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The ACE Study and Preventing Child Maltreatment

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Understanding Child Maltreatment and Its Prevention: A Brief History

- Prevalence:
 - 1980: first well done study is published
 - Key finding: Prevalence of child sexual abuse far greater than thought
- **Health Impact of maltreatment:**
 - Mid 1980s on – many small studies
 - **1998: ACE study findings published – new paradigm**
 - Key finding: Health impact of maltreatment far greater than imagined
- Econometric research:
 - 2003 – present
 - Key finding: Early investment of health care resources is crucial (conception – age 3) and should provide large return on investment.
- Neurobiology and physiology:
 - Most important work published in last 3-4 years.
 - Key finding: sensitive period in early life (0-3 years) for brain development. Maltreatment disrupts this and increases risk of intergenerational maltreatment.
- Prevention:
 - Very limited research base on primary prevention
 - In 2006 World Health Organization asks nations/health care entities to expand prevention research and publish their findings.



Adverse Childhood Experiences Study (ACE study)

- Collaborative between CDC and Kaiser HMO.
- Over 17,000 adults surveyed about childhood experiences.
- Average age = 57 years, white, middle class
- Medical histories available.

QUESTION: What impact do ACES have on health?



Adverse Childhood Experiences Study

- 10 Adverse Childhood Experiences (ACEs) surveyed:
 - 1. Physical abuse
 - 2. Sexual abuse
 - 3. Emotional abuse
 - -----
 - 4. Emotional neglect
 - 5. Physical neglect
 - -----
 - 6. Witness domestic violence
 - 7. Mental illness in home
 - 8. Family member incarcerated
 - 9. Alcohol/drug problems
 - 10. Parental separation or divorce

Key finding: all 10 ACEs have measurable, harmful effects on adult health.



ACE Study: Survey question for Domestic Violence

While you were growing up in your first 18 years of life, how often did your father (or stepfather) or mother's boyfriend do any of these things to your mother

- 1. Push, grab, slap or throw something at her?
- 2. Kick, bite, hit her with a fist, or hit her with something hard?
- 3. Repeatedly hit her over at least a few minutes?
- 4. Threaten her with a knife or gun, or use a knife or gun to hurt her?
 - 1=never
 - 2=once, twice
 - 3=sometimes
 - 4=often
 - 5=very often

A response of sometimes, often or very often for questions 1 and 2 and any response other than never for questions 3 and 4 defined a battered mother



ACE Score

- ACE score = total number of ACEs experienced.
 - Examples:
 - Childhood history of 1. exposure to domestic violence only
ACE score = 1
 - Childhood history of 1. parental alcoholism and 2. physical abuse. ACE score = 2.
 - Childhood history of 1. physical neglect, 2. sexual abuse, 3. parental divorce. ACE score =3.
 - Up to a maximum score of 10.
- Key finding: higher ACE score = greater risk for health problem.



ACE: Prevalence data

Key finding:

- About 2/3rd of those surveyed reported at least one ACE
- The 1/3 of participants with no reported ACEs were consistently healthier across all measures



ACE: Prevalence data

- Prevalence of ACEs in study group:
 - Sexual abuse = 21%
 - Domestic violence in childhood home = 13%
 - Substance abuse in home = 28%
 - Parental separation or divorce = 24%
 - Physical abuse = 28%
 - Emotional neglect = 15%
 - Emotional abuse = 11%
 - Physical neglect = 10%
 - Mental illness in home = 20%
 - Criminal household member = 5%

M Dong et al. (2003) Child Abuse and Neglect v27, pp 625-639.



ACEs & Domestic Violence

- ACE Score

| ACE Score | Risk for D.V. as an adult |
|-----------|---------------------------|
| 0 | 1.0 |
| 1 | 1.8x |
| 2 | 2.4x |
| 3 | 3.3x |
| 4 or more | 5.5x |

RF Anda et al. (2006) Eur. Arch Psychiatry Clin Neurosci. v256:174-86

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ACEs & Suicide Attempts

Attempted suicide during childhood or adolescence:

| ACE Score | Risk for suicide attempt |
|-----------|--------------------------|
| 0 | 1.0 |
| 1 | 1.4x |
| 2 | 6.3x |
| 3 | 8.5x |
| 4 | 11.9x |
| 5 | 15.7x |
| 6 | 28.9x |
| 7 or more | 50.7x |

S.H. Dube et al. (2001) JAMA v 286:3089-96



ACEs & Alcohol Abuse

- Alcohol use before age 14 :

| ACE Score | Relative Risk |
|-----------|---------------|
| 0 | 1.0 |
| 1 | 1.5x |
| 2 | 2.4x |
| 3 | 3.9x |
| 4 | 6.2x. |

S. R. Dube et al. (2006) J Adolescent Health, v38:444.e1-444.e10

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ACEs and Adult Alcoholism



ACEs & Illicit Drug Use

| ACE score | Relative risk |
|-----------|---------------|
| 0 | 1.0 |
| 1 - 2 | 2.0 x |
| 3 | 2.5x |
| 4 | 4.0x |
| 5 | 6.5x. |

SR Dube et al. (2003) Pediatrics, v111:564-572

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ACEs & Cardiovascular Disease

| Risk factors for heart disease: | Relative risk |
|---------------------------------|---------------|
| Domestic violence in home | 1.4x |
| Childhood sexual abuse | 1.4x |
| Childhood neglect | 1.4x |
| Childhood physical abuse | 1.5 x |
| ----- | |
| Physical inactivity | 1.7x |
| Hypertension | 1.9x |
| Severe obesity | 2.7x |
| ----- | |
| Multiple ACEs | 3.6x |

M Dong et al. (2004) Circulation v110:1761-66



ACEs & Cancer

- ACE score of 4 or greater nearly doubles the risk for cancer.

VJ Felitti et al. (1998) Am J Prev. Med. v14: 245-58



Common Diseases & ACEs

Stepwise increased risk for:

- Heart disease
- Cancer
- COPD
- Skeletal fractures
- Sexually transmitted diseases
- Liver disease
- Autoimmune disorders



Behavioral health & ACEs

Stepwise increased risk for:

- Clinical depression
- Suicide
- Domestic violence
- Anxiety disorders
- Hallucinations
- Sleep disturbances
- Autobiographical memory disturbances
- Poor anger control
- Relationship problems
- Employment problems



Reproductive Health & ACEs

Stepwise increased risk for:

- Early age at first intercourse
- Teen pregnancy
- Unintended pregnancy
- Teen paternity
- Fetal death



ACE Survey Summary

- ACEs are common
- Their impact on health is broad based, life long and more harmful than was imagined
- Neurobiological changes of ACEs increase risk of intergenerational patterns
- Econometric studies show early intervention is best possible investment of health care resources.



Why Any Success at Prevention is Important

Example: A prevention program that reduced ACEs in a family from 3 to 1 results in:

- Elimination of 5 of 6 suicide attempts
- Risk for alcohol dependence cut in half for next generation
- and so on for 33 health measures studied to this point.



Alaskan Angle

- State of Alaska requires Medicaid customers receiving behavioral health to complete an AST – Alaska Screening Tool
- AST re-designed this year to incorporate a set of **lifetime** trauma questions that explore about ½ of the ACE questions
- Their data analysis shows a similar pattern; more adverse experience had a meaningful relationship with psychological problems
- At this point, Alaska appears to be the first state to take this step



Prevention Efforts: The Birth Experience

- Breastfeeding causes release into brain of:
 - Oxytocin – bonding hormone
 - Prolactin – promotes parental care
 - Dopamine – pleasure hormone

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Swain et al. (2007) *Journal of Child Psychology and Psychiatry*, 48, 262-287.

- Hypothesis: longer duration of breastfeeding might prevent child maltreatment



Prevention Efforts: The Birth Experience

- Study; 6,621 mother-infant pairs followed over 15 years (Australia)
- Results:
 - Mothers who breastfed more than 4-months were 4.8x less likely to maltreat child
 - After controlling for 18 potential confounding variables, mothers who nursed 4-months or more were still 2.6 x less likely to maltreat child

L Strathearn et al (2009). Pediatrics v123:483-93



Effective Practices to Increase Duration of Breastfeeding

1. Birth experience:

- Skin to skin contact immediate post partum
- Rooming in post delivery
- Doula support during birth
- Vaginal v. caesarian delivery
- Lactation consult

2. Education:

- Pregnancy interactive group education

3. Generous maternity policies



Prevention Efforts: Family Leave Policies

- More generous family leave has been linked to:
 1. Improved maternal mental health
 2. Longer duration of breast feeding
 3. Lower child mortality rates

Stahelin et al. 2007, Int J Public Health, 52, 202-209

- Nations with higher family leave scores (more generous benefits) had lower mortality due to child maltreatment

M Erickson, 2008, World Psych Congress Abstract, Prague



Athabascan Birthing Traditions

- During the first 10-days post partum, mother and infant remained together and were totally supported by family (enhancing bonding)
- Following this, extended family helped with ongoing care (optimize parental learning and support)



Prevention Efforts: Nurse Family Partnership

Nurse-family partnership:

- Nurses visit home, teach and support parents for 2 years post birth
- Program designed by David Olds at U. Colorado
- Statewide initiatives in Colorado, Oklahoma, Pennsylvania

Key Finding 1: Families visited by a nurse were 48% less likely to have abused or neglected offspring at 15-year follow up

Key Finding 2: Para-professional programs have not been effective for prevention e.g. Healthy Families Alaska

D. Olds et al (2007) J Child Psy. And Psych, v48:355-91

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Prevention Efforts: Family Wellness Warriors Initiative (FWWI)

- Attachment research shows that adults who remember and “tell their story” in a full and honest way are unlikely to repeat generational abuse M Main and R Goldwyn (1984) Child Abuse and Neglect v8:203-17.
- SCF Family Wellness Warriors Initiative (FWWI) helps people remember and tell their story from the heart.
- Method: Helping people to tell their story in 3-5 day gatherings that integrate spiritual and cultural renewal with evidence-based psychology



Prevention Efforts: FWWI

- Created in 1998 by Alaska Native and American Indian Peoples
- Goal: To end child abuse and neglect in this generation.
- Assessment at 6-month follow-up shows the association between “real family” and “ideal family” has become much closer ($p=.00039$).



Summary

- The potential for prevention appears to be greater than generally appreciated:
 - but prevention research has focused on whether a specific intervention can prevent child maltreatment
 - perhaps it is time to ask who can we create optimally effective prevention programs?
 - it appears optimal programs may require an integrated prevention approach:
 1. Improving birth experience for at risk mothers
 2. Increasing duration of breastfeeding
 3. Nurse family partnership for all at risk mothers
 4. Improved national family leave policy
 5. Improving self awareness through personal story

