02/09/16 PRESENTATION: ADVERSE CHILDHOOD EXPERIENCES (ACEs) [MEETING CANCELLED-NOT HEARD]

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The Origins of Addiction:
Evidence from the Adverse Childhood Experiences Study

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The Origins of Addiction:

Evidence from the Adverse Childhood Experiences Study

"In my beginning is my end."
T.S. Eliot, "Four Quartets" [1]

ABSTRACT:

A population-based analysis of over 17,000 middle-class American adults undergoing comprehensive, biopsychosocial medical evaluation indicates that three common categories of addiction are strongly related in a proportionate manner to several specific categories of adverse experiences during childhood. This, coupled with related information, suggests that the basic cause of addiction is predominantly experience-dependent during childhood and not substance-dependent. This challenge to the usual concept of the cause of addictions has significant implications for medical practice and for treatment programs.

Purpose:

My intent is to challenge the usual concept of addiction with new evidence from a population-based clinical study of over 17,000 adult, middle-class Americans. The usual concept of addiction essentially states that the compulsive use of 'addictive' substances is in some way caused by properties intrinsic to their molecular structure. This view confuses mechanism with cause. Because any accepted explanation of addiction has social, medical, therapeutic, and legal implications, the way one understands addiction is important. Confusing mechanism with basic cause quickly leads one down a path that is misleading. Here, new data is presented to stimulate rethinking the basis of addiction.

Background:

The information I present comes from the Adverse Childhood Experiences (ACE) Study.[2] The ACE Study deals with the basic causes underlying the 10 most common causes of death in America; addiction is only one of several outcomes studied.

In the mid-1980s, physicians in Kaiser Permanente's Department of Preventive Medicine in San Diego discovered that patients successfully losing weight in the Weight Program were the most likely to drop out. This unexpected observation led to our discovery that overeating and obesity were often being used unconsciously as protective solutions to unrecognized problems dating back to childhood.[3, 4] Counterintuitively, obesity provided hidden benefits: it often was sexually, physically, or emotionally protective.

Our discovery that public health problems like obesity could also be personal solutions, and our finding an unexpectedly high prevalence of adverse childhood experiences in our middle class adult population, led to collaboration with the Centers for Disease Control (CDC) to document their prevalence and to study the implications of these unexpected clinical observations. I am deeply indebted to my colleague, Robert F. Anda MD, who skillfully designed the Adverse Childhood Experiences (ACE) Study in an epidemiologically sound manner, and whose group at CDC analyzed several hundred thousand pages of patient data to produce the data we have published.

Many of our obese patients had previously been heavy drinkers, heavy smokers, or users of illicit drugs. Of what relevance are these observations; do they imply some unspecified innate tendency to addiction? Is addiction genetic, as some have proposed for alcoholism? Is addiction a biomedical disease, a personality disorder, or something different? Are diseases and personality disorders separable, or are they ultimately related? What does one make of the dramatic recent findings in neurobiology that seem to promise a neurochemical explanation for addiction? Why does only a small percent of persons exposed to addictive substances become compulsive users?

Although the problem of narcotic addiction has led to extensive legislative attempts at eradication, its prevalence has not abated over the past century. However, the distribution pattern of narcotic use within the population has radically changed, attracting significant political attention and governmental action.[5] The inability to control addiction by these major, well-intended governmental efforts has drawn thoughtful and challenging commentary from a number of different viewpoints.[6,7]

In our detailed study of over 17,000 middle-class American adults of diverse ethnicity, we found that the compulsive use of nicotine, alcohol, and injected street drugs increases proportionally in a strong, graded, dose-response manner that closely parallels the intensity of adverse life experiences during childhood. This of course supports old psychoanalytic views and is at odds with current concepts, including those of biological psychiatry, drug-treatment programs, and drug-eradication programs. Our findings are disturbing to some because they imply that the basic causes of addiction lie within *us* and the way we treat each other, not in drug dealers or dangerous chemicals. They suggest that billions of dollars have been spent everywhere except where the answer is to be found.

Study design:

Kaiser Permanente (KP) is the largest prepaid, non-profit, healthcare delivery system in the United States; there are 500,000 KP members in San Diego, approximately 30% of the greater metropolitan population. We invited 26,000 consecutive adults voluntarily seeking comprehensive medical evaluation in the Department of Preventive Medicine to help us understand how events in childhood might later affect health status in adult life. Seventy percent agreed, understanding the information obtained was anonymous and would not become part of their medical records. Our cohort population was 80% white including Hispanic, 10% black, and 10% Asian. Their average age was 57 years; 74% had been to college, 44% had graduated college; 49.5% were men. In any four-year period, 81% of all adult Kaiser Health Plan members seek such medical

evaluation; there is no reason to believe that selection bias is a significant factor in the Study. The Study was carried out in two waves, to allow mid point correction if necessary. Further details of Study design are described in our initial publication.[2]

The ACE Study compares adverse childhood experiences against adult health status, on average a half-century later. The experiences studied were eight categories of adverse childhood experience commonly observed in the Weight Program. The prevalence of each category is stated in parentheses. The categories are:

- recurrent and severe physical abuse (11%)
- recurrent and severe emotional abuse (11%)
- contact sexual abuse (22%)

growing up in a household with:

- an alcoholic or drug-user (25%)
- a member being imprisoned (3%)
- a mentally ill, chronically depressed, or institutionalized member (19%)
- the mother being treated violently (12%)
- both biological parents *not* being present (22%)

The scoring system is simple: exposure during childhood or adolescence to any category of ACE was scored as one point. Multiple exposures within a category were not scored: one alcoholic within a household counted the same as an alcoholic and a drug user; if anything, this tends to understate our findings. The ACE Score therefore can range from 0 to 8. Less than half of this middle-class population had an ACE Score of 0; one in fourteen had an ACE Score of 4 or more.

In retrospect, an initial design flaw was not scoring subtle issues like low-level neglect and lack of interest in a child who is otherwise the recipient of adequate physical care. This omission will not affect the interpretation of our First Wave findings, and may explain the presence of some unexpected outcomes in persons having ACE Score zero. Emotional neglect was studied in the Second Wave.

The ACE Study contains a prospective arm: the starting cohort is being followed forward in time to match adverse childhood experiences against current doctor office visits, emergency department visits, pharmacy costs, hospitalizations, and death. Publication of these analyses soon will begin.

Findings:

Our overall findings, presented extensively in the American literature, demonstrate that:

- Adverse childhood experiences are surprisingly common, although typically concealed and unrecognized.
- ACEs still have a profound effect 50 years later, although now transformed from psychosocial experience into organic disease, social malfunction, and mental illness.
- Adverse childhood experiences are the main determinant of the health and social well-being of the nation.

Our overall findings challenge conventional views, some of which are clearly defensive. They also provide opportunities for new approaches to some of our most difficult public health problems. Findings from the ACE Study provide insights into changes that are needed in pediatrics and adult medicine, which expectedly will have a significant impact on the cost and effectiveness of medical care.

Our intent here is to present our findings only as they relate to the problem of addiction, using nicotine, alcohol, and injected illicit drugs as examples of substances that are commonly viewed as 'addicting'. If we know *why* things happen and *how*, then we may have a new basis for prevention.

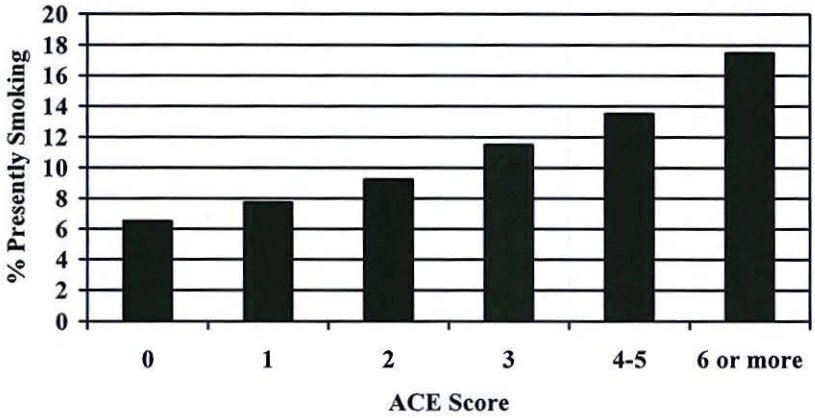
Smoking:

Smoking tobacco has come under heavy opposition in the United States, particularly in southern California where the ACE Study was carried out. Whereas at one time most men and many women smoked, only a minority does so now; it is illegal to smoke in office buildings, public transportation, restaurants, bars, and in most areas of hotels.

When we studied current smokers, we found that smoking had a strong, graded relationship to adverse childhood experiences. Figure 1 illustrates this clearly. The ***p*** value for this and all other data displays is .001 or better.

This stepwise 250% increase in the likelihood of an ACE Score 6 child being a

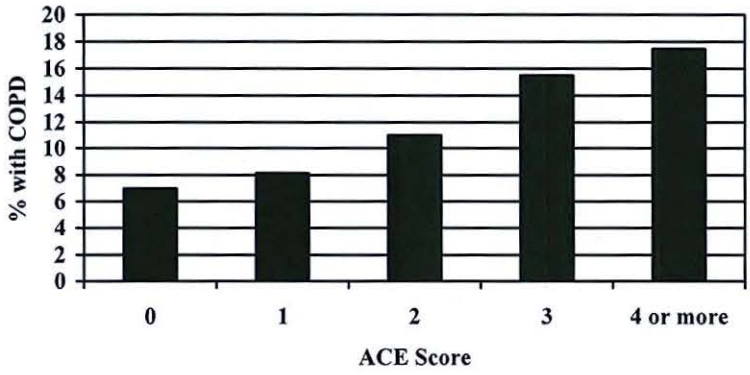
ACE Score vs. Smoking



current smoker, compared to an ACE Score 0 child, is generally not known.[8] This simple observation has profound implications that illustrate the psychoactive *benefits* of nicotine[9]; this information has largely been lost in the public health onslaught against smoking, but is important in understanding the intractable nature of smoking in many people.[10, 11, 12, 13]

When we match the prevalence of adult chronic bronchitis and emphysema against ACEs, we again see a strong dose-response relationship. We thereby proceed from the relationship of adverse childhood experiences to a health-risk behavior to their relationship with an organic disease. In other words, Figure 2 illustrates the conversion of emotional stressors into an organic disease, through the intermediary mechanism of an emotionally beneficial (although medically unsafe) behavior.

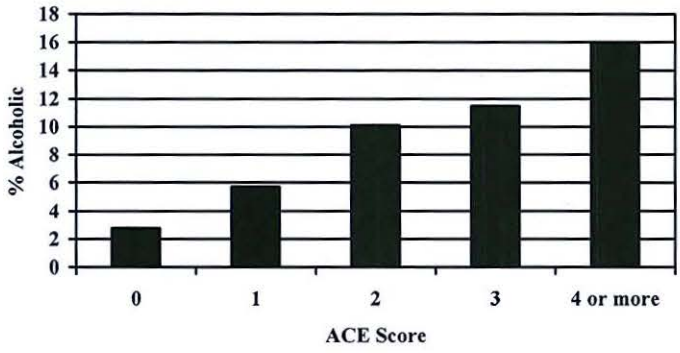
ACE Score vs. COPD



Alcoholism:

One's own alcoholism is not easily or comfortably acknowledged; therefore, when we asked our Study cohort if they had ever considered themselves to be alcoholic, we felt that *Yes* answers probably understated the truth, making the effect even stronger than is shown. The relationship of self-acknowledged alcoholism to adverse childhood experiences is depicted in Figure 3. Here we see that more than a 500% increase in adult alcoholism is related in a strong, graded manner to adverse childhood experiences.[14]

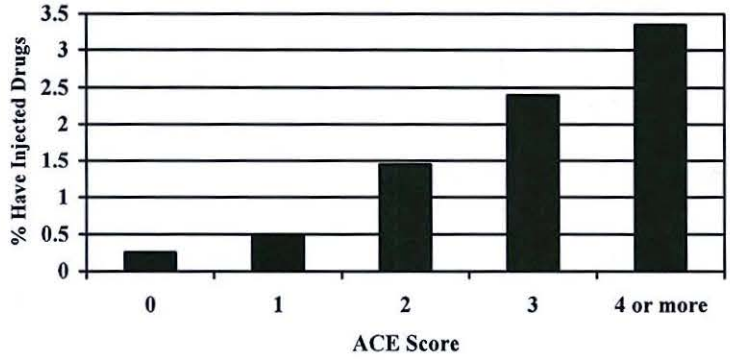
ACE Score vs. Adult Alcoholism



Injection of illegal drugs:

In the United States, the most commonly injected street drugs are heroin and methamphetamine. Methamphetamine has the interesting property of being closely related to amphetamine, the first anti-depressant introduced by Ciba Pharmaceuticals in 1932. When we studied the relation of injecting illicit drugs to adverse childhood experiences, we again found a similar dose-response pattern; the likelihood of injection of street drugs increases strongly and in a graded fashion as the ACE Score increases. (Figure 4) At the extremes of ACE Score, the figures for injected drug use are even more powerful. For instance, a male child with an ACE Score of 6, when compared to a male child with an ACE Score of 0, has a 46-fold (4,600%) increase in the likelihood of becoming an injection drug user sometime later in life.

ACE Score vs. Injected Drug Use



Discussion:

Although awareness of the hazards of smoking is now near universal, and has caused a significant reduction in smoking, in recent years the prevalence of smoking has remained largely unchanged. In fact, the association between ACE Score and smoking is stronger in age cohorts born after the Surgeon General's Report on Smoking. Do current smokers now represent a core of individuals who have a more profound need for the psychoactive benefits of nicotine than those who have given up smoking? Our clinical experience[12] and data from the ACE Study suggest this as a likely possibility. Certainly, there is good evidence of the psychoactive benefits of nicotine for moderating anger, anxiety, and hunger.[9-12]

Alcohol is well accepted as a psychoactive agent. This obvious explanation of alcoholism is now sometimes rejected in favor of a proposed genetic causality. Certainly, alcoholism may be familial, as is language spoken. Our findings support an experiential and psychodynamic explanation for alcoholism, although this may well be moderated by genetic and metabolic differences between races and individuals.

Analysis of our Study data for injected drug use shows a powerful relation to ACEs. Population Attributable Risk* (PAR) analysis shows that 78% of drug injection by

women can be attributed to adverse childhood experiences. For men and women combined, the PAR is 67%. Moreover, this PAR has been constant in four age cohorts whose birth dates span a century; this indicates that the relation of adverse childhood experiences to illicit drug use has been constant in spite of major changes in drug availability and in social customs, and in the introduction of drug eradication programs.[17]

American soldiers in Vietnam provided an important although overlooked observation. Many enlisted men in Vietnam regularly used heroin. However, only 5% of those considered addicted were still using it 10 months after their return to the US.[15, 16] Treatment did not account for this high recovery rate. Why does not everyone become addicted when they repeatedly inject a substance reputedly as addicting as heroin? If a substance like heroin is not inherently addicting to everyone, but only to a small minority of human users, what determines this selectivity? Is it the substance that is intrinsically addicting, or do life experiences actually determine its compulsive use? Surely its chemical structure remains constant. Our findings indicate that the major factor underlying addiction is adverse childhood experiences that have not healed with time and that are overwhelmingly concealed from awareness by shame, secrecy, and social taboo. The compulsive user appears to be one who, not having other resolutions available, unconsciously seeks relief by using materials with known psychoactive benefit, accepting the known long-term risk of injecting illicit, impure chemicals. The ACE Study provides population-based clinical evidence that unrecognized adverse childhood experiences are a major, if not the major, determinant of who turns to psychoactive materials and becomes 'addicted'.

Given that the conventional concept of addiction is seriously flawed, and that we have presented strong evidence for an alternative explanation, we propose giving up our old mechanistic explanation of addiction in favor of one that explains it in terms of its psychodynamics: unconscious although understandable decisions being made to seek chemical relief from the ongoing effects of old trauma, often at the cost of accepting future health risk. Expressions like 'self-destructive behavior' are misleading and should be dropped because, while describing the acceptance of long-term risk, they overlook the importance of the obvious short-term benefits that drive the use of these substances.

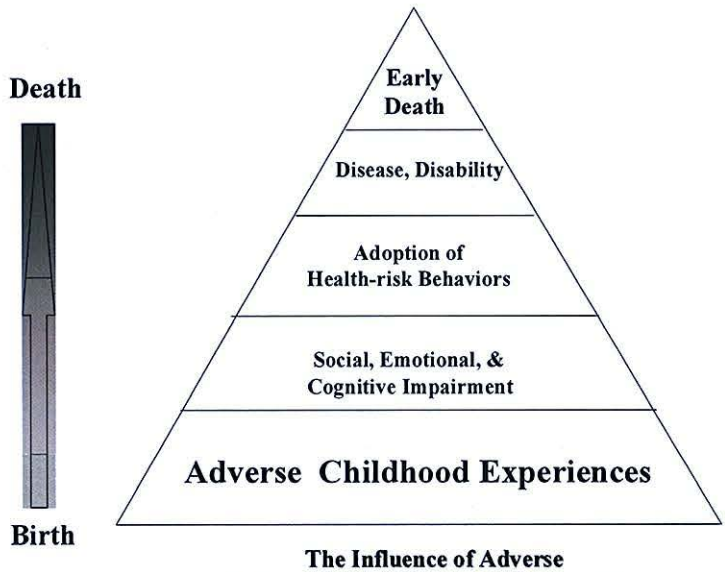
This revised concept of addiction suggests new approaches to primary prevention and treatment. The current public health approach of repeated cautionary warnings has demonstrated its limitations, perhaps because the cautions do not respect the individual when they exhort change without understanding. Adverse childhood experiences are widespread and typically unrecognized. These experiences produce neurodevelopmental and emotional damage, and impair social and school performance. By adolescence, children have a sufficient skill and independence to seek relief through a small number of mechanisms, many of which have been in use since biblical times: drinking alcohol, sexual promiscuity, smoking tobacco, using psychoactive materials, and overeating. These coping devices are manifestly effective for their users, presumably through their ability to modulate the activity of various neurotransmitters. Nicotine, for instance, is a

** Population Attributable Risk is a simple concept, although a complex calculation, that describes in a population that portion of a risk factor that can be attributed to a particular cause.*

powerful substitute for the neurotransmitter acetylcholine. Not surprisingly, the level of some neurotransmitters varies genetically between individuals[18].

It is these coping devices, with their short-term emotional benefits, that often pose long-term risks leading to chronic disease; many lead to premature death. This sequence is depicted in the ACE Pyramid (Figure 5). The sequence is slow, often unstoppable, and is generally obscured by time, secrecy, and social taboo. Time does not heal in most of these instances. Because cause and effect usually lie within a family, it is understandably more comforting to demonize a chemical than to look within. We find that addiction overwhelmingly implies prior adverse life experiences.

The sequence in the ACE Pyramid supports psychoanalytic observations that addiction is primarily a consequence of adverse childhood experiences. Moreover, it does so by a population-based study, thereby escaping the potential selection bias of individual case reports. Addiction is not a brain disease, nor is it caused by chemical imbalance or genetics. Addiction is best viewed as an understandable, unconscious, compulsive use of psychoactive materials in response to abnormal prior life experiences, most of which are concealed by shame, secrecy, and social taboo.



The Influence of Adverse Childhood Experiences Throughout Life

Our findings show that childhood experiences profoundly and causally shape adult life. 'Chemical imbalances', whether genetically modulated or not, are the necessary intermediary mechanisms by which these causal life experiences are translated into manifest effect. It is important to distinguish between cause and mechanism. Uncertainty and confusion between the two will lead to needless polemics and misdirected efforts for preventing or treating addiction, whether on a social or an

individual scale. Our findings also make it clear that studying any one category of adverse experience, be it domestic violence, childhood sexual abuse, or other forms of family dysfunction is a conceptual error. None occur *in vacuuo*; they are part of a complex systems failure: one does not grow up with an alcoholic where everything else in the household is fine.

Treatment:

If we are to improve the current unhappy situation, we must in medical settings routinely screen at the earliest possible point for adverse childhood experiences. It is feasible and acceptable to carry out mass screening for ACEs in the context of comprehensive medical evaluation. This identifies cases early and allows treatment of basic causes rather than vainly treating the symptom of the moment. We have screened over 450,000 adult members of Kaiser Health Plan for these eight categories of adverse childhood experiences. Our initial screening is by an expanded Review of Systems questionnaire; patients certainly do not spontaneously volunteer this information. 'Yes' answers then are pursued with conventional history taking: "I see that you were molested as a child. *Tell me how that has affected you later in your life."*

Such screening has demonstrable value. Before we screened for adverse childhood experiences, our standardized comprehensive medical evaluation led to a 12% reduction in medical visits during the subsequent year. Later, in a pilot study, an on-site psychoanalyst conducted a one-time interview of depressed patients; this produced a 50% reduction in the utilization of this subset during the subsequent year. However, the reduction occurred only in those depressed patients who were high utilizers of medical care because of somatization disorders. Recently, we evaluated our current approach by a neural net analysis of the records of 135,000 patients who were screened for adverse childhood experiences as part of our redesigned comprehensive medical evaluation. This entire cohort showed an overall reduction of 35% in doctor office visits during the year subsequent to evaluation.[19]

Our experience asking these questions indicates that the magnitude of the ACE problem is so great that primary prevention is ultimately the only realistic solution. Primary prevention requires the development of a beneficial and acceptable intrusion into the closed realm of personal and family experience. Techniques for accomplishing such change *en masse* are yet to be developed because each of us, fearing the new and unknown as a potential crisis in self-esteem, often adjusts to the status quo. However, one possible approach to primary prevention lies in the mass media: the story lines of movies and television serials present a major therapeutic opportunity, unexploited thus far, for contrasting desirable and undesirable parenting skills in various life situations.

Because addiction is experience-dependent and not substance-dependent, and because compulsive use of only one substance is actually uncommon, one also might restructure treatment programs to deal with underlying causes rather than to focus on substance withdrawal. We have begun using this approach with benefit in our Obesity Program, and plan to do so with some of the more conventionally accepted addictions.

Conclusion:

The current concept of addiction is ill founded. Our study of the relationship of adverse childhood experiences to adult health status in over 17,000 persons shows addiction to be a readily understandable although largely unconscious attempt to gain relief from well-concealed prior life traumas by using psychoactive materials. Because it is difficult to get enough of something that doesn't quite work, the attempt is ultimately unsuccessful, apart from its risks. What we have shown will not surprise most psychoanalysts, although the magnitude of our observations in new, and our conclusions are sometimes vigorously challenged by other disciplines.

The evidence supporting our conclusions about the basic cause of addiction is powerful and its implications are daunting. The prevalence of adverse childhood experiences and their long-term effects are clearly a major determinant of the health and social well being of the nation. This is true whether looked at from the standpoint of social costs, the economics of health care, the quality of human existence, the focus of medical treatment, or the effects of public policy. Adverse childhood experiences are difficult issues, made more so because they strike close to home for many of us. Taking them on will create an ordeal of change, but will also provide for many the opportunity to have a better life.

Footnote:

Abstracts of all past and future ACE Study articles may be found by searching under the author name (Felitti VJ) at the web site for the US National Library of Medicine: http://www.ncbi.nlm.nih.gov/entrez/query.fcgi

Free subscription is available to an electronic newsletter dealing with various aspects of the ACE Study. Contact: editor@acestudy.org

References:

1. Eliot, TS. Four Quartets. Harcourt, Brace, and World, New York, 1943.

2. Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz AM, Edwards V, Koss MP, et al. The relationship of adult health status to childhood abuse and household dysfunction. American Journal of Preventive Medicine. 1998; 14:245-258.

3. Felitti VJ. Long Term Medical Consequences of Incest, Rape, and Molestation. Southern Medical Journal. 1991; 84:328-331.

4. Felitti VJ. Childhood Sexual Abuse, Depression, and Family Dysfunction in Adult Obese Patients. Southern Medical Journal. 1993; 86:732-736.

5. Brecher EM. Licit and Illicit Drugs. Little Brown, Boston; 1972, p183-192

6. Friedman M, Szasz TS. On Liberty and Drugs: Essays on the free market and prohibition. Drug Policy Foundation Press, Washington DC, 1992.

7. Gray JP. Why Our Drug Laws Have Failed and What We Can Do About It: A Judicial Indictment of the War on Drugs. Temple University Press, Philadelphia, 2001.

8. Anda RF, Croft JB, Felitti VJ, Nordenberg D, Giles WH, Williamson DF, Giovino GA. Adverse childhood experiences and smoking during adolescence and adulthood. Journal of the American Medical Association. 1999; 282:1652-1658.

9. Carmody TP. Affect regulation, nicotine addiction, and smoking cessation. J Psychoactive Drugs 1989; 24:111-122.

10. Larson PS, Silvette H. Tobacco: Experimental and Clinical Studies, Suppl. 3; Williams & Wilkins, Baltimore, 1975.

11. Jaffe JH, Jarvik M. In Lipton MA, DiMascio A, Killam K. Psychopharmacology: A Generation of Progress. Raven Press, NY, 1978. p1665-1676.

12. ACE Score 6: Psychoactive benefits of nicotine. Videotaped interview. Department of Preventive Medicine, Kaiser Permanente, San Diego, 1997.

13. Anda RF, Williamson DF, Escobedo LG, Mast EE, Giovino GA, Remingtom PL. Depression and the dynamics of smoking. A national perspective. JAMA. 1990 Sep 26;264(12):1541-5.

14. Dube SR, Anda RF, Felitti VJ, Edwards VJ, Croft JB. Adverse Childhood Experiences and personal alcohol abuse as an adult. Addictive Behaviors. 2002; 27(5): 713-725.

15. Robins LN, Helzer JE, Davis DH. Arch Gen Psychiatry 1975 Aug;32(8):955-61 Narcotic use in southeast Asia and afterward. An interview study of 898 Vietnam returnees.

16. Robins LN. Vietnam Veterans' rapid recovery from heroin addiction: a fluke or normal expectation? Addiction 1993; 88:1041-1054.

17. Dube SR, Felitti VJ, Dong M, Chapman DP, Giles WH, and Anda RF. Childhood Abuse, Neglect, and Household Dysfunction and the Risk of Illicit Drug Use: The Adverse Childhood Experiences Study. Pediatrics. 2003; 111(3): 564-572.

18. Du L, Faludi G, Palkovits M, Sotoni P, et al. High activity-related allele of MAO-A gene associated with depressed suicide in males. Neuroreport 2002; 13(9): 1195-98.

19. Felitti VJ. Unpublished data, Kaiser Permanente Medical Care Program, San Diego, 1978, 1980, 1998.

END

CME credits available for this article — see page 95.

ORIGINAL RESEARCH & CONTRIBUTIONS

Obesity: Problem, Solution, or Both?

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Victoria Pepper, MS
Albert Ray, MD

Since 1982, the Southern California Permanente Medical Group's Positive Choice Weight Loss Program in San Diego has treated more than 30,000 adults, predominantly middle-aged, for obesity—some successfully, some not. This has been an extraordinary experience and provided us with numerous counterintuitive observations. We now are convinced that obesity is widely misunderstood, and we realize that the unusual program we have operated safely and effectively for more than a quarter century is often misunderstood as well. There is growing interest in our program and in using our approach as a model for other Kaiser Permanente (KP) Regions. We therefore share an overview here of our experience with this specific program. Consequently, most referenced works in this report are publications emanating from our program, sometimes contrasting those findings with conventional views on the subject.

The Positive Choice Weight Loss Program has two integrated components:

- Prolonged absolute fasting, with the use of a supplement to support health and to prevent death from such fasting.
- A lengthy and complex group program to explore the basis of each participant's unconscious compulsive use of food, as well as to explore the hidden benefits of obesity for that individual.

Given that the average weight loss of someone completing our 20-week program is 62 lb (28 kg) and that approximately 5000 patients each have lost more than 100 lb (45 kg), we realize we have challenged the belief systems of some who assume either that such weight loss cannot commonly be achieved or that the process of supplemented absolute fasting must be dangerous. In fact, the process has been notably safe, and major improvements in biomedical outcomes have been the norm. This article addresses four basic issues:

1. The safety of properly supplemented prolonged absolute fasting in obesity
2. The observed origins of obesity, and their implications
3. The components of a relevant treatment program
4. Outcomes of the Program.

Overview of Unsupplemented Starvation

The Irish hunger strikers of the early 1980s illustrated the outcome of unsupplemented, prolonged, absolute fasting. They only drank water, and it was clear after six weeks that all involved had sustained significant weight loss and were mortally ill. By seven weeks, all were dead. They died because of profound potassium and magnesium deficiency, with consequent lethal cardiac arrhythmia. Had they received electrolyte supplementation and had the hunger strikers been obese, they could have lived for several months longer before dying because of major protein deficiency. Supplementing two essential fatty acids and the essential amino acids needed for anabolic protein turnover would have prevented such a death. Had this been done, the hunger strikers would have died toward the end of a year because of beriberi, pellagra, and scurvy. Preventing these diseases by vitamin supplementation would be straightforward. To simplify the example, we have left out the problem of calorie deficiency in these nonobese individuals. In obese individuals, body fat stores of course resolve this problem; the metabolism of these fat stores is obviously the basis for weight loss. Details of unsupplemented starvation can be found in the famous work of Ancel Keys, described in his two-volume *Biology of Human Starvation.*[1]

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**Provided and Notated by Dr. Vincent Felitti*

Safety of Supplemented Fasting

The nutritional supplement Optifast 70 was created by Sandoz Pharmaceuticals to supply electrolytes, amino acids, two essential fatty acids, and vitamins. At 420 cal/d in five feedings, this superbly designed product allows a sufficiently morbidly obese individual to cease eating all food and caloric beverages for at least a full year. In our entire experience, no death or biomedical harm has occurred in any of these individuals.

During a year of supplemented absolute fasting, a weight loss of approximately 300 lb (136 kg) will occur (Figure 1). To the degree that this does not occur, it means that the patient is consuming food, regardless of denial. Surprisingly, hunger is not a problem. However, the desire to eat is variable, ranging from minor to uncontrollable. Interestingly, this desire to eat is an issue separate from hunger. Indeed, it attests to the profound psychoactive benefits of food, as illustrated by a commonplace observation that is even built into our language: "Sit down and have something to eat; you'll feel better." There is truth for many in the phrase "comfort food."

Origins of Obesity

In the early years of the Weight Program, we naively were taking morbidly obese individuals down 300 lb (136 kg) at a time, a rate of loss distinctly exceeding that of bariatric surgery. The striking results perhaps understandably led us to believe that we understood what we were doing. Counterintuitively, some of our most successful patients forced us to realize we were merely in possession of a powerful technology and had no idea what we were doing in other regards. They did this by demonstrating that massive weight loss could precipitate divorce, severe anxiety, and sometimes suicidality. Some patients, sensing these outcomes early, fled their own success in the Program. Surprisingly, our high dropout rate was mainly limited to patients who were *successfully* losing weight. By contrast, we had other patients who were eating during the Program, routinely denying it, and losing no weight while paying a fairly significant fee, seemingly to accomplish nothing. With these patients, it took some time for us to realize that we were supplying an important support system with our group approach. It turned out that many of our obese patients had no functional support systems at home.

The striking and frankly annoying conflict between our ability quickly and safely to reduce a person's weight and what patients appeared capable of tolerating emotionally led us to detailed exploration of the life histories of 286 of our patients. Here, we unexpectedly discovered that histories of childhood sexual abuse were common, as were histories of growing up in markedly dysfunctional households. It became evident that traumatic life experiences during childhood and adolescence were far more common in an obese population than was comfortably recognized.[2] We slowly discovered that major weight loss is often sexually or physically threatening and that obesity, whatever its health risks, is protective emotionally. Ultimately, we saw that certain of our more intractable public health problems such as obesity are often also unconsciously attempted *solutions* to problems dating back to the earliest years but hidden by time, by shame, by secrecy, and by social taboos against exploring certain areas of life experience. The antecedent life experiences of the obese are quite different from those of the always-slender.[3] Eventually, these Program findings led to the 17,000-member Adverse Childhood Experiences (ACE) Study, in which we established that the developmental damage initially discovered in our obese patients was broadly applicable to many aspects of everyday medical practice.[4,5]

Ultimately, we learned from our patients that in obesity, we are dealing with two core problems:

- The unconscious, compulsive use of food for its psychoactive benefits
- The unrecognized and unspoken *benefits* of obesity.

These two core problems are markedly at variance with conventional thinking about obesity, starting with the government's food pyramid. Worse yet, these two basic problems are uncomfortable to deal with. In reviewing the medical literature, one quickly notes that most articles purporting to discuss the *causes* of obesity quickly switch to describing the unhealthy consequences of obesity and never pursue their stated goal. One also notes the tendency to confuse intermediary mechanism with basic cause. For instance, several years ago, leptin deficiency was proposed as the cause of human obesity. Although that idea has now been discarded, someday the "real leptin" will be discovered, but it will no more be causal than increased levels of epinephrine are the cause of anxiety. Each is a necessary intermediary mechanism, not a basic cause. Understanding the difference is as essential to progress in treatment as it is to primary prevention.

Any physician choosing to validate in his patients the points being made here will be in the position of asking about topics that we have all learned are not discussed by polite

It became evident that traumatic life experiences during childhood and adolescence were far more common in an obese population than was comfortably recognized.[2]

people. Incest, rape, family suicides, and parental brutality are not readily brought up. That being the case, we physicians typically have no basis for opinions on the frequency or rarity of such life experiences. We documented these experiences as surprisingly common among our patients, but we did not know that before we began routinely inquiring about them. Counterintuitively, we learned that discussion of these experiences is usually *not* uncomfortable to those who have had them, if they are supported by someone comfortable with their discussion. Patients often find a great sense of relief in discussing their life experiences. As one patient wrote, "The shame, guilt, and pain for the abuse and molestations of childhood, and being raped, was so great that I had to come forward or die. If your questionnaire had been put in front of me, it would have shown me that people existed in the medical profession who knew about the sad things that happen to some people." This poignant statement imposes a huge responsibility on us that we can of course avoid by falling back on lack of time or lack of training as being the factor that precludes our inquiry.

The now internationally recognized ACE Study was initiated to determine the prevalence and outcomes of ten categories of such life experiences in more than 17,000 consecutive adults from KP's San Diego population.[6] These experiences are common, and their consequences are devastating in terms of emotional damage, biomedical disease, and the costs of health care. Like a child's footprints in wet cement, the consequences are lifelong. Putting it plainly in regard to obesity, we have seen that obesity is not the core problem. Obesity is the marker for the problem and sometimes is a solution. This is a profoundly important realization because none of us expects to cure a problem by treating its symptom.

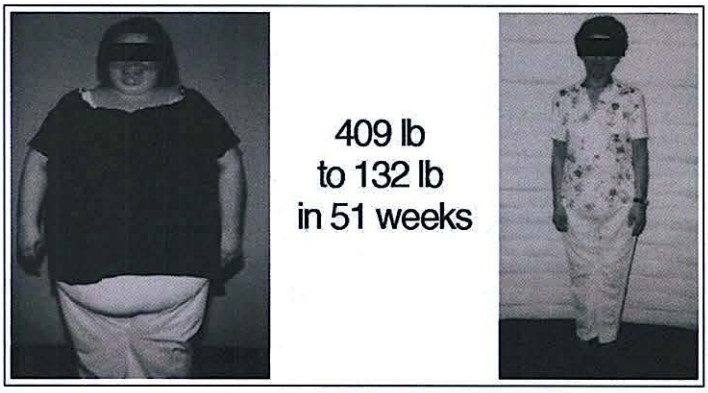

Figure 1. Patient who lost 277 lb in 51 weeks

Treatment

Given the nature of our observations about the causes of obesity, repeatedly documented in thousands of responses to our preprogram questionnaire (See http://xnet.kp.org/permanentejournal/spr10/PreprogramQuestionnaire.pdf to view the questionnaire) and in more than 50 videotaped interviews, it was inevitable by the early 1990s that we revise our program to fuse two separate goals: weight loss by supplemented fasting, and helping patients identify and resolve the life experiences underlying obesity. By far the easier of the two goals is the medical management of supplemented absolute fasting. Weekly checks of potassium levels, blood pressure measurements in patients taking antihypertensive medications, and blood sugar levels in patients with diabetes are our most common tracking measures other than weight itself. Other details of biomedical management are equally straightforward but are not the point of this article. Chronic disease is not a reason for exclusion from the Program; most such patients should actually be sought for Program inclusion if obese. Our only absolute exclusions are pregnancy and recent myocardial infarction or stroke. Optifast 70, drunk five times daily for a total daily intake of 420 cal, is a remarkable material that makes biologically safe the otherwise unthinkable. The remainder of the day's caloric needs come from body fat stores as long as those fat stores exist. It is important to understand that Optifast 70 has one function only: the prevention of death from prolonged absolute fasting. It does not take weight off people; not eating does that. And it has nothing to do with whether lost weight is regained or kept off; that outcome is solely a function of what is accomplished or not accomplished by the group work of the Program.

By contrast with the simplicity of fasting, the weekly two-hour group meetings of the Program are a complex endeavor that is difficult for some patients to engage in and is difficult to train staff to pursue vigorously. By the mid-1980s, we had learned that our initial goal of teaching people to "eat right" was totally irrelevant to obesity, although it seemed a reasonable thing to do when we did not know what to do. In retrospect, we

should have known better because most of us knew that overweight, middle-aged women commonly know enough about calorie content to give a dietitian a run for his or her money any day of the week. Nutrition is an interesting and important subject that has no more relationship to obesity than it does to anorexia. The role of the Program is to help people recognize and find an acceptable alternate solution or resolution to the underlying problems being treated with food. We are at an early stage of success; the work is difficult because it is resisted by some patients and can awaken personal ghosts in staff, but we have clearly established a beachhead on the right beach and slowly are moving inland.

In the course of detailed interviewing of about 2000 obese patients over the past 20 years, in-depth and often repetitively over time, we have noted several recurrent findings:

- It is rare for anyone to be born obese. In 2000 adult obese patients, only one individual was born overweight, at 14 lb (6 kg), to a 550-lb (250-kg) mother, and she was slender throughout childhood and adolescence until age 20, when she married an alcoholic and suddenly began massive weight gains, ultimately matching her mother's weight. "Born fat" is a defensive concept.
- A significant minority of our Program participants are born at subnormal weight because of prematurity.
- Obesity indeed runs in families, as does speaking the same language. It is the distribution pattern of body fat deposition that is genetically determined, not its presence.
- Major weight gain is typically abrupt, episodic, and life-event related.
- The forces underlying extreme morbid obesity are relatively easy to discern for those seeking them. They are qualitatively similar to those underlying mild overweight, though they are much harder to discern in the latter.
- The age at which weight gain first began is critically important because it allows one to inquire why it began *then*. Some patients will know and others will not want to know, but this is an essential point not to be dropped because of patient avoidance.
- Obesity commonly is beneficially protective: sexually, physically, and socially. This is an uncomfortably difficult point for many nonobese individuals to accept.
- Major weight loss may present a significant threat, usually to the person involved, but sometimes to others.
- Emotional support from others for major weight loss is uncertain.

With adequate medical monitoring, there is no biologic risk to supplemented absolute fasting. Supplemented fasting has two treatment advantages:

- When large amounts of weight are to be lost, it reduces weight quickly enough to provide positive and supportive feedback.
- By removing eating as a major coping device, we expose the underlying issues that are being treated by the psychoactive properties of food.

The main work of the Program enters personal territory that is comfortably off-limits to polite people. It is therefore difficult and demanding, though conceptually simple. Doing the work in groups is essential because of the implicit support of the group and because participants quickly learn from each other's self-observations. To the degree that counselors pose meaningful questions to their groups, and insist on answers to the questions asked and not to some enfeebled version of their questions, they are successful. To the degree that they teach by lecturing, they fail. In actual fact, our task is to help the participants discover what they already know at some level, and then to use that discovery for their own benefit. To illustrate the process, some seemingly simple questions may be offered for our readers to try, understanding that this works best in small groups and initially will be stressful for the group leader:

1. Why (not *how*) do you think people get fat?
2. How old were you when you *first began* putting on weight? Why do you think it was then and not a few years earlier or later?
3. Sometimes people who lose a lot of weight regain it all, if not more. When that happens, why do you think it happens?
4. What are the advantages of being overweight?

Patients' answers to these questions are staggeringly counterintuitive to conventional thinking about obesity. Moreover, their answers have been consistent over the many years we have posed these questions in group sessions. For instance, answers to question 1 routinely are: "stress, depression, people leave you alone, men won't bother you." There are of course occasional escapist responses like "I just like food." In that case, the following response to the answer given for question 2 is helpful: "Really? Can you tell us why you suddenly liked food more at 22 when you first began putting on weight?" Responses to question 3 always are versions of "If you don't deal with the underlying issues, the weight will come back." About 60% of the time, someone in a group

will also propose that regain occurs because major weight loss is threatening. Answers to question 4 repeatedly fall into three categories: obesity is sexually protective; it is physically protective (eg, "throwing your weight around"); and it is socially protective—people expect less from you.

Ultimately, we were forced to recognize that patients in a supportive setting speak of things that we ourselves may find it easier not to know. This embarrassing recognition exposes the tempting opportunity that a physician or group leader has to become part of the problem by authenticating as biomedical disease that which is actually the somatic inscription of life experience onto the human body and brain. The frequent reference to "the disease of obesity" is grossly in error, diagnostically destitute, and apparently made by those with little understanding of the antecedent lives of their patients. Obesity, like tachycardia or jaundice, is a physical sign, not a disease.

... a physician has to become part of the problem by authenticating as biomedical disease that which is actually the somatic inscription of life experience onto the human body and brain.

What we have learned about obesity has been more widely applicable in everyday medical practice than we would ever have contemplated. The general principles underlying the unconscious, compulsive use of food as a psychoactive agent are common to any of the addictions. We unwittingly recognized this at some level in the early years of the Program by giving as gifts, coffee mugs bearing the inscription, "It's hard to get enough of something that *almost* works." The psychoactive benefits of food are profound though not curative: "Sit down and have something to eat; you'll feel better." Hunger is not at issue in that saying. Whether we are talking about the next mouthful, the next drink, the next cigarette, the next sexual partner, or the next dose of whatever psychoactive chemical we might buy on the street, the concept is equally applicable: It's hard to get enough of something that almost works.

Slowly, we have come to recognize that overeating is not the basic problem. It is an attempted solution, and people are not eager to give up their solutions, particularly at the behest of those who have no idea of what is going on. Nor is obesity the problem. Obesity is the consequence, the marker for the problem, much in the way that smoke is the marker for a house fire. Often enough, obesity is even the solution—to problems that are buried in time and further protected by shame, by secrecy, and by social taboos against exploring certain areas of human experience. A memorable response comes to mind from 1985 when a patient, going with us through a timeline of her life in which weight, age, and events were matched, told us that at age 23 she was raped and that in the subsequent year she gained 105 lb (48 kg). Looking down at the carpet, she then muttered to herself, "Overweight is overlooked, and that's the way I need to be." Not knowing how to respond at the time, we said nothing. A few weeks later when she had lost 35 lb (16 kg), enough to be noticeable, she abruptly disappeared for 2.5 years, quickly regaining the weight. When she attempted to rejoin the Program after that hiatus, we discovered that she had no recollection of this conversation. Prompted by this to look into the issue of amnesia, we found in a sample of 300 consecutive obesity program patients that 12% acknowledged a history of focal amnesia, typically for the few years antecedent to the onset of weight gain. Amnesia is a high-grade marker for dissociation, which is a high-grade marker for abuse.[7]

Just as no one becomes amnesic because of good experiences, no one becomes fat out of joy. Depression is common in the Program and is a major stumbling block to weight loss. Not surprisingly, until the recent advent of pharmacologic blockers of fat absorption, every single "diet pill" save one has had potent antidepressant activity. The exception was fenfluramine, whose potent antianxiety activity was linked with the antidepressant phentermine as the first component of fen-phen. These medications can play a useful supportive role, but it should be understood that what is being treated is depression or anxiety, the consequences of antecedent life experiences, and not obesity per se. Overall, we have found and documented that the antecedent life experiences of the obese are quite different from those of the always-slender.[3]

Subsequent to the 20-week weight-loss phase of the Program, we have a 12-month Maintenance Phase. Initially thinking that this was necessary to teach people how to eat right, we slowly came to see that Maintenance indeed is essential, but for other reasons: to provide group support when major weight loss is threatening, usually to the person involved but sometimes to those who are close. Some of our patients regain all their weight, and others do not. The question we posed was: What are the differences between those who regain and those who do not? We have identified two major predictors of regain: a history of childhood sexual abuse and currently being married to an

alcoholic.[8] The latter can probably be generalized into having a significantly dysfunctional marriage, but that concept was too nebulous to study as an outcome.

Today the prevalence of obesity is rapidly increasing in children. Although our experience with obese children is quite limited, we are impressed by the number of adults who date the onset of their initial weight gain to coincide with parental loss in childhood, usually by divorce. Our most obese female patient, weighing 840 lb (381 kg) at age 29, was born weighing slightly less than 2 lb (0.9 kg) and was thin until her parents divorced when she was 11 years old and she never again saw her father. By age 17, she weighed 500 lb (227 kg). This correlation with parental divorce has escaped general attention, although a search in Google Scholar using the phrase *childhood obesity divorce* quickly indicates its presence in the literature. Given the high prevalence of divorce in the US, we suspect that "McDonald's" may be a more comfortable explanation for childhood obesity, although it obviously misrepresents mechanism as cause.

Bariatric surgery has been increasing in popularity since its initiation in 1967 by Edward Mason, the remarkable Iowa surgeon who introduced gastric bypass surgery to the US.[9] Our own experience in the Program with bariatric surgery is biased because we see a disproportionate number of cases where "the surgery failed" and patients consequently enter the Weight Loss Program. We have found alternate explanations that are not usually considered. An unexpectedly clear insight was provided by a recent patient comment: "The antidote [sic] to bariatric surgery is Karo Syrup." The psychological implication is blatant; the physiologic insight is ingenious. One may not be able to chew one's way through a lot after bariatric surgery, but the ability to ingest highly caloric liquids is unlimited. The question, of course, is: Why would a patient do that? A different take on bariatric surgery is depicted in a brief video clip of an interview with a patient available at: http://public.me.com/vjfmdsdca. These comments from patients are, once again, counterintuitive to conventional views about obesity. We have slowly learned that our average patient on the one hand wants very much to lose weight but on the other hand often has significant unconscious fear of the changes that major weight loss will bring about. In keeping with this unexpressed conflict, it is worth remembering that opposing forces are routinely present in biologic systems.

Outcomes

We have measured our Program outcomes in three categories:

- Weight loss
- Maintenance of weight lost
- Benefits of weight loss.

The average weight loss in one 20-week cycle of our program has been 62 lb (28 kg). The most anyone has ever lost in our former 26-week cycle was 157 lb (71 kg). This was a highly motivated man with a large underlying muscle mass.

Eighteen months after completion of the Program, half of our patients are keeping off 60% or more of the weight lost. These are old data and have probably improved with the revised Program, but we have not restudied the point. Instead, we have studied the differences between those who regain and those who do not.[8] Our ability to predict regain offers the possibility for preventive treatment in advance.

The biomedical benefits of such major weight loss have been dramatic. Of 400 consecutive patients taking medication for hypertension who completed the Program, 62% were able to discontinue all medication and no longer had hypertension. Of 400 consecutive patients with hypercholesterolemia, the average starting cholesterol level was 285 mg/dL; the average cholesterol level for those completing the Program was 204 mg/dL. Most impressively, of 320 patients with Type 2 diabetes who completed the Program, 71% were able to discontinue medication and had normal fasting blood sugars. In terms of health care economics, there is a 25% reduction in physician office visits while patients are in the Program and a 40% reduction in such visits in the subsequent year. Certainly, some of this is due to a reduced disease burden, but we suspect that a significant portion is due to reduced emotional distress in patients who have been helped in supportive settings to speak of the worst secrets of their lives and have been enabled to emerge feeling still accepted as human beings.

Summary

We have had an unusual opportunity to become deeply involved in the treatment of major obesity since 1985. What we have counterintuitively learned from that experience is that obesity, though an obvious physical sign and easily measured, is not the core problem to be treated, any more than smoke is the core problem to be treated in house fires. Supplemented absolute fasting is a highly effective treatment for obesity, but only if it is combined with a meaningful program that is designed to help patients explore the psychodynamic issues that underlie overeating as a

coping device, as well as exploring the possible protective *benefits* of obesity itself. The work is difficult because it threatens social conventions and beliefs and often awakens personal ghosts in staff. This can lead to nonalignment of purpose and reminds us of Michael Balint's famous comment, "Patients see doctors because of anxiety, while doctors see patients because of disease. Therein lies the problem between the two."[10] Although our work with obesity is difficult to carry out, we have nevertheless found that the work we have described can be done and that the benefits are major. ❖

Disclosure Statement

The author(s) have no conflicts of interest to disclose.

Acknowledgment

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References

1. Keys A. Biology of human starvation. Minneapolis: University of Minnesota Press; 1950.
2. Felitti VJ. Long-term medical consequences of incest, rape, and molestation. South Med J 1991 Mar;84(3):328–31.
3. Felitti VJ. Childhood sexual abuse, depression, and family dysfunction in adult obese patients: a case control study. South Med J 1993 Jul;86(7):732–6.
4. Felitti VJ, Anda R, Nordenberg D, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. Am J Prev Med 1998 May;14(4):245–58.
5. Felitti VJ. The relation between adverse childhood experiences and adult health: turning gold into lead. Perm J 2002 Winter;6(1):44–7.
6. Felitti VJ, Anda RF. The relationship of adverse childhood experiences to adult health, well-being, social function, and healthcare. In: Lanius R, Vermetten E, Pain C, editors. The impact of early life trauma on health and disease: the hidden epidemic. Cambridge, UK: Cambridge University Press; in press 2010. Chapter 8.
7. Edwards V, Fivush R, Anda RF, Felitti VJ, Nordenberg DF. Autobiographical memory disturbances in childhood abuse survivors. In: Freyd JJ, DePrince AP, editors. Trauma and cognitive science: a meeting of minds, science, and human experience. New York: Haworth Maltreatment and Trauma Press; 2001. p 247–64.
8. Felitti VJ, Williams SA. Long-term follow-up and analysis of more than 100 patients who each lost more than 100 pounds. Perm J 1998;2(3):17–21.
9. Mason EE, Ito C. Gastric bypass in obesity. Surg Clin North Am 1967 Dec;47(6):1345–51.
10. Balint M. The doctor, his patient, and the illness. Rev ed. New York: International Universities Press; 1972.

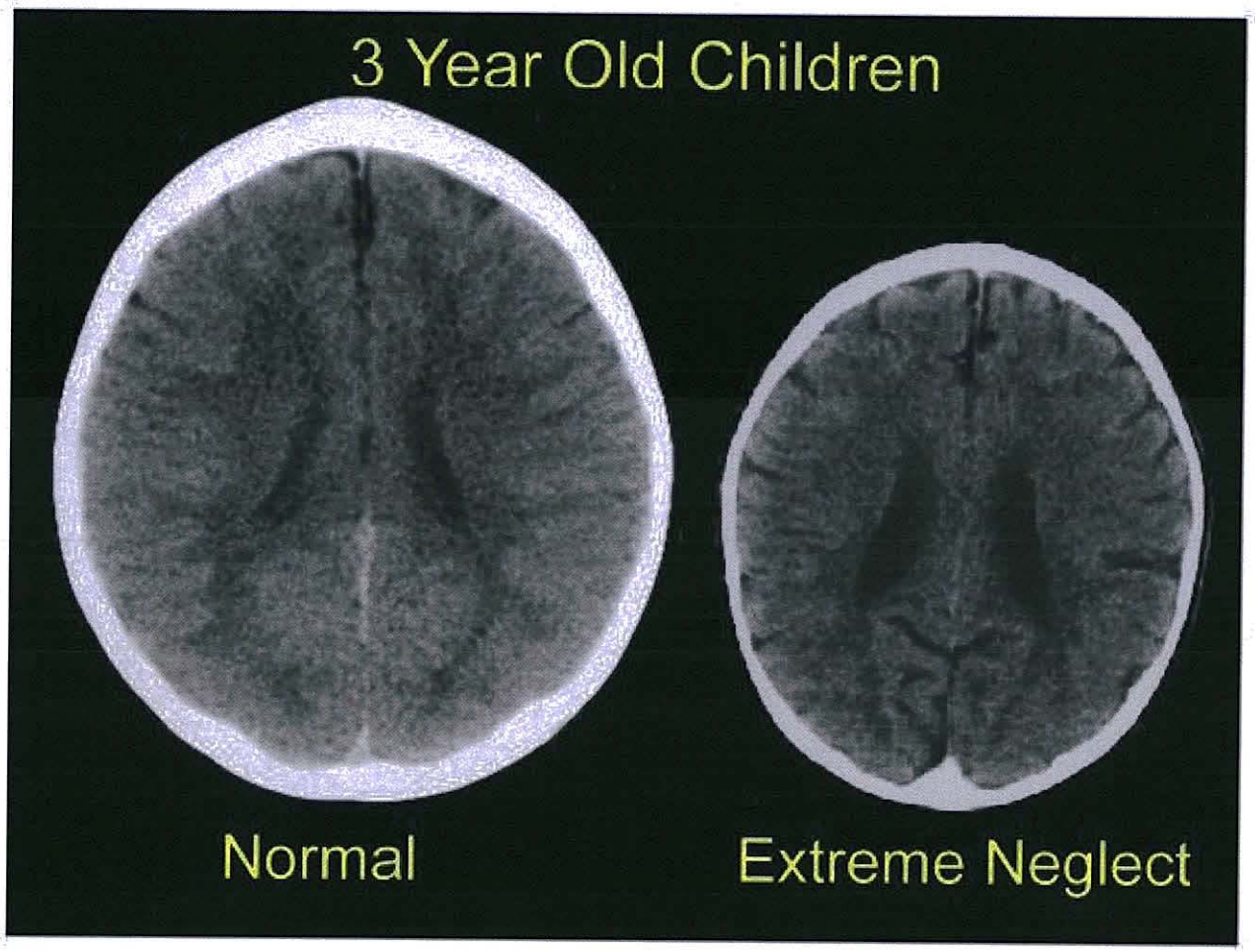
The Boston Tea Party

To say that obesity is caused by merely consuming too many calories is like saying that the only cause of the American Revolution was the Boston Tea Party.

— Adelle Davis, 1904-1974, American author and nutrition pioneer

A Systemic Approach and the Economic Benefits of Identifying and Treating Family Trauma

The Developing Brain



Bruce Perry, MD

Evidence

The Adverse Childhood Experience Study:

- Collaborative between CDC and Kaiser Permanente HMO.
- > 17,000 adults surveyed about adverse childhood experiences.
- Average participant age - 57 years.
- Medical histories available for all participants.

V Felitti et al. 1998. Am J Prev Med 14:245-58.

Adverse Childhood Experience Study

10 adverse childhood experiences surveyed:

1. Physical abuse
2. Sexual abuse
3. Emotional abuse
4. Emotional neglect
5. Physical neglect

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6. Witness domestic violence
7. Mental illness in home
8. Family member incarcerated
9. Alcohol/drug problems
10. Parental separation or divorce

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.

Health Measures Now Linked to Adverse Childhood Experiences Score

- Stepwise increased risk for:
  - Heart disease
  - Asthma
  - Diabetes
  - Cancer
  - COPD
  - Skeletal fractures
  - Sexually transmitted diseases
  - Liver disease
  - Autoimmune disorders
  - Osteoarthritis
  - Smoking
  - Alcohol abuse
  - Over eating and obesity
  - Illicit drug use
  - Promiscuity
  - IV drug use
  - Clinical depression
- And
  - Autobiographical memory disturbance
  - Poor anger control
  - Relationship problems
  - Employment problems
  - Early age at first intercourse
  - Teen pregnancy
  - Unintended pregnancy
  - Teen paternity
  - Fetal death
  - Suicide
  - Domestic violence
  - Anxiety disorders
  - Hallucinations
  - Sleep disturbances
  - Chronic pain
  - Headaches
  - Early death

2013 Alaska BRFSS

All Alaskan Adults	35.6%	22.3%	14.7%	10.1%	6.5%	10.8%
18-24	34.0%	26.0%	15.9%	8.2%	5.8%	10.0%
25-34	33.3%	19.8%	15.5%	10.9%	8.4%	12.1%
35-44	30.4%	26.8%	10.5%	10.7%	6.2%	15.3%
45-54	33.8%	20.5%	13.6%	12.8%	6.3%	13.0%
55+	41.7%	20.6%	16.7%	8.6%	5.9%	6.5%
Male	38.9%	22.5%	16.1%	8.5%	5.6%%	8.5%
Female	32.0%	22.2%	16.1%	11.9%	7.5%%	13.2%

Adverse Childhood Experience*	Alaska	Arkansas	Louisiana	New Mexico	Tennessee	Washington
						34.9
				19.5		
	14.8					

***Percentages in red are the highest of the states compared.**

Source: ~~Alaska data from the 2013 Alaska Behavioral Risk Factor Surveillance System, Alaska Department of Health and Social Services, Division of Public~~ Health, Section of Chronic Disease Prevention and Health Promotion

Source: Five States Study data from the Centers for Disease Control and Prevention, *Adverse Childhood Experiences Reported by Adults --- Five States, 2009,* http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5949a1.htm

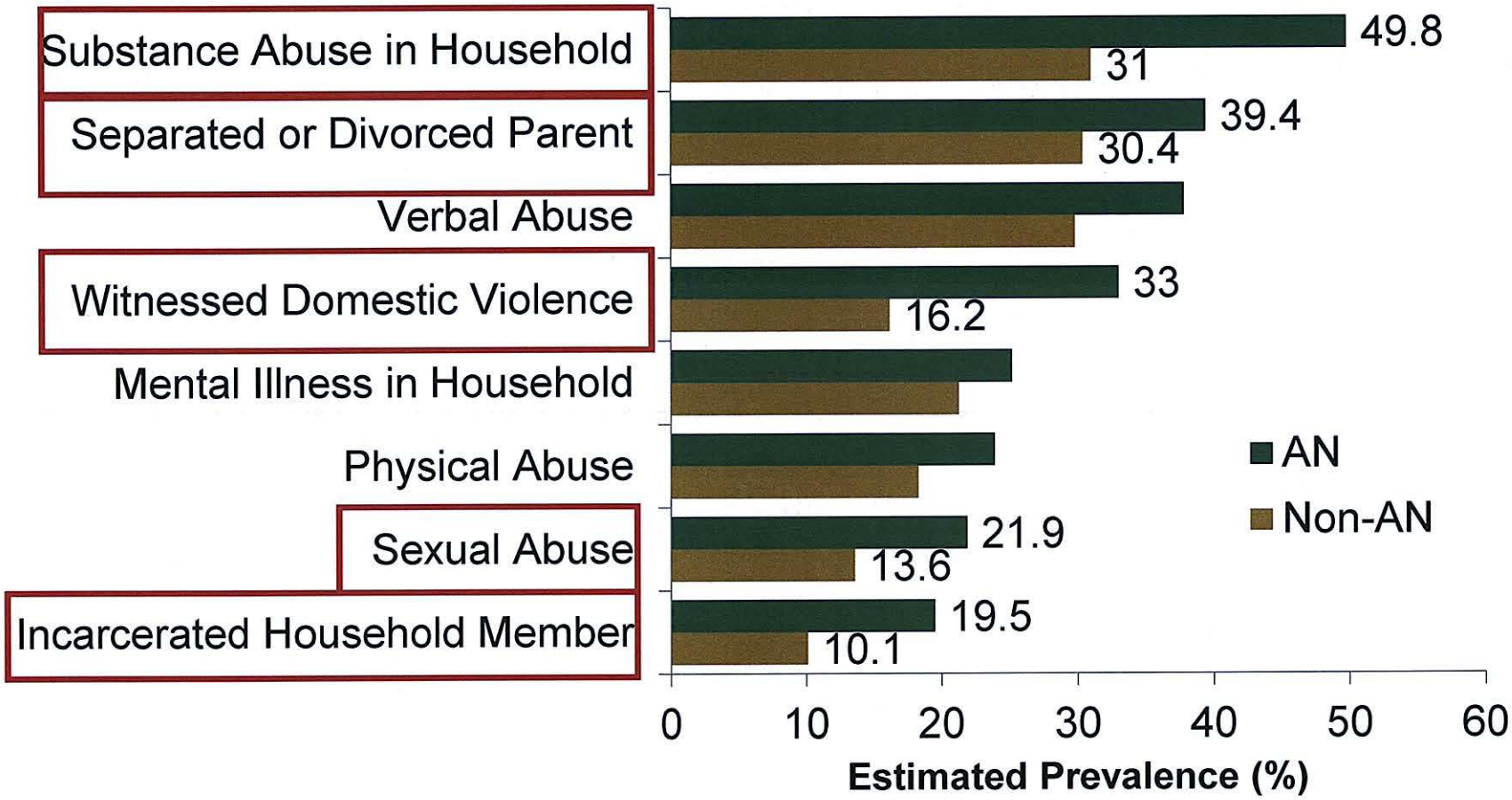
Adverse Childhood Experience*						
Household Dysfunction						
						24.3
	11.5					
	33.8					
	31.7					
				18.9		

***Percentages in red are the highest of the states compared.**

Source: ~~Alaska data from the 2013 Alaska Behavioral Risk Factor Surveillance System, Alaska Department of Health and Social Services, Division of Public~~ Health, Section of Chronic Disease Prevention and Health Promotion

Source: Five States Study data from the Centers for Disease Control and Prevention, *Adverse Childhood Experiences Reported by Adults --- Five States, 2009,* http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5949a1.htm

Prevalence of Specific ACEs Experienced by AN People Compared with Non-AN



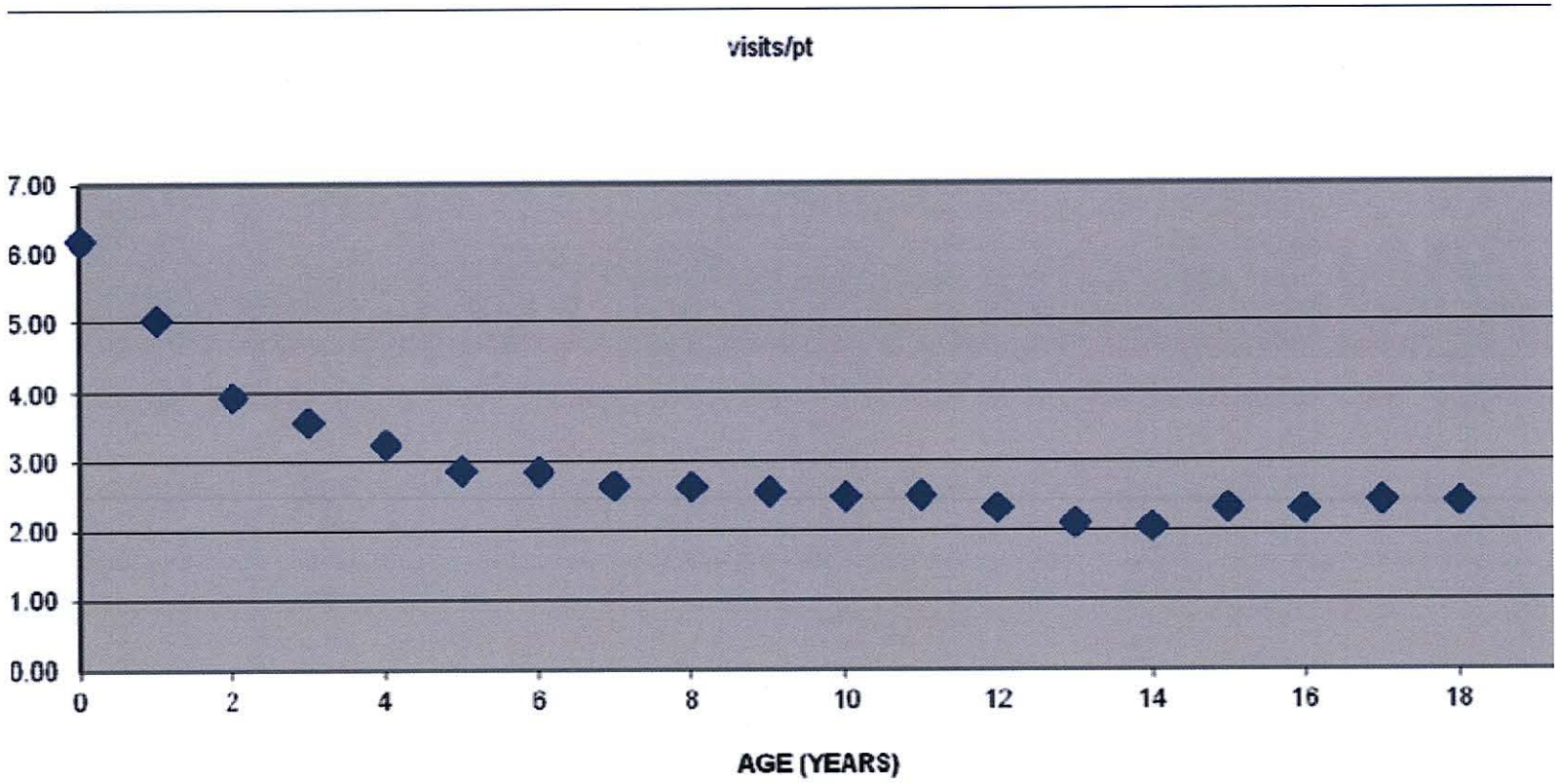
Source: 2013 Alaska BRFSS

How Do We Work Together to Decrease Alaska ACEs?

American Academy of Pediatrics Policy Statement

- Front line: Providers
  - Providers need to *actively assist* parents, child care providers, teachers, policy makers, civic leaders, and the general public to address many of the most persistent and costly problems facing contemporary society, including:
    - Limited educational achievement
    - Diminished economic productivity
    - Criminality
    - Disparities in health

Why Are Providers the Front Line?



Age at Which Children Are Seen in a Provider's Office

Parent-Screening Questionaires

SEEK™

Parent Questionnaire (PQ)

Dear Parent or Caregiver: Being a parent is not always easy. We want to help families have a safe environment for kids. So, we're asking everyone these questions. They are about problems that affect many families. If there's a problem, we'll try to help.

Please answer the questions about your child being seen today for a checkup. If there's more than one child, please answer "yes" if it applies to any one of them. This is voluntary. You don't have to answer any question you prefer not to.

Today's Date: __/__/____ Child's Name: _____

Child's Date of Birth: __/__/____

PLEASE CHECK

○ Yes	○ No	Do you need the phone number for Poison Control?
○ Yes	○ No	Do you need a smoke detector for your home?
○ Yes	○ No	Does anyone smoke tobacco at home?
○ Yes	○ No	In the last year, did you worry that your food would run out before you got money or Food Stamps to buy more?
○ Yes	○ No	In the last year, did the food you bought just not last and you didn't have money to get more?
○ Yes	○ No	Do you often feel your child is difficult to take care of?
○ Yes	○ No	Do you sometimes find you need to hit/spank your child?
○ Yes	○ No	Do you wish you had more help with your child?
○ Yes	○ No	Do you often feel under extreme stress?
○ Yes	○ No	In the past month, have you often felt down, depressed, or hopeless?
○ Yes	○ No	In the past month, have you felt very little interest or pleasure in things you used to enjoy?
○ Yes	○ No	In the past year, have you been afraid of your partner?
○ Yes	○ No	In the past year, have you had a problem with drugs or alcohol?
○ Yes	○ No	In the past year, have you felt the need to cut back on drinking or drug use?
○ Yes	○ No	Are there any other problems you'd like help with today?

Please give this form to the doctor or nurse you're seeing today. Thank you!

CENTER FOR YOUTH WELLNESS

health begins with hope

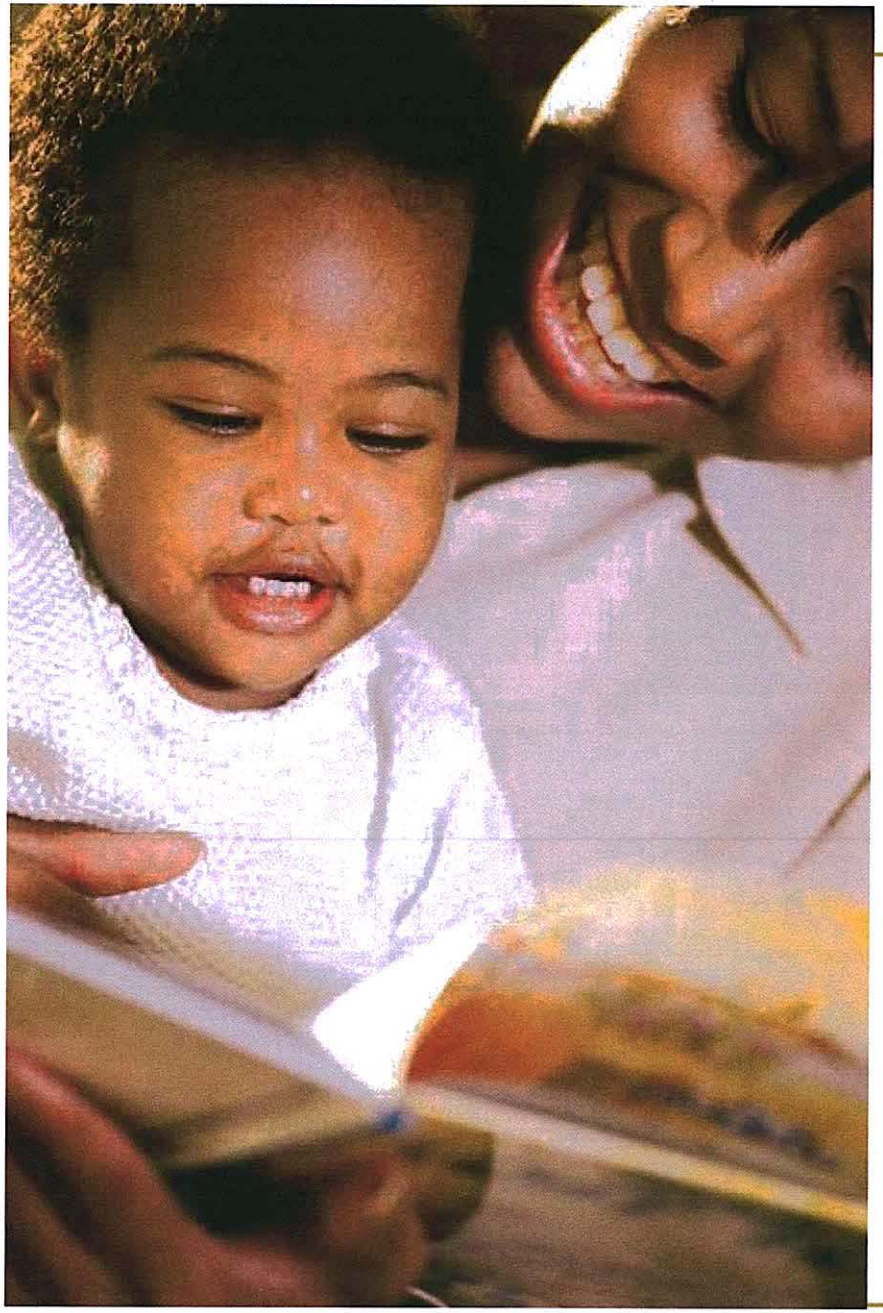
Three Questions—Gets Almost Everything

- Has anything really stressful happened to your child since the last time I saw you?
- How has that affected your child's behavior?
  - Corollary question: How has this event and any changes in your child's behavior affected you?
- What have you done that's really fun with your child since the last time I saw you?
- Give me three words to describe your child

HelpMeGrow

- Connects at-risk children with the services they need
  - Four Core Components
    - Child health care provider outreach to support screening
    - Community outreach to identify resources
    - Centralized telephone access point
    - Collection of data, including service gap analysis
  - Builds collaboration across sectors to improve access
  - Identifies gaps and barriers to access systems

  - www.helpmegrownational.org



Care Coordinators provide

- Assessment of needs & referrals to services
- Education on development, behavior management and programs
- Ongoing developmental monitoring
- Advocacy and follow up

What Can Policy Makers and Funders Do?

- Support reimbursement of screening and other aspects of the patient-centered medical home
- Support the development of programs like Help Me Grow that have been shown to improve family wellness and decrease system costs
- Preferentially support organizations and programs that focus on intervention in early childhood
  - ACEs Resolution in the House

What If We Reduced Alaska's ACE Score by ½ Point

Reducing Alaska's ACE Score by ½

- If we just look at the reduction of
  - Obesity
  - Adult Medicaid recipients
  - Smoking
  - Binge drinking
  - Diabetes
  - Arthritis

- *Alaska will save $90 million annually*

What Does $90 Million Buy in Alaska?

- 258 three bedroom homes in Anchorage (average price $347,000)
- 915 kindergarten teachers (wages only $66,384 + 40%) $97,938
- 846 police officers (wages only $75,672 + 40%) $105,941
- 518 mechanical engineers (wages only $123,600 + 40%) $173,040
- 339 pediatricians (wages only $189,000 + 40%) $264,600
- Office of Children's Services - General Funds 2016 – Operations
- All of the Behavioral Health State Medicaid Costs + $18 million
- The General Funds for the Department of Commerce, Community & Economic Development + The Department of Labor & Workforce Development
- 103,307 Flights from Ketchikan to Barrow in July ($868)
- Boeing 737-800 + $17 million for fuel and crew.

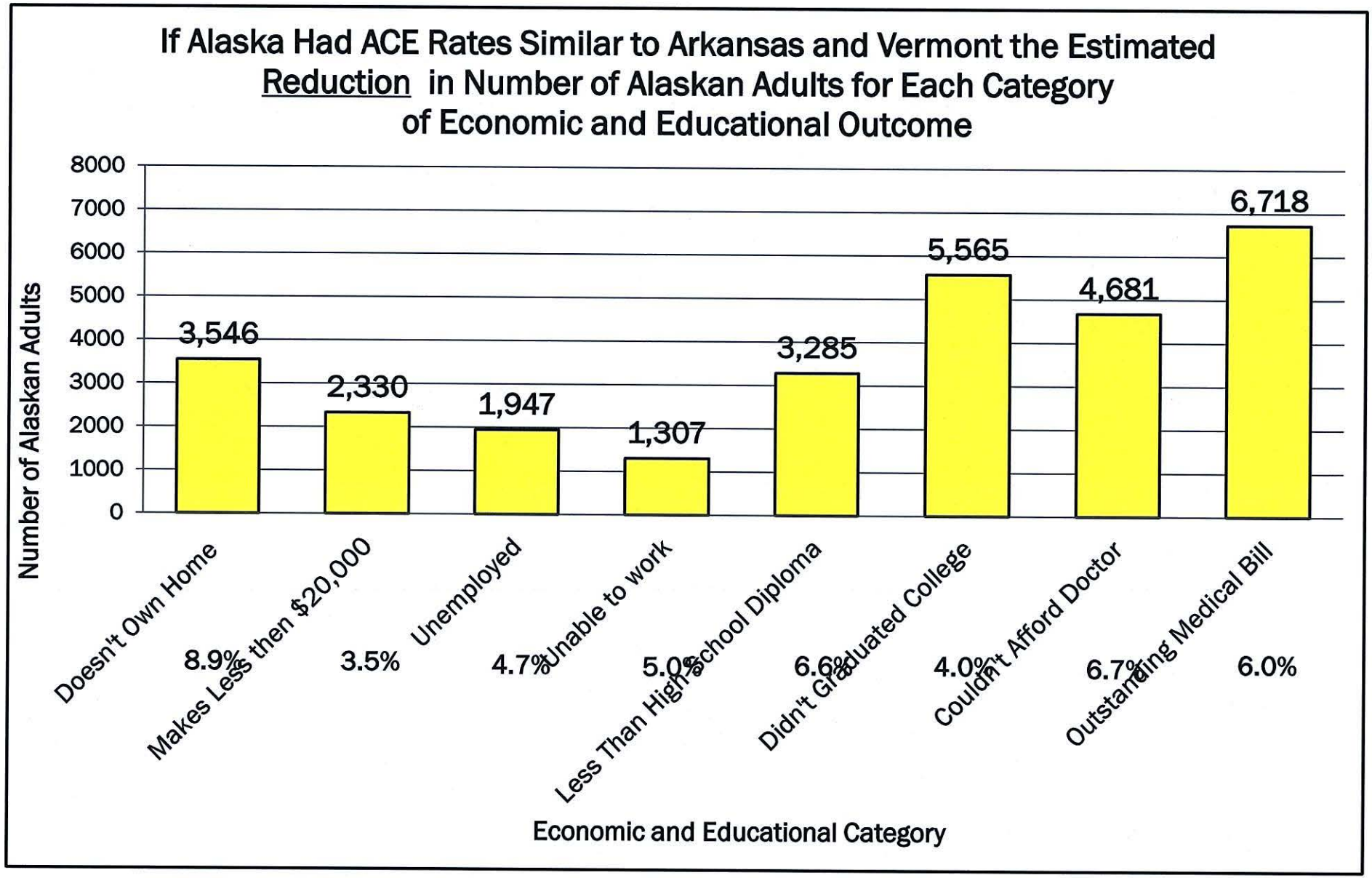
Pick One!

http://live.laborstats.alaska.gov/occ/alloccs.cfm#L

Advisory Board on Alcoholism and Drug Abuse

abada amhb

Alaska Mental Health Board



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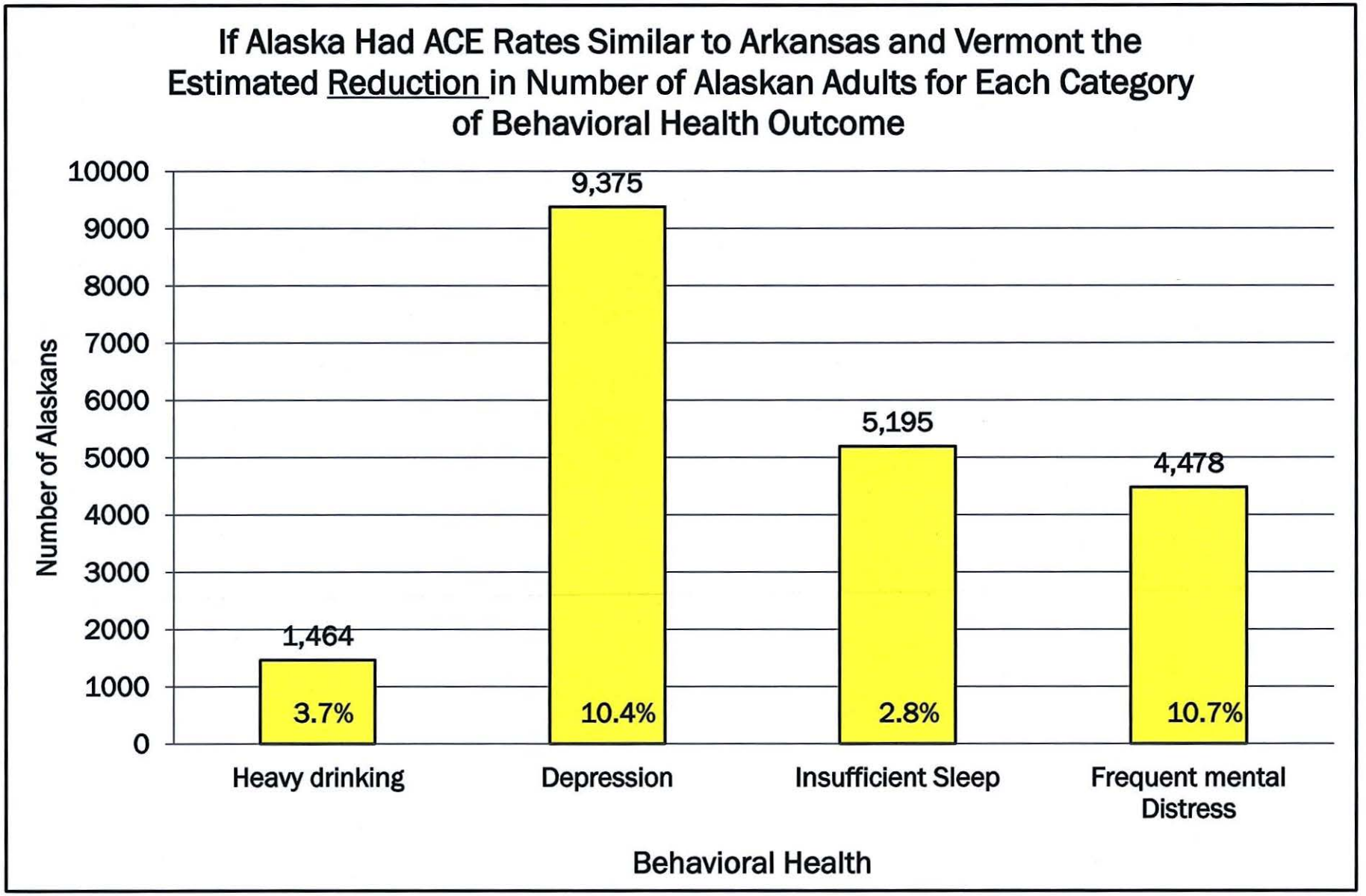

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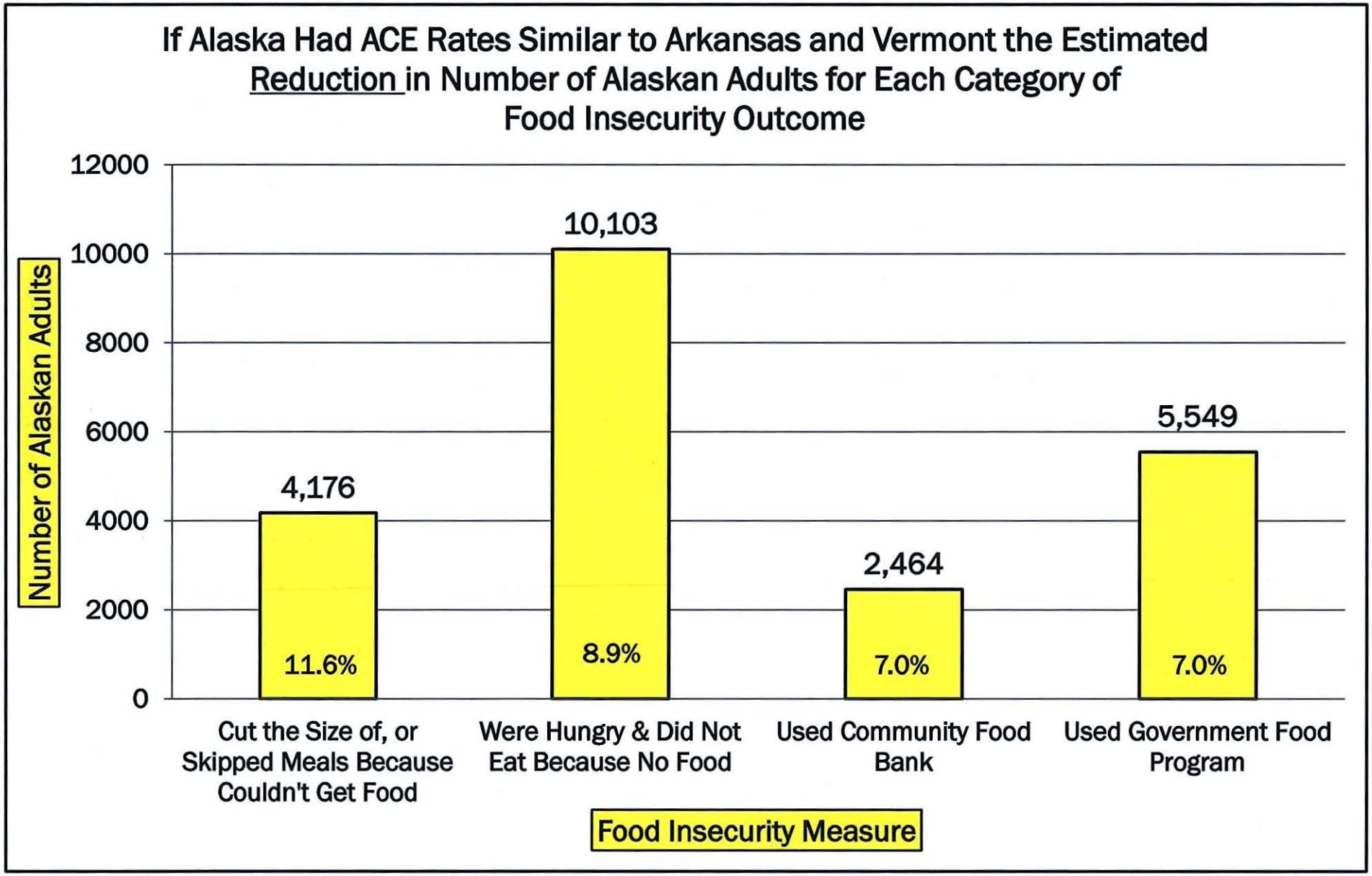

Calculations based on 2013 Alaska BRFSS data conducted be the Alaska Mental Health Board and Advisory Board on Alcoholism and Drug Abuse Staff

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"In the brain, as in the economy, getting it right the first time is ultimately more effective and less costly than trying to fix it later. "

James Heckman
Nobel Laureate Economist

National Scientific Council
on the Developing Child, Perspectives:
The Cradle of Prosperity. (2006).
http://www.developingchild.net

Thank you!!!

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Chapter 10

The Lifelong Effects of Adverse Childhood Experiences

Vincent J. Felitti, MD
Robert F. Anda, MD, MS

"They do not want to hear what their children suffer. They've made the telling of the suffering itself taboo."

Alice Walker, *Possessing the Secret of Joy.*

This chapter will document how adverse childhood experiences play a major and lifelong role in the difficulty, effectiveness, and cost of adult medical practice, and are the major origin of numerous important public health, medical, and social problems. In all of these areas, the relationship between adverse childhood experiences and adult well being ordinarily goes unrecognized. Our evidence comes from the Adverse Childhood Experiences (ACE) study, a collaborative effort between Kaiser Permanente and the Centers for Disease Control (CDC) involving over 17 000 adults in a major retrospective and prospective epidemiologic analysis. The ACE study reveals how 10 categories of adverse life experience in childhood have a demonstrable impact, decades later, on health risks, disease burden, social malfunction, medical care costs, and life expectancy. This chapter will show that events that are lost in time, and then further protected by shame, secrecy, and social taboos against exploring certain areas of human experience, cost us heavily in health, humanity, and dollars. Routinely integrating the inquiry about, acknowledgement, and discussion of traumatic life experiences into the medical history has major benefits to patients, and is generally welcomed by them, though it is often uncomfortable for physicians. This professional discomfort has secondary ramifications in limiting the availability of such information in medicine, social work, and in the law enforcement, legislative, and judicial systems.

Origins of the ACE Study

The ACE study had its origins in our repeated counterintuitive experiences while operating a major obesity-reduction program using the technique of supplemented absolute fasting, which allows weight to be reduced non-surgically at approximately the rate of 300 lbs per year.[1] We repeatedly found many patients fleeing their own success when major weight loss occurred. We were forced to recognize that eating has major psychoactive benefits that are obvious enough to be built into the language: "Sit down and have something to eat; you'll feel better." Many of our patients had a significant need to feel better, though these rarely surfaced spontaneously and hence were not known. Further exploration led to discovering the protective *benefits* of obesity. We slowly discovered that many of these patients had life experiences for which being obese was protective. If one has a need to de-sexualize oneself, as in a reaction to rape or childhood sexual molestation, then gaining a hundred pounds is an effective approach. A former rape victim who gained 105 pounds in the year subsequent to her rape commented: "Overweight is overlooked, and that's the way I need to be."

Similarly, being larger than others can project a sense of power, as illustrated in the common expression, "Throwing your weight around."

Interviews with our obese patients unexpectedly led to discovering myriad long-term medical effects of seriously troubled childhoods. Such histories were almost never documented in their medical records. The high prevalence of abusive life experiences in the childhoods of our obese patients ultimately led us to consider to what degree this might also be the case in a general population. The ACE study was devised to determine in a general, middle-class, adult population the prevalence of 10 categories of stressful, traumatic childhood experiences that we had found so common in our obese population. And further, to determine what, if any, the additional long-term effects of these experiences might be.

These clinical observations at Kaiser Permanente's Department of Preventive Medicine in San Diego dovetailed with new approaches to understanding the emotional underpinnings of behavior and disease that had recently emerged at the CDC among studies of nationally representative samples of US adults. Among these studies were: linking self-reported stress to the incidence of peptic ulcer disease,[2] discovering the higher prevalence of smoking and lower incidence of quitting among persons who are depressed,[3] and finding an increased incidence of coronary heart disease among persons experiencing hopelessness.[4] The combination of clinical observations at Kaiser Permanente (KP) and the public health approach using the tools of medical epidemiology at the CDC proved to be a powerful combination in designing the ACE study and quantifying and interpreting the observed long-term effects of ACEs.

The Department of Preventive Medicine at Kaiser Permanente in San Diego provided an unusual resource for carrying out such a study in its Health Appraisal division. At the time the ACE study began in 1995-1997, over 50 000 adults a year voluntarily chose to come for periodic comprehensive medical evaluation. This evaluation included detailed medical history, extensive laboratory testing, and complete physical examination. In any 4-year period, 81% of the adult members in San Diego chose to avail themselves of this service.

The ACE study consisted in our asking two groups of such adult Kaiser Health Plan members, each consisting of 13 000 consecutive individuals requesting such health appraisal, whether they would help us understand how childhood experiences might affect health later in life. We explained that we would also track their medical records prospectively to follow their clinical courses forward in time. The study was carried out in two separate waves to allow mid-point revision if necessary. Almost 70% of those asked agreed to participate in the ACE study. All persons had high-quality health insurance from Kaiser Health Plan. Average age was 57 years with a range from 26 into the nineties. Almost exactly half were men, half women. Approximately 80% were white including Hispanic, 10% black, 10% Asian; 74% had attended college. This was clearly a middle-class American population, and not one that could be dismissed as "not in my practice." This may have a bearing on the deep intellectual interest the findings of this study have generated, as well as on the resistance to using them in practice.

Approval of the ACE study was slowed by institutional review board (IRB) concern that some patients might emotionally decompensate when faced with the intrusive questions that we proposed to ask by questionnaire about childhood experiences. Colleagues assured us that patients would be furious when faced with these types of questions and they believed that patients would be unlikely to respond truthfully. IRB agreement was ultimately obtained by arranging to have a responsible person carry a cell phone 24 hours a day for 3 years to accept emergency calls from those putative persons who might decompensate when asked about the reality of their lives. However, no phone calls were received. Instead, we had a number of patient compliments and a small collection of letters, one written on lined paper by an elderly woman: "Thank

you for asking. I feared I would die and no one would ever know what had happened."

Ten categories of adverse childhood experiences were queried by the 4-page ACE study questionnaire that was mailed home to participants after they had filled out and submitted a lengthy general medical questionnaire. Inquiry in the ACE questionnaire was specifically limited to the first eighteen years of life and initially consisted of eight categories. Three categories were of abuse: physical abuse (not spanking), contact sexual abuse, and emotional abuse (typically recurrent humiliation). Five categories involved major household dysfunction. These consisted of growing up in a household: where the mother was treated violently; from which a household member was imprisoned; in which a member was alcoholic or a drug user; where a member was seriously depressed, suicidal, or mentally ill; and where the biological parents had separated or divorced. In the second wave of the study, two categories were added relating to major emotional and physical neglect. Specifics of the actual questions are provided in the first ACE study publication.[5]

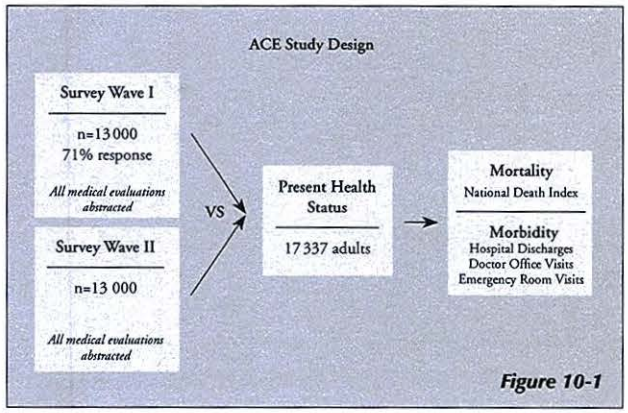


Figure 10-1. *ACE Study design.*

An ACE score was created which summed the number of categories that were experienced. The *number* of incidents or events within an ACE category was not summed. The ACE score can thus range from 0 to 8 in the first wave, and from 0 to 10 in the second group of 13 000 patients who were invited to participate. Surprisingly, the ten categories turned out to be essentially co-equal in terms of measured long-term effects. The conceptual design of the ACE study is depicted in **Figure 10-1**.

ACE scores, the number of categories (not incidents) of adverse childhood experiences, represent the self-acknowledged prevalence of traumatic life experiences during the childhoods of the 17 337 middle class adults in our study cohort. The prevalence of traumatic life experiences in childhood and adolescence was far higher than had been conceived. In retrospect, there was no basis for any opinion in terms of the prevalence of ACEs, because such information is well protected by shame and secrecy, and we had previously been inhibited by our own ignorance against the routine exploration of certain areas of human experience. Prevalence data for the 10 ACE categories is presented in **Table 10-1**. One readily sees that only 33% had an ACE score of 0, while one in six adults acknowledged an ACE score of 4 or more categories during

Table 10-1. Categories of Adverse Childhood Experiences

Abuse, by Category	Prevalence (%)
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%
Divorce or loss of biological parent <18	23%
Depression or mental illness in home	17%
Mother treated violently	13%
Imprisoned household member	5%

childhood. The question, of course, is whether this matters. Doesn't time heal? Aren't children resilient?

However, we were to find that, in this realm, time does not heal. Rather, time conceals, and resilience is real but partial, and is too commonly attributed, merely because of the achievement of focal economic or social success.

This chapter will approach the biomedical relevance of adverse childhood experiences to various outcomes, first by addressing common health risks underlying disease, then disease itself, and finally death. Subsequently, this chapter will address the emotional toll and the social effects of adverse childhood experiences.

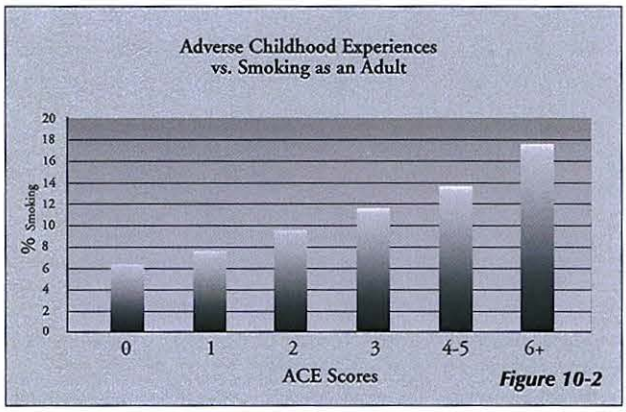
Health Risks

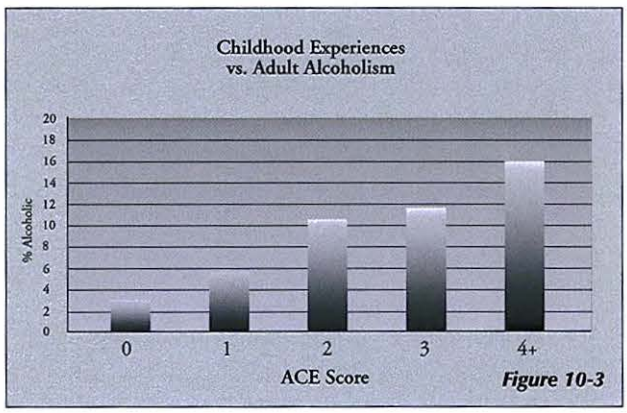
The harmful effects of smoking tobacco have been widely recognized for the past five decades. Nicotine is considered an addicting substance, addiction being defined as the unconscious, compulsive use of psychoactive agents. A more colloquial explanation of addiction is that people find it difficult to get enough of something that *almost* works to alleviate stress, worry, anxiety, or any similar negative experience. Generally, addiction has been thought to be due to a substance having unspecified molecular properties that act on the brain, resulting in some form of capture from repeated exposure. Indeed, nicotinic receptors are widespread in the brain, supporting this concept. Given the popularity of the belief that addiction is substance-dependent, it is thus easy to overlook the significant differences in life experiences between individuals, underlying the likelihood of their compulsive use of certain commonly available substances like nicotine, alcohol, or street drugs.[6]

Figure 10-2. *Adverse childhood experiences vs. smoking as an adult. All graphics have a p value of .001 or better.*

Figure 10-3. *Adverse childhood experiences vs. alcoholism.*

The ACE study found that the likelihood of current smoking in San Diego, a city with heavy public health pressures against smoking, is directly proportionate to ACE score.[7] This is illustrated in **Figure 10-2**, and is not compatible with addiction being simply due to repeated exposure to nicotine.





Alcoholism has major biomedical and social ramifications that are generally accepted as consequences of the addicting qualities of alcohol. Among the multiple ACE questionnaire items referring to alcoholism, the most direct was Question 18, "Have you ever considered yourself to be an alcoholic?" **Figure 10-3** illustrates the proportionate relationship to self-acknowledged alcoholism of developmental life experiences captured in the ACE score.[8] If the addicting qualities of alcohol were intrinsic to the substance, there would not be this strong, proportionate relationship to an individual's ACE score.

The strongest relationship of the ACE score to addiction is seen with injection of street drugs.[6,9] The long-term impact of injection drug use is heavily medical and social, with major involvement of law enforcement. It is commonly believed that repeated use of many street drugs will in itself produce addiction. Our findings challenge those views. **Figure 10-4** shows the dramatic and proportionate relationship of ACE score to self-acknowledged injection drug use. At ACE score 6, there is a 4600% increase in the likelihood of later becoming an injection drug user, compared to the likelihood at ACE score 0. Several epidemiologists at CDC described this intense relationship of injection drug use to prior traumatic life experiences as being of a magnitude seen once in a career.

The nature of the relationship between the ACE score and intravenous drug use strongly suggests that addiction has

relatively little to do with supposed addicting properties of certain substances, other than their all providing a desirable psychoactive relief. Rather, it is clear that the ameliorating effect that is being sought is proportionate to the sum of the number of categories of traumatic life experiences suffered. In other words, this is an understandable attempt at self-treatment with something that *almost* works, thus creating a drive for further doses. An additional insight may be obtained by realizing that the demonized crystal meth is the very same psychoactive chemical, methamphetamine, which was first introduced in the US as a prescription antidepressant by Burroughs Wellcome in 1940 under the brand name Methedrine. Amphedroxyn was the Lilly brand name.

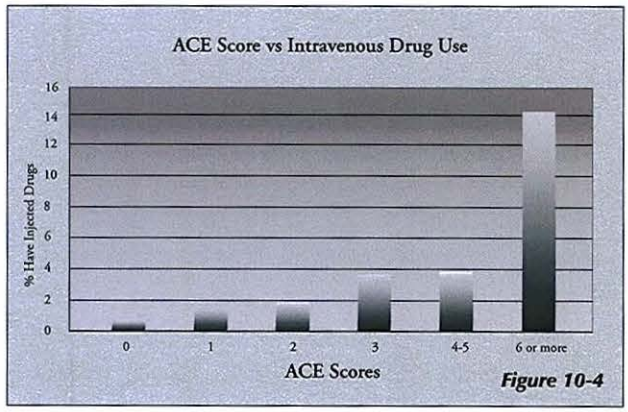


Figure 10-4. *Adverse childhood experiences vs. intravenous drug use.*

The broad public health perspective brought by the collaboration of Kaiser Permanente with CDC led to the inclusion of a wide array of health behaviors, disease risk factors, and health outcomes into the design of the Adverse Childhood Experiences study: eg, obesity, inactivity, promiscuity, liver disease, and mortality. Further information about them, their relationship to antecedent life experiences, and their consequences may readily be found in seventy ACE study publications, most of which are abstracted at the CDC's ACE study web site: http://www.cdc.gov/ACE/index.htm.

Ultimately, one sees that many of the more serious public health problems, while indeed undesirable for society, are *also* unconsciously attempted solutions to personal problems that are unrecognized because they are lost in time, and further protected by shame, by secrecy, and by social taboos against exploring certain realms of human experience and activity. This represents a public health paradox wherein the public health problem is also a personal solution. This public health paradox underlies many of our most difficult current problems in medicine and public health: in general people are not eager to give up the thing that comes closest to helping, especially at the behest of those who have no idea what has gone on in their lives. As an example, some people continue to smoke in the face of life-threatening pulmonary or cardiovascular disease.[10] Given the reality of some people's lives, it is important to at least try to understand that not everyone wishes to serve out a full life sentence, and that help is sometimes best given by understanding than by trying to impose superficial advice.

Biomedical Disease

In the three prior examples of easily recognized health risks, there is a pathway that transmutes life experience in childhood to biomedical disease in adult life. The relationship of smoking, alcoholism, and use of illicit drugs to subsequent disease is too obvious to belabor; these coping devices are major intermediary mechanisms leading to disease. Traumatic life experiences in childhood, captured by the ACE score, appear to be a major cause underlying the unconscious selection of those substances that are used because of their psychoactive benefits. Their risks are certainly major, but distant. Most of us understand that when stresses are sufficient, the future will often be sold out to obtain current relief. Nevertheless, in spite of the routine co-occurrence of opposing forces in nature, many find it difficult to accept that the same substance may have both good and bad qualities. As physicians we often approach complex and difficult behavioral problems by paying attention to only half the equation, and so we are at a significant disadvantage.

In looking at common disease outcomes like chronic obstructive pulmonary disease (COPD) and coronary artery disease (CAD), one may recognize that not every person with COPD has been a smoker, nor does everyone with CAD have the underlying risk factors identified in the Framingham study. This raises the question: what causes their disease? In coronary artery disease, approximately 10-15% of cases have

none of the currently recognized underlying risk factors. However, when ACE scores are evaluated in this group, nine of the ten categories of adverse childhood experience are found to be associated with a distinct increase in the likelihood of coronary disease in adult life, even in the absence of the Framingham risk factors.[11] This indicates a second major pathway leading from life experience in childhood to biomedical disease in adult life: the effect of major unrelieved stress over prolonged periods of time. It is a pathway that is currently under extensive study; its ultimate limits and ramifications are yet to be worked out.

Figure 10-5-a. *Adverse childhood experiences vs. depression.*

Figure 10-5-b. *Estimates of the population attributable risk of adverse childhood experiences for selected outcomes in women.*

Figure 10-5-c. *Adverse childhood experiences vs. 50-year antidepressant use.*

In an analysis of 21 different autoimmune diseases, it was possible to demonstrate a proportionate relationship between ACE score and the likelihood of developing autoimmune diseases decades later in adult life.[12] Our evolving understanding of these mechanisms involves adverse early life experiences affecting development of the brain, thus altering the complex inter-relationship of neural, endocrine, and immune systems.[13] Recently, it has become increasingly clear that the dyscontrol resulting from chronic stress in these systems causes the release of pro-inflammatory cytokines, chemicals which cause inflammatory changes in the endothelial lining of minute blood vessels thereby blocking circulation to tissues they ordinarily supply, resulting in various levels of scar formation and thus hypofunction.[14,15]

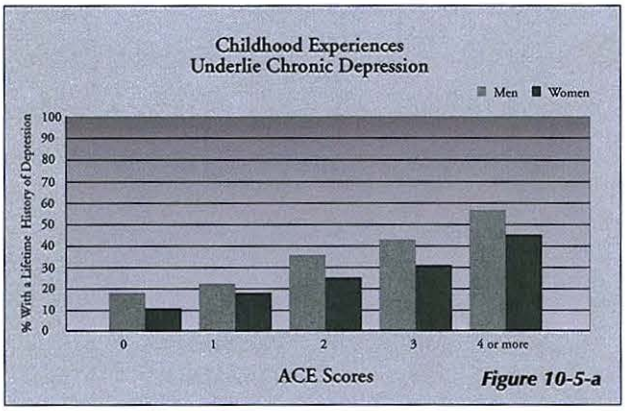


Figure 10-5-a

Estimates of the Population Attributable Risk* of ACEs for Selected Outcomes in Women

Mental Health	PAR
Current Depression	54%
Chronic Depression	41%
Suicide Attempt	58%

*That portion of a condition attributable to specific risk factors

Figure 10-5-b

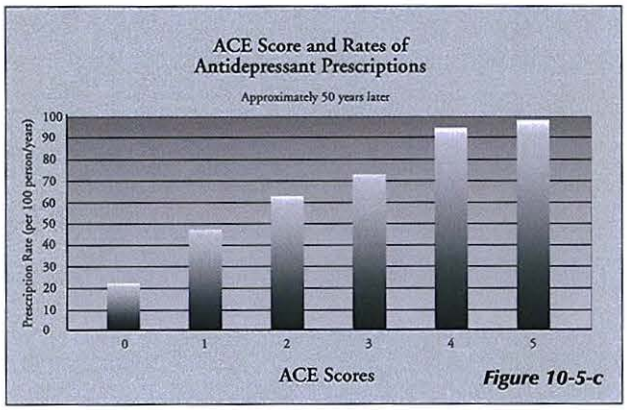


Figure 10-5-c

Although the demonstrated relationship of adverse childhood experiences to a lifetime history of fractures[2] and liver disease[16] is readily understandable via the intermediary mechanisms of drug-related accidents to fractures, and alcohol or hepatitis to liver disease, the basis for the proportionate relationship of ACE score to malignancy is more subtle.[17] Once one gets beyond the relationship of smoking to lung cancer, we remember that all of us produce throughout our lives a low level of malignant cells that are processed out by our immune systems. Thus, "getting cancer" typically involves either an increased rate of production of malignant cells as in carcinogen exposure, or a decreased rate of clearance as in the immunosuppressed states required for organ transplantation. In recent years physicians have come to understand the role of major unrelieved stress in immunosuppression, both as a result of prolonged high levels of circulating cortisone analogues and by ultimate dysregulation of the hypothalamic-pituitary-adrenal axis with its effects on the immune system.[15]

Given the above examples of the proportionate, dose-response relationship of ACE score to later biomedical disease, and not even including the upcoming relationship of traumatic childhood experiences to later suicide, it is not surprising that life expectancy would be shortened. Indeed, in the prospective arm of the ACE study, it was found that experiencing six or more categories of adverse life experience in infancy, childhood, or adolescence shortens an individual's life expectancy by almost twenty years.[18]

Emotional Disorders

That abusive life experiences should produce subsequent emotional disturbance is hardly unexpected, but the breadth, depth, and chronicity of those outcomes was distinctly greater than anticipated.[19-21] Depression, suicidality, chronic anxiety, amnesia, and hallucinations exemplify most of our findings in

this area. **Figure 10-5-a** illustrates the pervasive relationship of childhood experiences to self-acknowledged chronic depression decades after the fact. Not all chronic depression can be traced to childhood, but when the population attributable risk was studied to estimate how much of the problem can be traced to childhood experiences, one can see that it is a major component (see **Figure 10-5-b**). **Figure 10-5-c** shows that antidepressant use on average a half-century later is still strongly related to childhood experiences. As Barbour has perceptively stated, depression is not a disease but a normal response to abnormal life experiences.[22] The fact that neurochemical changes are demonstrable illustrates the necessary intermediary mechanisms for depression to manifest itself, not its causality. Mistaking mechanism for cause is a temptingly comfortable error to be avoided if advances in understanding are to be made.

A similar proportionate relation exists between childhood experiences and suicide attempts later in life, and is illustrated in **Figure 10-6**. At ACE score 7 and higher there is a dramatic increase in the likelihood of attempted suicide as compared to ACE score 0: a 31-fold or 3100% increase.[23]

It appears inescapable that a major portion of depression and attempted suicide can be traced back to 10 categories of traumatizing life experiences in childhood. Further, prescription rates for anxiety-reducing medications approximately a half-century after childhood show a similar proportionate relationship to ACE score[24] as was demonstrated for anti-depressant medication over the course of a lifetime (see **Figure 10-7**).

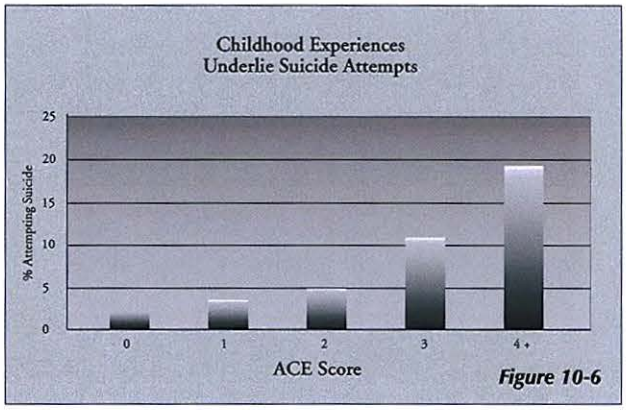
Amnesia is rarely considered in the complete medical history. Given that it is well-recognized as an unconscious response to trauma, this is a major oversight. Doctors often hear patients recount incidents of childhood memory loss. **Figure 10-8** depicts the relationship of ACE score to partial amnesias of this type.[25]

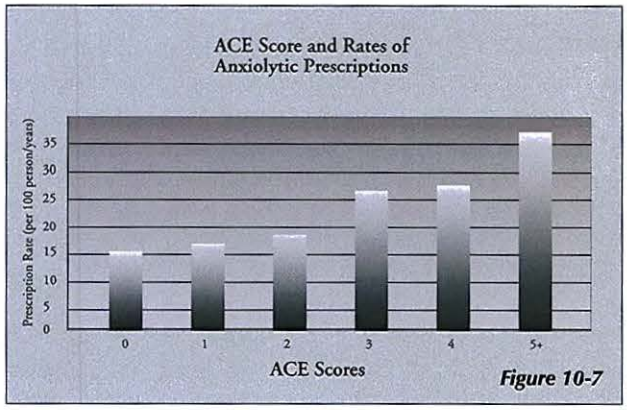
Figure 10-6. *Adverse childhood experiences vs. suicidality.*

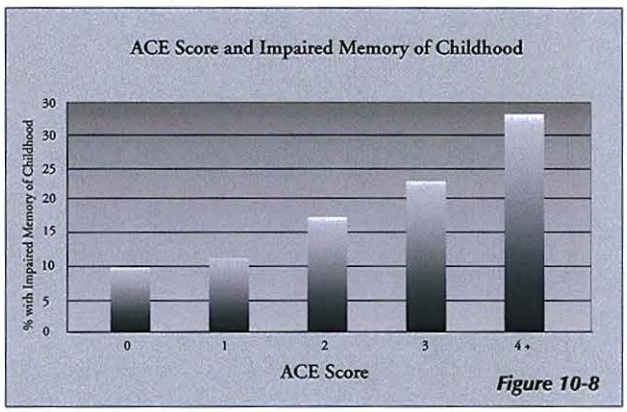
Figure 10-7. *Adverse childhood experiences vs. rates of anxioloytic prescriptions.*

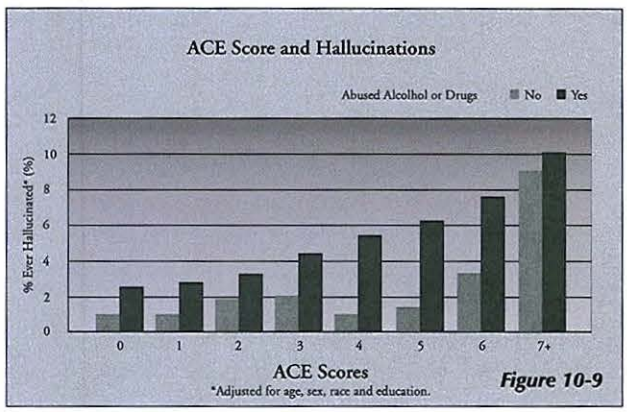
Figure 10-8. *Adverse childhood experiences vs. impaired memory of childhood.*

Figure 10-9. *Adverse childhood experiences vs. hallucinations.*









Similarly, most of us would consider it insulting to patients to inquire routinely about hallucinations, and most psychotic individuals recognize it does not profit them to speak openly of hallucinating. Yet, when individuals are openly and routinely questioned in a population-based manner, there is a striking relationship of ACE score to later hallucinations (**Figure 10-9**). This is independent of alcohol or street drugs possibly being used to moderate a high ACE score, and hence being a possible source of the hallucinations.[26]

In **Figure 10-10** (previously unpublished data), the relationship of multiple unexplained adult symptoms is presented in relation to a history of childhood sexual abuse. In addition to these clinical findings from the retrospective and prospective arms of the ACE Study, one recognizes that major economic costs are implicitly involved for individual care and for increasingly expensive prescription medications often used in treatment.

Social Function

Although toxic materials are certainly at many worksites, their number does not approach the number of toxic childhoods playing out at those worksites. These present in occupational medicine as unexplained symptoms, somatization disorders, absenteeism, or inadequate performance of ordinary tasks.[27] **Figure 10-11** shows the proportionate relationship of ACE score to self-rated inadequate performance of one's job. The 2000 Nobel Laureate in Economics, James Heckman of the University of Chicago, has written extensively on the prolonged economic costs of these adverse childhood experiences.[28]

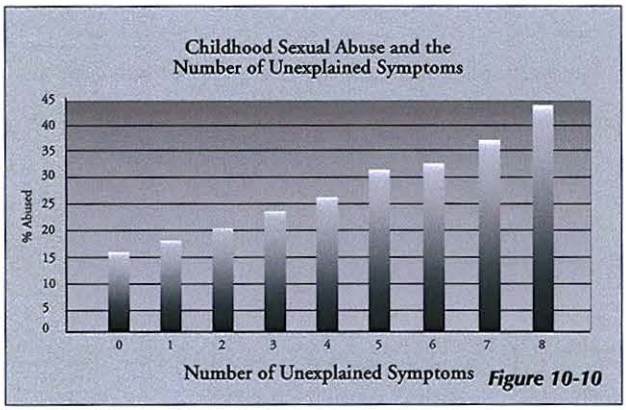
In a totally different social realm, we have documented the relationship of ACE score to promiscuity (**Figure 10-12**),[13] and to multiple marriages (**Figure 10-13**).[29] It seems clear that traumatizing life experiences during childhood are related to later

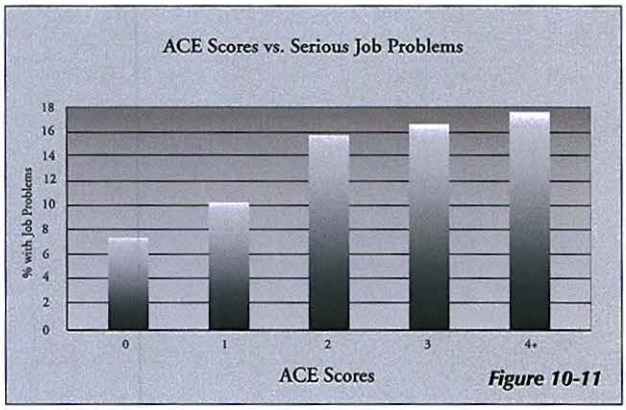
Figure 10-10. *Childhood sexual abuse and the number of unexplained symptoms.*

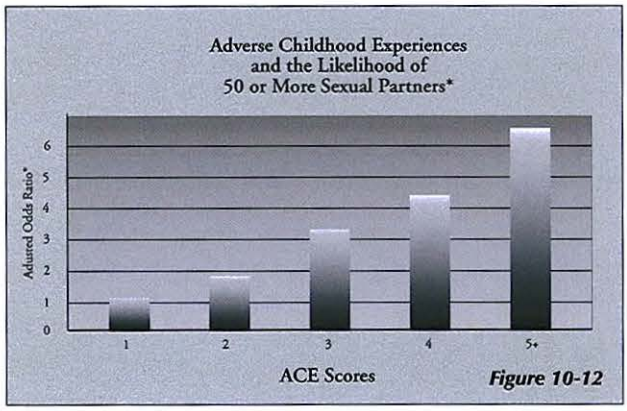
Figure 10-11. *Adverse childhood experiences vs. serious job problems.*

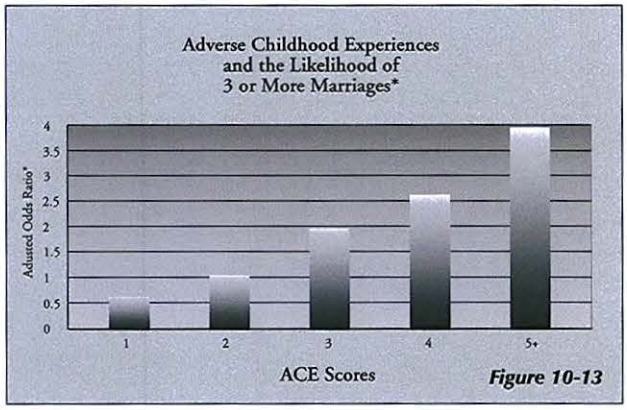
Figure 10-12. *Adverse childhood experiences increase the likelihood of having 50 or more sexual partners.*

Figure 10-13. *Adverse childhood experiences increase the likelihood of having 3 or more marriages.*









interpersonal instability, including of marital relationships, and that promiscuity can be understood as an ongoing quest for the one who will love me or a form of self-soothing akin to alcohol, nicotine, or drug use.

Integration of ACE Findings into Practice

Ultimately, it became obvious that what was being uncovered in the ACE study was profoundly relevant to the organization, delivery, outcomes, and cost of everyday medical practice. Further, that the impact of adverse childhood experiences played out strongly in the social sector as well, involving prisons, homelessness, and juvenile delinquency. The photojournalist Susan Madden Lankford, working as an urban anthropologist, has documented these latter relationships in three recent books that are sampled at her website.[30]

Clearly, much of what we see in adult medical practice and as current major public health problems has its origins in what was present but unrecognized in pediatrics. There is a need to move from our current symptom-responsive approach in primary care to the comprehensive approach that was conceived but not attained—what George Engel described as a biopsychosocial approach.[31] Stanford's Victor Fuchs has noted that such comprehensive care requires information, infrastructure, and incentive. Already blessed with extensive infrastructure, our first move was to improve our routine information base by integrating trauma-oriented questions in the already lengthy and detailed biomedical questionnaire that our patients filled out at home before coming in for comprehensive medical evaluation. Our examiner staff correctly perceived that their performance bar had abruptly been reset to a higher level; two of thirty examiners left to work in other departments, while the others became highly capable at routinely dealing with thematic material that most of us avoid. Internist and family practice colleagues, while commonly finding the ACE study quite interesting, generally did not want to use its findings in practice, citing time factors and lack of training as explanations. Those in fee-for-service practice additionally cited lack of insurance coverage. While superficially plausible, we saw these often were cover excuses for deeper resistance, sometimes related to the awakening of personal ghosts, as well as discomfort in discussing topics we have all been taught are protected by social taboos related to sex and the privacy of family lives.

We too faced these issues, as did our staff of examiners. Nevertheless, we proceeded to develop a lengthy, well-conceived, general medical questionnaire with trauma-oriented components that patients filled out at home. When patients arrived in our Health Appraisal Center, this questionnaire was collected and fed into a digital scanner that took all *Yes* answers, organized them into a Review of Systems format, and provided a laser-printed medical history a few pages long that quickly enabled us to identify those areas needing further exploration or discussion. Because it was equally clear what body systems or areas did *not* need further exploration, the time we had was redirected and turned out to be adequate. This indeed was unexpected.

The fact that intimate life experiences, which previously had never surfaced because of our own discomfort and not because of time, could be brought up and discussed in the course of comprehensive medical evaluation was a tribute to the effect of a well-devised, highly detailed medical questionnaire that got the information out in the safety of the patient's home, making it easier to bring it up for discussion in the doctor's office. Our discussion was brief, commonly following the pattern of: "I see on the questionnaire that you were… Tell me how that has affected you later in your life." Responses were typically a minute or two long, sometimes tearful, and often providing information that helped patients achieve new levels of understanding of their problems, and helped us understand what we might do to help.

After this expansion of our standard information base had taken place to include trauma-oriented questions, and we were satisfied with our new-found ability to make sense out of complex and confusingly intractable cases, an outside organization using

the data mining technique of neural net analysis carried out a study of over 100 000 patients undergoing comprehensive medical evaluation with the new trauma-oriented medical questionnaire. The same physical examination and extensive laboratory testing were involved as before. Their findings showed a dramatic change that we had not anticipated.

In the year following comprehensive medical evaluation using the expanded questionnaire with trauma-oriented components, there was a 35% reduction in doctor office visits (DOVs) and an 11% reduction in ER visits compared to the year-before visits of that large patient cohort. A control group from some years earlier, when the evaluation process was similar except that trauma-oriented questions were absent, showed an 11% reduction in DOVs (unpublished data). ER visits had not then been studied. The obvious question was why this major change took place. Some physicians supposed these reductions in utilization were the result of patients being referred for psychotherapy, while others theorized that patients were avoiding needed medical care because they have been so humiliated by being forced to answer those questions.

Neither supposition has any factual basis. Almost no one was referred for therapy. Moreover, no complaints were heard and many patients were complimentary and grateful for the trauma-oriented approach. Obviously, some patients may have chosen to falsely answer *No* to trauma-oriented questions, but the number of *Yes* answers was so great that it was clear that an important new realm of the medical history had been uncovered. We thus came to see in adult medical practice the importance of the early years, the developmental years, and in particular the importance of damaging life experiences during those years. Gradually, we came to see that asking, listening, and enabling a patient to go home feeling still accepted, is in itself a major intervention. The clinical practice of asking, listening, and accepting is *doing*.

A profound change in disease patterns has occurred since the early 20th century when infectious and deficiency diseases were rife during childhood and were responsible for large portions of adult disease. Rheumatic heart disease has since been replaced by coronary disease, and the diseases of malnutrition have been replaced by diseases resulting from obesity. Polio, rickets, pellagra, and hookworm seem like ancient memories, although they occurred within the lifetime of many of us.

Our current problems in medical practice are not only diagnostic and therapeutic but now are heavily economic. One of the most important insights derived from the Adverse Childhood Experiences study may be its demonstration of the major intellectual, economic, and emotional benefits that result from moving into realms of the medical history that are generally closed by social nicety. There are only three sources of diagnostic information in all of medicine: history, physical examination including observation of interpersonal relationships, and laboratory studies. While experienced physicians have long understood that history is the most important of the three, producing diagnosis about 80% of the time, our practice patterns tend to focus on laboratory studies. The reasons behind this are complex, involving time, insurance reimbursement, lack of experience, physician discomfort discussing certain areas of human life like sex or family experiences, and the heavily biomedical teaching approaches of medical schools. Although the numerous publications from the ACE study have attracted widespread intellectual interest, there has been significant resistance to integrating that information into clinical practice. Clinical integration, while intellectually straightforward, represents major personal and organizational change, and hence threatens a crisis in self-esteem as is discussed by the philosopher Eric Hoffer in his monograph, *The Ordeal of Change*.[32]

We have shown in one large and unusual Department of Preventive Medicine that such clinical integration is routinely possible. It is affordable, acceptable, and beneficial to patient, physician, and third party payer. We have now successfully used this comprehensive approach with 440 000 adult patients in one department over an

eight-year period. And yet, it has not spread, even within Kaiser Permanente.

In spite of all our advances, do our current ways of medical understanding limit us as Kirkengen has eloquently argued from Norway?[33] We have choices: we can change nothing in medical practice itself, even while making significant biomedical advances and engaging in politicized discussions about the economics of healthcare; we can attempt difficult emotional and physical repair work in patients, after the fact and on an enormous scale; or we can attempt true primary prevention. No one knows how to carry out primary prevention in this area, but it is the right problem to face.

Signs of Progress: ACE Study Findings Move into Public Health Applications

By contrast, efforts to integrate the ACE study findings into public health practice are meeting with encouraging success. Information from the ACE study is now rapidly gaining traction both nationally and internationally. The Centers for Disease Control and the World Health Organization (WHO) have begun to face the reality that adverse childhood experiences pose the major public health and social problem of our times.[34] In his piercing book, *Lost Lives*, Helander has documented from his years at WHO the global prevalence of this problem.[35]

Surveillance studies are a powerful tool for putting new concepts on the state, national, and international agendas that lead to changes in policy and practice. The CDC- and state-based Behavioral Risk Factor Surveillance System (BRFSS) now offers standardized questions about ACEs that allow participating states to have their own population-based ACE study.[36] Interest in the public health burden of adverse childhood experiences is growing state-by-state across the country. Starting in 2009, 18 states are now routinely gathering ACE information, and around the world countries are working with the CDC and the WHO to pilot test the use of ACE questions in health surveys. Information from such sources will lead to changed perspectives on health, and in improved understanding of the root causes of today's most pressing public health problems. In spite of the complex problem of resistance to change, it is likely that public health will lead these changes well in advance of primary care medical practice.[37] When the use of comprehensive medical history, including routine inquiry into traumatic life experiences in the developmental years, ultimately penetrates clinical primary care, it may be one of the major public health advances of our time.

References

1. Felitti VJ, Jakstis K, Pepper V, Ray A. Obesity: problem, solution, or both. *Permanente J.* 2010;14:24-30.
2. Anda RF, Williamson DF, Remington PL, Escobedo LG, Mast EE, Madans J. Self-perceived stress and the risk of peptic ulcer disease: a national prospective study. *Arch Int Med.* 1992;152:829-833.
3. Anda RF, Williamson DF, Escobedo LG, Mast EE, Giovino GA, Remington PL. Depression and the dynamics of smoking: a national perspective. *JAMA.* 1990;264:1541-1545.
4. Anda RF, Williamson D, Jones D, et al. Depressed affect, hopelessness, and the risk of ischemic heart disease in a cohort of US adults. *Epidemiology.* 1993;4:285-294.
5. Felitti VJ, Anda RF, Nordenberg D, et al. The relationship of adult health status to childhood abuse and household dysfunction. *Am J Prev Med.* 1998;14:245-258.
6. Felitti VJ. Ursprünge des Suchtverhaltens—Evidenzen aus einer Studie zu belastenden Kindheitserfahrungen. *Praxis der Kinderpsychologie und Kinderpsychiatrie.* 2003;52:547-559.

7. Anda RF, Croft JB, Felitti VJ, et al. Adverse childhood experiences and smoking during adolescence and adulthood. *JAMA.* 1999;282:1652-1658.
8. Dube SR, Anda RF, Felitti VJ, Edwards VJ, Croft JB. Adverse childhood experiences and personal alcohol abuse as an adult. *Addict Behav.* 2002;27:713-725.
9. Dube SR, Felitti VJ, Dong M, Chapman DP, Giles WH, Anda RF. Childhood abuse, neglect, and household dysfunction and the risk of illicit drug use: the Adverse Childhood Experience study. *Pediatrics.* 2003;111:564-572.
10. Edwards VJ, Anda RF, Gu D, Dube SR, Felitti VJ. Adverse childhood experiences and smoking persistence in adults with smoking-related symptoms and illness. *Permanente J.* 2007;11:5-13.
11. Dong M, Giles WH, Felitti VJ, et al. Insights into causal pathways for ischemic heart disease: Adverse Childhood Experiences study. *Circulation.* 2004;110:1761-1766.
12. Dube SR, Fairweather D, Pearson WS, Felitti VJ, Anda RF, Croft JB. Cumulative childhood stress and autoimmune diseases in adults. *Psychosom Med.* 2009;71:243-250.
13. Anda RF, Felitti VJ, Bremner JD, et al. The enduring effects of abuse and related adverse experiences in childhood: a convergence of evidence from neurobiology and epidemiology. *Eur Arch Psychiatry Clin Neurosci.* 2006;256:174-186.
14. Danese A, Pariante CM, Caspi A, Taylor A, Poulton R. Childhood maltreatment predicts adult inflammation in a life-course study. *Proc Nat Acad Sci USA.* 2007;104:1319-1324.
15. Sorrells SF, Sapolsky RM. An inflammatory review of glucocorticoid actions in the CNS. *Brain Behav Immun.* 2007;21:259-272.
16. Dong M, Dube SR, Felitti VJ, Giles WH, Anda RF. Adverse childhood experiences and self-reported liver disease: new insights into a causal pathway. *Arch Intern Med.* 2003;163:1949-1956.
17. Brown DW, Anda RA, Felitti VJ, et al. Adverse childhood experiences are associated with the risk of lung cancer: a prospective cohort study. *BMC Public Health.* 2010;10:20-32. http://www.miomedcentral.com/1471-2458/10/20. Accessed July 24, 2013.
18. Brown DW, Anda RA, Tiemeier H, et al. Adverse childhood experiences and the risk of premature mortality. *Am J Prev Med.* 2009;37:389-396.
19. Edwards VJ, Anda RF, Felitti VJ, Dube SR. Adverse childhood experiences and health-related quality of life as an adult. In: K Kendall-Tackett, ed. *Health Consequences of Abuse in the Family: A Clinical Guide for Evidence-Based Practice.* Washington, DC: American Psychological Association; 2003:81-94.
20. Chapman DP, Anda RF, Felitti VJ, Dube SR, Edwards VJ, Whitfield CL. Epidemiology of adverse childhood experiences and depressive disorders in a large health maintenance organization population. *J Affective Disord.* 2004;82:217-225.
21. Chapman DP, Dube SR, Anda RF. Adverse childhood events as risk factors for negative mental health outcomes. *Psych Annals.* 2007;37:359-364.
22. Barbour A. *Caring for Patients: A Critique of the Medical Model.* Palo Alto, CA: Stanford University Press; 1995.
23. Dube SR, Anda RF, Felitti VJ, Chapman D, Williamson DF, Giles WH.

Childhood abuse, household dysfunction and the risk of attempted suicide throughout the life span: findings from the Adverse Childhood Experiences study. *JAMA*. 2001;286:3089-3096.

24. Anda RF, Brown DW, Felitti VJ, Bremner JD, Dube SR, Giles WH. Adverse childhood experiences and prescribed psychotropic medications in adults. *Am J Prev Med*. 2007;32:389-394.
25. Brown DW, Anda RF, Edwards VJ, Felitti VJ, Dube SR, Giles WH. Adverse childhood experiences and childhood autobiographical memory disturbance. *Child Abuse Negl*. 2007;31:961-969.
26. Whitfield CL, Dube SR, Felitti VJ, Anda RF. Adverse childhood experiences and subsequent hallucinations. *Child Abuse Negl*. 2005;29:797-810.
27. Anda RF, Fleisher VI, Felitti VJ, et al. Childhood abuse, household dysfunction, and indicators of impaired worker performance in adulthood. *Permanente J*. 2004;8:30-38.
28. Knudsen EI, Heckman JJ, Cameron J, Shonkoff JP. Building America's future workforce: economic, neurobiological and behavioral perspectives on investment in human skill development. *Proc Natl Acad Sci USA*. 2006;103:10155-10162.
29. Hillis SD, Anda RF, Felitti VJ, Marchbanks PA. Adverse childhood experiences and sexual risk behaviors in women: a retrospective cohort study. *Fam Plann Perspect*. 2001;33:206-211.
30. Lankford SM. Humane exposures publishing. Humane Exposures Website. http://www.humaneexposures.com/publishing.html. Accessed July 24, 2013.
31. Engel GL. The need for a new medical model: a challenge for biomedicine. *Science*. 1977;196:129-136.
32. Hoffer Eric. *The Ordeal of Change*. New York, NY: Harper & Row; 1963.
33. Kirkengen AL. *The Lived Experience of Violation: How Abused Children Become Unhealthy Adults*. Bucharest: Zeta Press; 2010.
34. Anda RF, Butchart A, Felitti VJ, Brown DW. Building a framework for global surveillance of the public health implications of adverse childhood experiences. *Am J Prev Med*. 2010;39:93-98.
35. Helander E. *Lost Lives: the Pandemic Violence Against Children*. Lund, Sweden: Academic Press; 2011.
36. Centers of Disease Control and Prevention. Adverse childhood experiences reported by adults—five states, 2009. *MMWR*. 2010;59(49):1609-1613.
37. Anda RF, Brown DW. Root causes and organic budgeting: funding health from conception to the grave. *Pediatr Health*. 2007;1:141-143.