.D.
Senior Scientist at PAXIS Institute in Tucson
Co-investigator at Johns Hopkins Center for Prevention



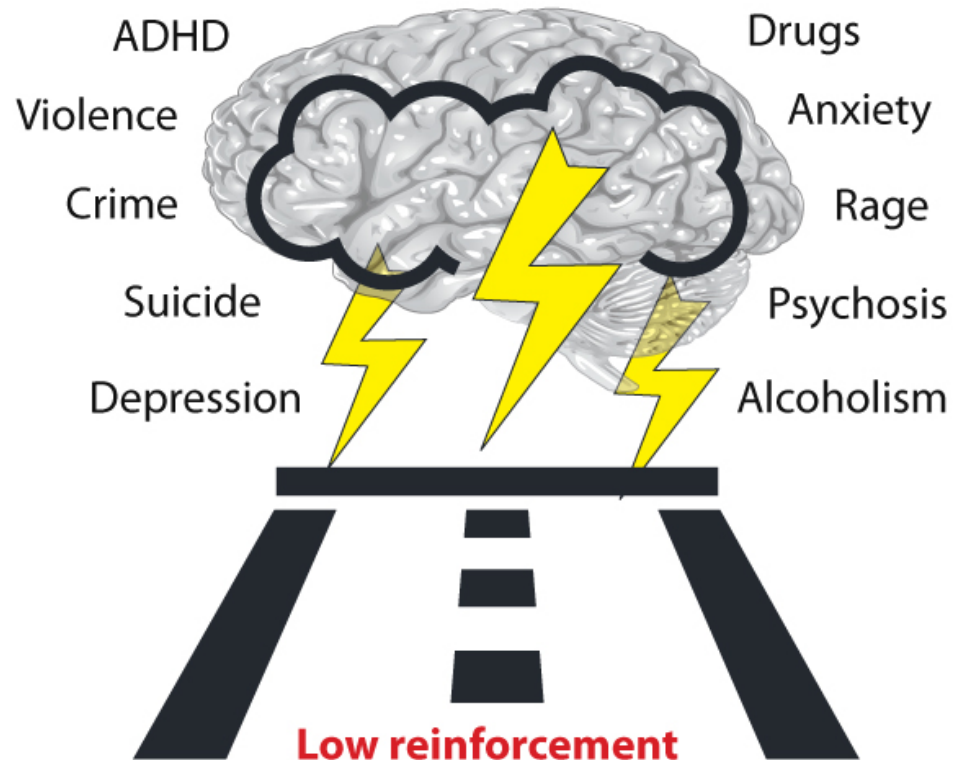
Nurturing
environments to evolve
our futures...

Dennis D. Grubby

See: <http://bit.ly/DennisPublications>

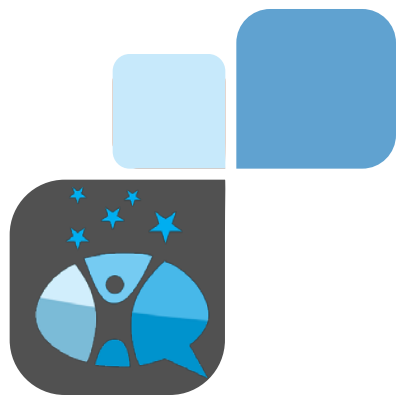
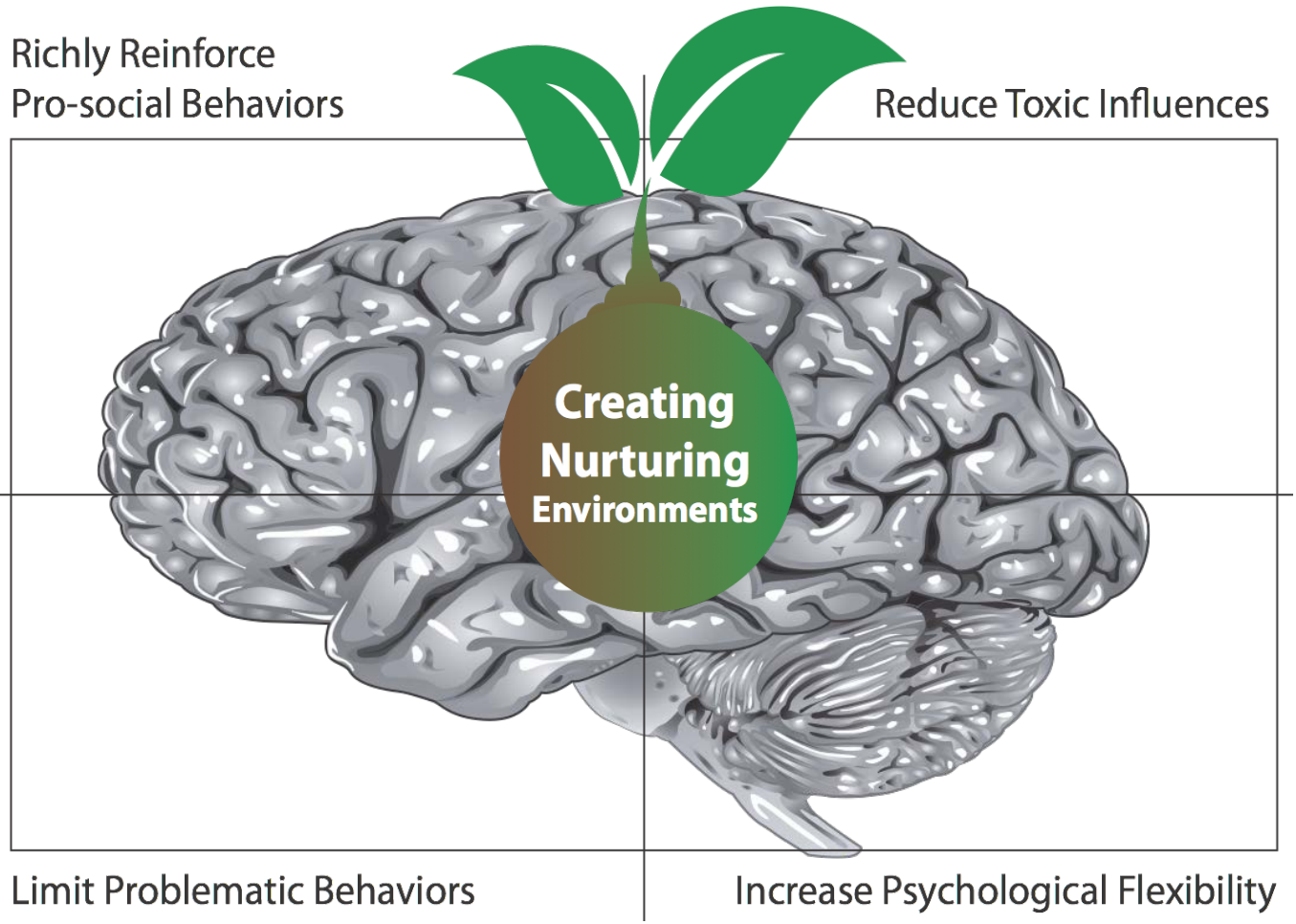


Severe, Stormy Mental, Emotional, and Behavioral Disturbances Ahead



**Low reinforcement
of prosocial behaviors**
High Exposure to Toxic Influences
High Exposure to Problematic Behaviors
Low Psychological Flexibility





A nurturing classroom: PAX GBG

Richly Reinforce
Pro-social Behaviors

- Daily group fun brief activity rewards for prosocial behavior
- Written “Tootles” from peers & adults

Reduce Toxic Influences

- Low rates exposure to tattling,
- Low exposure to bullying & other ACEs
- Low exposure to harsh adult actions



**Creating
Nurturing
Environments**

- 75% to 85% **reduction** in disturbing, disruptive, aggressive peer behaviors every day.
- Low rates of negative peer reinforcement.

- Increased ability to change the social environment
 - More ability to treat upsets lightly
 - Less attachment to diagnoses

Limit Problematic Behaviors

Increase Psychological Flexibility



NURTURING ENVIRONMENTS

EVOLVING A NURTURING SOCIETY



HOME

ABOUT NURTURING ENVIRONMENTS

ANTHONY BIGLAN

DENNIS EMBRY

Read the answer at:

NurturingEnvironments.org "CAN NURTURING ENVIRONMENTS TURN ON" PROTECTIVE GENES?

BY DENNIS EMBRY | MAY 6, 2014 | EPIGENETICS, PREVENTION, PUBLIC HEALTH

Yes, indeed, through a process called epigenetics. Chances are you've never heard of changes in gene expression, since most people were taught your genes are for life. Well, we do have our genes for life—but many of our genes change their expression based on our social interactions at home, at school or in the community. Many of

Mental-Behavioral Disorders Phenotype

- Externalizing Disorders
- Internalizing Disorders
- Riskier and Earlier Sex
- Violence to self / others
- Academic & Work Problems
- Alcohol/Tobacco Abuse
- Drug Addictions
- Health problems

Mental-Behavioral Health Phenotype

- Better academic success
- Better work success
- Delayed sex
- Positive mental health
- Better physical health
- Low Alcohol/Tobacco use
- Lower Drug use
- All violence lower

connections. You can get some more info at the National Institutes of Health, <http://bit.ly/BDNF-nih>, and another link has good overview about what BDNF does for human behavior, <http://bit.ly/BDNF-overview>.

What many people don't know is that some genes, like the 16 gene variations of BDNF, "listen" to the social and biological environment. If the gene variation "hears", for example, lots of threats coming from other humans or risk to future, the gene may express itself differently. If the gene "hears" reinforcement, and support from other humans, it may express itself differently—preferentially calculating a longer life.



Predicted Long Term Results from Johns Hopkins Studies if All US 1st Graders Nurtured

The IOM Cited intervention could impact all these US indicators, when this year's First Graders reach age 21...

Number	Outcome
350,306	fewer young people will need any form of special education services
226,668	more boys will likely graduate from high school.
272,002	more boys will likely enter university
361,444	more girls will likely graduate from high school
282,440	more girls will likely enter university
39,564	fewer young people will commit and be convicted of serious violent crimes
391,518	fewer young people will develop serious drug addictions
267,881	fewer young people will become regular smokers.

Estimates are available for every state and Congressional District. Visit GoodBehaviorGame.org

Net Cost Savings?

\$53 Billion Per 1st Grade Cohort (4 million kids) at age 21
(after \$300 million per cohort)

Aos, S., S. Lee, E. Drake, A. Pennucci, T. Klima, M. Miller, L. Anderson, J. Mayfield and M. Burley (2013) "Good Behavior Game, Return on Investment: Evidence-Based Options to Improve Statewide Outcomes." 8.



Discussion Panel and Participants

