

## Adverse Childhood Experiences and Its Influence on Health

Katie Nealon MD2, under the direction of F. Dennis Dawgert, M.D., Clinical Associate Professor of Pediatrics, completed a summer research project on physicians' knowledge and experience focused on the ACE-Adverse Childhood Experiences-study. The subsequent data revealed that 85% of the clinical teaching faculty at TCMC, across all campuses, had never heard of or read this study. Importantly 65% were interested in learning more about it. The data demonstrates the accuracy of the headline that this is "The largest, most important public health study you never heard of."



### What is the ACE study?

Vincent Felitti, MD, Robert Anda, MD, et al published, link below, this landmark study in 1998. It was a large prospective survey with 17,421 respondents who were enrolled in The Kaiser –Permanente Health plan in San Diego, California. They looked at Adverse Childhood Experiences and their relationship to disease factors and incidence, quality of life, health care utilization and mortality.

### ACEs are defined in three broad categories with ten ACE events:

#### ABUSE:

**Physical (28%)\***

**Sexual (21%)**

**Psychological (11%)**

#### NEGLECT:

**Physical (10%)**

**Emotional (15%)**

**Criminal Behavior/Incarceration (6%)**

#### FAMILY DYSFUNCTION:

**Substance Abuse (27%)**

**Loss of parent ( 23%)**

**Mental Illness (17%)**

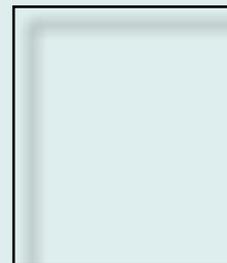
**Domestic Violence (13%)**

*\*number in parenthesis equals percent incidence in study group*

The study looked at how many ACEs occurred in a patient. Each event counted as one Experience. So if none of these occurred in a patient's history the score was zero; if five occurred the score was five. If a patient was sexually abused multiple times this counted as one event of sexual abuse.

**Read more from the CDC at:**

[http://www.cdc.gov/violenceprevention/acestudy/about\\_ace.html](http://www.cdc.gov/violenceprevention/acestudy/about_ace.html)



"As a pediatrician, I view preventive care as a major benefit to the health and well being of my patients. I was unaware of the ACE study until three years ago. I have come to believe that the findings it has demonstrated can be a major benefit to the health of our patients for years. I asked Kathleen Nealon, MD2, explored what physicians in the TCMC community know about the game changing findings in this study. I considered myself fairly attuned to preventive issues but also was personally surprised that for 17 years since it's publication, I had no idea about this important study."

-F. Dennis Dawgert, M.D.  
Clinical Associate Professor of Pediatrics



"Medical students only have four years to learn the crucial elements of being a physician before we get the two letters at the end of our name that, to much of the public, mean that we know everything there is to know about health and wellness. The truth is, we are limited by our time and education. The goal of my research is not to tell physicians that they don't know everything, but to expose a gap in our education that we can easily fill and that, when filled, will be invaluable to our patients."

-Kathleen Nealon, MD2

# ACE RISK FACTORS AND DISEASE INCIDENCE

## Risk Factors and Diseases

Smoking (4)  
Alcoholism (8)  
drug Abuse (12)  
Severe Obesity (2)  
Physical inactivity (2)  
IV drug Use (12)  
Depressed Mood (4)  
STD'S (4)  
Suicide Attempts (12)  
High Number of Sex Partners (4)  
Ischemic Heart Disease (2)  
Stroke (3)  
COPD (4)  
Hepatitis (2.5)

Next the researchers looked at the Risk Factors and Disease Incidence listed above and correlated them with a patient's ACE score. Risk Factors and diseases increase in odds ratio are shown in parenthesis.

Therefore, if you have an ACE Score of zero you still have a number of smokers but if your ACE score is greater than four your incidence of smoking is two times higher. With the risk of suicide if your ACE score is greater than four you have a 12 times greater risk than someone with no ACE experiences!

## The ACE Study points out 4 important issues:

- There is a DRECT link between Childhood trauma and adult onset of chronic disease, mental illness and prison time.
- ACE s are common. 66 percent of the people in this study experienced one or more types of ACE. 87 percent of those with an Ace of one had two or more ACEs.
- Increases in the number of ACEs results in an increasing risk of medical, mental and social problems in adulthood.
- This is a significant health risk for all. We cannot say it occurs in minorities because 75 percent were white; nor can we say it is a problem for those who are poorly educated because more than 50 percent were college educated and the majority were employed, insured and skilled.

Advances in Neuroscience, Neurobiology, Neuroimmunology, Genetics, Epigenetics, Social science and Psychiatry have shown that lifelong changes in brain structure, especially to the pre-frontal cortex, amygdala, corpus callosum and limbic system. Brain chemistry changes occur with chronic toxic stress.

The Hypothalamic-Pituitary-Adrenal axis is altered with release of cortisol and inflammatory mediators that can alter the immune system. Some of these changes seem to be then carried genetically to subsequent generations.

This is a giant leap in our understanding of chronic disease. We need to be aware and in the fore-front at TCMC of leading and co-coordinating progress and research that can help our patients and our society to prevent and reduce the burden of chronic disease.



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