



**Children of Alcoholics
in the Medical System:
Hidden Problems, Hidden Costs**

Children of Alcoholics Foundation, Inc.
New York
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CHILDREN OF ALCOHOLICS FOUNDATION, INC.

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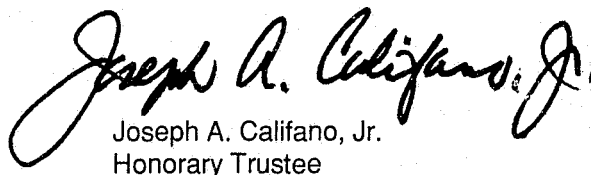
Alcoholism is a family disease. Its primary victim is the alcoholic, but the family and children suffer its ravages as well.

Seven million American youngsters under the age of 18 live with parental alcoholism. Each and every day each of these children must cope with emotional turmoil, stress, erratic and irrational behavior and often physical as well as psychological pain. Their health suffers from tensions and often from abuse and neglect. Some of these children are permanently damaged when their mothers drink during pregnancy. Research conducted over the last decade has established the fact that children from alcoholic families have more physical, emotional and mental health problems than other youngsters.

This study, the first drawn from a large data base of insured working Americans, documents the enormous impact of parental alcoholism on children's health—and on our health care system. Children of alcoholics go to the hospital at a greater rate and stay longer than other children. They use hospital days at an almost two-thirds greater rate than other children and home health services at twice the rate. The rate of their health care costs is a third higher than that of other children.

Treating the alcoholic parents of these high-risk children is not enough. As this study makes clear, children of alcoholics need and deserve help for themselves. Health care and other professionals who are in contact with youngsters must be alert and sensitive to the signals, often subtle, of parental alcohol abuse in children they treat. The payoff is twofold: less suffering and pain for millions of children and a reduction of health care costs.

As health care costs approach 12% of our gross national product, we must seize every opportunity to prevent illness and avoid the need for expensive hospital treatment. Treating alcoholism has been demonstrated to be cost effective. This study indicates that helping children of alcoholics also offers substantial savings to the health care system. By targeting children of alcoholics for prevention and treatment services, we can help prevent future alcoholism and reduce the fearsome human and economic toll on these innocent victims.



Joseph A. Califano, Jr.
Honorary Trustee

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Children of Alcoholics in the Medical System: Hidden Problems, Hidden Costs

Summary

Research shows children of alcoholics are far more likely than other youngsters to have physical, emotional and mental health problems. They are also more likely to become alcoholics. Yet despite these findings, few studies have examined their use of the medical system in comparison with other youngsters and none has compared their health care costs to those of other children. To generate this valuable information needed by a broad range of professionals, the Children of Alcoholics Foundation launched the first major study of the effects of parents' alcohol abuse on their youngsters health care patterns, utilization rates and costs of their medical care.

Given what is already known about this especially vulnerable population, the Foundation hypothesized that children from alcoholic families as compared with other children, would have greater health care usage, including more frequent admissions to hospitals, longer hospital stays and higher health care costs. The study population consisted of dependent children of adults who were in treatment for alcoholism or related disorders between 1984-1986 and youngsters from other families. The data was based on claims filed by 1.6 million subscribers under group policies carried by Independence Blue Cross and included analysis by admission rates, length of hospitalizations and financial costs of inpatient, short procedure unit and home health care.

Major Findings

- Children of alcoholics' rate for inpatient admissions per thousand subscribers was 24.3% greater than other children.
- Children of alcoholics' average length of hospital stay was 28.8% greater than other children.
- Children of alcoholics' rate of hospital days used per thousand subscribers was 61.7% greater than other children.
- Children of alcoholics' rate of inpatient hospital charges per thousand subscribers was 36% greater than other children.
- Children of alcoholics' higher rates of inpatient admissions, average lengths of stay and charges occurred within specific diagnosis categories, most notably in substance abuse and mental disorders.

Findings from this comparative study indicate the negative effect of parental alcoholism on children and raise many broad concerns. Of primary importance are the physical and mental health problems parents' alcoholism causes children. A second concern is the cost of health care for individuals in alcoholic families in terms of dollars and in personal suffering. A third issue is the cumulative burden of the financial costs of parental alcoholism on the entire health care system.

The report concludes with recommendations for health care providers, prevention and education programs, employers and insurers to provide early intervention, services and referrals in order to prevent children's problems and reduce their health care costs. Also included is an agenda for future research to expand understanding of the negative impact of parental alcoholism on children's health and improve our ability to help these vulnerable youngsters.

Introduction and Acknowledgements

by Migs Woodside, President

The Children of Alcoholics Foundation is a voluntary, nonprofit, public organization created in 1982 to help the nation's 28 million children of alcoholics — a silent but troubled group — whose problems have been generally ignored. Its mission is to reach and help children and adults from alcoholic families; make Americans aware of their greater risk of physical, mental and emotional problems; reduce their pain and suffering; and break the intergenerational cycle of family alcoholism.

To carry out its mission, the Foundation informs and educates the public and professionals about the problems caused by parents' drinking; encourages federal, state and local decision makers to respond to the unique needs of these vulnerable children; and develops programs and materials to prevent problems and help children of alcoholics reach their full potential.

A further goal of the Foundation is to promote and disseminate new research and new data on the effects of family alcoholism on children. This report, *Children of Alcoholics in the Medical System: Hidden Problems, Hidden Costs*, represents another of the Foundation's major initiatives to produce valuable new information for professionals in key positions to help this high-risk group.

In 1984, shortly after its first full year of operation, the Foundation launched the initial project in its extensive program to promote research and generate needed information. This initiative included the organization of a landmark conference which brought together, for the first time, leading scientists and clinicians from diverse disciplines to create a research agenda on children of alcoholics. During the meeting, conferees appraised the current state of research, developed fruitful areas for future study and agreed unanimously on the urgent need for a comprehensive, coordinated research effort targeting this at-risk population.

Later that same year, the Foundation convened a similar meeting which brought research scientists together with clinicians working in prevention programs for children of alcoholics. The purpose of this conference was to assess the applicability of research to prevention programs, identify priority areas in which to improve the design, effectiveness and evaluation of prevention programs, and lay out strategies to improve prevention research.

In 1985, in an effort to inform other professionals about research, the Foundation created *Focus: Children of Alcoholics*, the first video to explain scientific findings in plain language. This video is an important tool in educating others about children and adults from alcoholic families and is used widely by professionals in health care,

university, government and counseling settings.

In 1986, drawing from the professional literature, the Foundation worked with Yankelovich, Skelly and White/Clancy & Shulman, Inc. to design and carry out the first national survey of corporate medical directors and employee assistance programs. The purpose of the study was to find out what these human resource professionals knew about adult children of alcoholics on the job and the possible carryover effects of parental alcoholism on adult employed children of alcoholics. Results showed most human resource professionals were unaware that growing up with an alcoholic parent had lingering negative effects which could cause workplace problems for adults. To educate the business community and encourage help, if needed, for these employees, the Foundation prepared and published *Children of Alcoholics on the Job: A Report for Health Care and Human Resource Professionals in Corporations and Employee Assistance Programs*. This booklet, already in its second printing, identifies the long-lasting effects of parental alcoholism, and suggests practical, cost-free steps businesses can take to help employees, improve their productivity and, at the same time, reduce company health care costs.

In 1987, with its growing national reputation for interest in research and close ties to the scientific community, the Foundation was asked by members of its Scientific Advisory Board to host the initial two-day meeting of the nation's first research consortium formed to develop a major comprehensive study of factors in the transmission of familial alcoholism. The meeting brought together prominent scientists from six separate research centers throughout the country to plan the first multifactorial, multidisciplinary, longitudinal study of molecular genetics, biological markers and psychosocial factors in alcoholics and their families.

Among its current programs for professionals, the Foundation is developing the first medical curriculum, *Children of Alcoholics: A Population at Risk*, for practicing physicians, medical students and hospitals. The materials include training video vignettes and instructional guides.

Background: Children of Alcoholics in the Medical System: Hidden Problems, Hidden Costs

Seven million American children under the age of eighteen have at least one alcoholic parent. These youngsters are four times more likely than others to become future alcoholics and are also more likely to have many related problems. With increased knowledge and resources, health care practitioners and others can begin to understand, intervene and ultimately prevent many of the negative consequences of family alcoholism.

Without question, alcoholism harms the health, and there is mounting evidence that the health of other family members also suffers. Families of alcoholics use more health care services than other families, with the rate of

their use escalating during the period before an alcoholic enters treatment and declining at some point thereafter (Blue Cross, 1987).

As early as 1984, the Foundation recognized the critical need for much more information about the health status of children from alcoholic families and identified the insurance industry as a valuable resource to provide this information. To find out what data existed, the Foundation contacted the National States Association of Insurance Commissioners, the Health Insurance Association of America and the American Life Insurance Council and also reviewed all relevant studies indexed in the data base of the National Clearinghouse for Alcohol Information.

It soon became clear that studies of alcoholics and their families expressed data on children as part of an aggregate group, included with their parents' health problems. Because of the way the data was collected or analyzed, it was not possible to examine children of alcoholics' health problems, hospital utilization rates or costs apart from their parents' or to compare them with other youngsters'. Because it did not appear likely this kind of needed scientific study would be performed in the near future, the Board of Directors of the Children of Alcoholics Foundation decided to undertake this investigation as one of the organization's major projects.

For several reasons, the Foundation turned again to the insurance industry as a potential source of data. First, data from insurance carriers avoid the limitations of studies based solely on users of a particular medical facility. Second, unlike studies of patients in alcoholism treatment programs, data collected by insurance carriers include large numbers of comparison families with no history of alcoholism.

After much inquiry and disappointment, the Foundation was exceedingly pleased to learn that Independence Blue Cross, which serves the greater Philadelphia area, generated a large and important pool of data which can be analyzed by children's problems. In fact, this forward thinking and innovative company was eager to participate in a study with the Foundation. The third partner in this project was the Philadelphia Health Management Corporation, which, working with Independence Blue Cross, analyzed data on the carrier's 1.6 million subscribers and also performed the review of the literature for this report.

The goal of the study, as in all Foundation projects, was to reduce current pain and prevent future alcoholism. The purpose of the investigation was to identify and compare the differences in health care patterns, hospital utilization rates and costs of hospital health care provided children from alcoholic and from nonalcoholic families. Based on the scientific research which shows that children of alcoholics are more prone to have physical, mental and emotional problems, the Foundation hypothesized that, in comparison with other youngsters, they would have greater health care usage, more frequent hospital admissions, longer hospitalizations and higher health care costs.

Study objectives included the following outcomes:

- provision of important new data needed by health educators, planners and service providers about the negative consequences and costs of parental alcoholism for children;
- improvement of the ability of health care professionals to identify children from alcoholic families and provide appropriate and timely intervention and health care; and
- reduction of the nation's health care costs by supplying the knowledge base on which to plan effective intervention and prevention strategies to combat future alcohol abuse and related health problems.

To insure scientific accuracy and optimum application of the study's results, the Foundation established the Health Care Advisory Committee (Appendix A). These experts in the fields of medicine, pediatrics, research, and drug and alcohol abuse assisted in the development of the study by defining the criteria for alcoholic parents; recommending important areas for investigation; reviewing the major implications of the findings; and suggesting a plan to promote and disseminate the report to a wide audience including health care personnel, prevention and treatment programs, insurance carriers and the business and scientific communities.

On behalf of the Children of Alcoholics Foundation, I would like to thank the following members of the Health Care Advisory Committee for their wisdom, valuable suggestions and considerable contributions of time: Joseph C. Kern, Ph.D., Director of Alcohol Treatment Services, Department of Drug and Alcohol Addiction, Nassau County, New York; David C. Lewis, M.D., Professor of Medicine and Community Health, Brown University; Robert G. Niven, M.D., Department of Psychiatry, Harper Hospital, Detroit, Michigan; Ruth Stein, M.D., Professor of Pediatrics, Ambulatory Care Service, Bronx Municipal Hospital Center; and Ann P. Streissguth, Ph.D., Professor, Department of Psychiatry and Behavioral Sciences, School of Medicine, University of Washington.

Two other members of the Health Care Advisory Committee deserve special recognition. Of prime importance was the role played by Leonard Davis, Vice President of Independence Blue Cross in Philadelphia, who understood the critical need for this new data and interested his organization in participating in the project. We are very grateful to Independence Blue Cross for its significant contribution, including the use of its data base and provision of computer services to perform the data analysis. Special thanks are also due Richard J. Cohen, Ph.D., President of the Philadelphia Health Management Corporation (PHMC), who, with the energetic, enthusiastic and able assistance of PHMC staff members Kathleen Coughy, Ph.D., and Lisa Roth, assured the high quality of the data produced. I would also like to thank Jennifer Leonard for her tremendous assistance and contribution as project writer and Kamala Brush, Director of Programs at the Foundation, for her tireless dedication to accuracy, comprehensiveness and excellence in support of this project.

On behalf of the Board of Directors, it is my sincere pleasure to express our deep appreciation to those who made possible this significant new report by providing their generous financial assistance. They include The Medical Trust of The Pew Charitable Trusts, The Commonwealth Fund and The Ira W. DeCamp Foundation created under the Will of Elizabeth DeCamp McNerny. Of course, the contents of the publication remain the sole responsibility of the Foundation.

We believe the substantial findings in this report are extremely valuable for diverse groups, including health care and service providers in prime positions to assist children from alcoholic families, those who plan new prevention and intervention programs, insurance carriers, employers, government officials involved in public policy initiatives and scientists whom we hope will be encouraged to explore this fertile area for further study. This new knowledge can be a major catalyst in spurring action to bring about needed improvements so children of alcoholics can lead happier and healthier lives.

Literature Review

Alcoholics, Their Families and the Health Care System

Alcoholism exacts a high toll on our health care system. Drinking increases the chances of physical illness and early death (Holder and Blose, 1986). Alcoholics frequently require continuing care for chronic medical problems (Forsythe, Griffiths and Reiff, 1982) such as liver disorders, trauma, malnutrition and gastrointestinal, respiratory and nervous system diseases (Ashley et al., 1981). Alcoholics use health care resources at a much higher rate than nonalcoholics (Forsythe, Griffiths and Reiff, 1982), at a cost two to three times greater than nonalcoholics (Forsythe, Griffiths and Reiff, 1982; Roghmann et al., 1981).

Most health care utilization studies focus solely on alcoholics; very few include the families of alcoholics. In addition, it is difficult to compare studies and to generalize from the reported results because of the multiplicity of definitions of "alcoholism" and the use of different sources for study populations.

However, in one study of privately insured Federal employees, the National Institute on Alcohol Abuse and Alcoholism found that, on the average, alcoholics' families used health care services and incurred costs at a rate about twice that of similar families with no known alcoholic members (NIAAA, 1985). Average monthly health care costs over four years ran \$210 and \$107 per person, respectively, for these two groups.

Hospitalization costs accounted for most of this difference between alcoholic and nonalcoholic families; ambulatory care usage was similar for the two groups (NIAAA, 1985). In a further analysis of the same data base, families with alcoholic members incurred 70% more health care costs than comparison families even when the expense of alcoholism treatment was eliminated from the calculation of total health care usage (Holder and Blose, 1986).

The NIAAA (1985) study found that health care usage by alcoholics typically peaks in the months before entering treatment, with significant decreases following the start of treatment. NIAAA estimated that, on the average, the cost of alcoholism treatment would be offset by savings in other health care costs within two to three years after rehabilitation. Early treatment helped; the most significant reductions for health care costs occurred when treatment was initiated before the alcoholic was 45 years old.

NIAAA found no statistically significant reduction in health care utilization by nonalcoholic family members after the alcoholic entered treatment. However, a Blue Cross study of families whose members entered drug and/or alcohol abuse treatment found that the non-substance-abusing family members used hospital services at a rate nearly 50% higher in the five months before the alcohol or drug abuser entered treatment than in the five months posttreatment (Blue Cross, 1987). This difference in rates

was even greater for dependents than for adults.

In a study of alcoholics treated in a fee-for-service clinic, Roberts and Brent (1982) found that the alcoholics' family members had significantly higher utilization rates, higher rates of distinct diagnoses and a disproportionate number of diagnoses of trauma and stress-related diseases than a group of nonalcoholic control families. Members of alcoholic families had an average of 9.7 physician visits per year, compared to 6.5 visits for control family members. The number of distinct diagnoses per year was 6.3 and 4.5, respectively, suggesting that families of alcoholics have more health problems than families of nonalcoholics. In particular, alcoholics' families had significantly higher proportions of diagnoses in six categories: "trauma"; "gastrointestinal"; "neuroses"; "other mental and psychological"; "endocrine, nutrition, metabolic"; and "genitourinary."

In an earlier study of HMO utilization by alcoholics and their families, Roghmann et al. (1981) found that although alcoholics utilized a disproportionate share of HMO services, particularly inpatient services, compared to controls, their families underutilized health care services. For instance, alcoholics' rate of inpatient care was more than twelve times greater than that of the nonalcoholic control group. However, the rate at which alcoholics and their families combined used HMO services, including alcoholism treatment services, was only 2.7 times the rate of utilization by the control group families. Families of identified alcoholics had lower rates of outpatient care than did the families of controls, which offset the disproportionate amount of inpatient care utilized by the alcoholics themselves. The observed underutilization of health care services in the families of alcoholics was attributed to low help-seeking behavior on the part of mothers under stress.

Roberts and Brent (1982) suggest that an explanation for these discrepancies may lie in differences of research methodology. They point out that Roghmann et al. matched only the alcoholics to nonalcoholic controls, and not the family members. In addition, Roghmann's sample included a group of alcoholics under treatment and prepaid health plan patients. Roberts and Brent excluded alcoholics under treatment and based their research in a fee-for-service clinic.

Both studies also used different methods for identifying the alcoholics in the study group. Roghmann and his colleagues identified 167 alcoholics based on diagnosis at the HMO, record of inpatient treatment for alcoholism and/or on the enrollees' own descriptions of their alcohol use at the initial HMO health assessment. Roberts and Brent asked each physician at the fee-for-service clinic to identify patients belonging to a family which included an alcoholic, based on the physicians' professional judgment, the AMA definition of alcoholism or reports of alcoholism by family members. The physicians identified 110 people using these criteria, only 7 of whom had previously been listed as alcoholic in their medical records.

Children of Alcoholics and Their Health Care Usage

Findings from the very few studies which have examined health care usage by relatively small numbers of children of alcoholics have also been inconclusive. But, on the whole, these studies suggest that children of alcoholics use more health care than other children. Further, the studies have found that health care usage varies by age and sex of the child and by sex of the alcoholic parent.

Nylander (1960) and Rydelius (1981) conducted a twenty-year longitudinal study of 229 Swedish children of alcoholic fathers and a control group of parents and children who were the "social twins" of the subjects. Health care usage was first evaluated when the children were 4 to 12 years old. Information on health care utilization was extracted from interviews with the subjects' mothers and from physical and mental examinations of the children.

Initially Nylander found that children with alcoholic parents (11%) were less likely than controls (21%) to have prolonged physical illness or physical illness which required medical treatment. Both groups enjoyed general good health. However, the children of alcoholics made a disproportionate number of visits to outpatient clinics and hospitals with complaints of headaches, stomach pains, tiredness, tics, nausea, insomnia and enuresis for which no definite physical illness could be shown. Children of alcoholics were also more likely than controls to exhibit emotional irritability, anxiety, aggression and depression.

Differences between male and female children and across age groups were observed in the types of symptoms presented. Female children were much more likely than males to report diffuse abdominal pain of psychogenic origin. Fecal incontinence, other than that due to illness or physical defect, occurred only in males. The number of psychosomatic symptoms reported by girls in the study group increased with age, but remained constant across the age range for boys. Speech disorders occurred more often in males (16%) than in females (6%). An opposite trend was observed for both sexes in the control group: females had more symptoms than males and both males' and females' symptoms declined with age. Male and female children of alcoholics also had poorer dental health than controls. While the frequency of cavities was the same for both groups, 39% of children of alcoholics and only 21% of controls had teeth which needed filling.

Twenty years later, Rydelius (1981) reexamined the Swedish study population. He found that at ages 24-36, male and female children of alcoholics showed poorer health than the controls. The men had more sick leave days, more sick leave periods of less than one week, and more sick leave periods of more than one week. Females showed similar illness patterns. Sons of alcoholics were hospitalized more than sons of controls, and more often reported poisoning and injuries due to assault. Daughters of alcoholics visited obstetrical/gynecological clinics more

than other women.

Putnam, Rockett and Stout (1985) studied 132 dependent children (age 19 or younger, or in college) of a group of HMO first-time counseling clients who were diagnosed as "alcohol-troubled," according to the NIAAA classification system. The children's ages varied from early childhood to college age, averaging 10 years. Each alcoholic parent was matched to a control subject selected from lists of current HMO members. Over a study period of 39 months, data was collected on health care utilization and illness experience from HMO medical records, counseling records and hospital claim forms for spouses of alcoholics and controls and their respective children.

The study team found that children of alcoholics had significantly more total health problems for which medical care was sought, and marginally more of each category of problems, than did controls' children. Children of alcoholics' health problems varied considerably by sex and age.

Sons of alcoholics were at significantly greater risk of overall illness, injury and emotional problems than were sons of controls. The former reported more problems of all types (52% more), incurred 60% more injuries and were five times more likely to report emotional problems. Alcoholics' sons were more likely to be classified as severely ill and disabled (34% as compared to 15% of controls' sons). Younger sons of alcoholics were more likely to experience higher injury and illness rates; the rates, although still greater compared to those of controls, declined with age. However, the likelihood of severe illness for sons of alcoholics increased with age and by age 15 and over, they were almost four times more likely than controls' sons to be severely ill. The greatest differences among alcoholics' and controls' sons for emotional problems were found in the youngest and older age groups.

Daughters of alcoholics reported 70% more psychosomatic problems than daughters of controls but otherwise there were no significant differences in the illness variables. Psychosomatic problems were the source of the greatest disparity in the youngest ages, although it was also high for older adolescent daughters. Preschool-aged daughters of alcoholics and those from 10-14 were more likely to be severely ill than daughters of controls.

In addition, children of alcoholics utilized more HMO services than controls' children and the usage varied by the sex and age of the child. Sons of alcoholics utilized 65% more ambulatory HMO services than sons of controls, had three and a half times as many hospitalizations with twice the mean length of stay, and utilized 15 times more counseling services. The differences in utilization rates were greatest at the youngest ages. Usage by sons of alcoholics declined with age; in the 15 and over age group, they utilized fewer services than controls' sons.

Although daughters of alcoholics and controls made the same number of ambulatory visits per year, daughters of alcoholics were hospitalized three and a half times as often and had three times as many counseling sessions as daughters of controls. Daughters of alcoholics used fewer

HMO services than daughters of controls but their usage increased with age; by age 10 they utilized more services than controls' daughters.

Comparing sons and daughters of alcoholics, the study team found sons of alcoholics had higher rates for both problems reported and ambulatory utilization, had more than twice as many injuries, and were significantly more likely to be severely, chronically ill than daughters of alcoholics. Daughters of alcoholics tended to have more acute illnesses and more psychosomatic problems than sons. Alcoholics' sons and daughters had the same high rates of emotional problems.

Comparing the effects of the sex of the alcoholic parent, neither sons nor daughters of alcoholic mothers utilized more services than their control family counterparts. When fathers were alcoholic, sons utilized significantly more services than controls' sons. No such relationship was found for daughters of alcoholic fathers.

Both sons and daughters of alcoholic mothers were at substantially increased risk of injury and severe illness when compared to children of alcoholic fathers. Those daughters were also more likely to report emotional problems.

Examining the injury susceptibility of these children of alcoholics in detail, Putnam and Rockett (1986) found that sons of alcoholics utilized significantly more ambulatory HMO services for injury (67% more) than sons of controls, made 30% more emergency room visits and were twice as likely to be hospitalized. Daughters of alcoholics and controls showed no significant differences in utilization of ambulatory services, but daughters of alcoholics made 60% more hospital emergency room visits for injury.

Another study based its findings on the perceptions of hospital administrators providing treatment for 200 alcoholic fathers (Matajcek and Baueriva, 1981). The administrators noted that the alcoholics' children, aged 4 to 15, made 8% more medical visits, had more than double the number of injuries needing treatment and underwent five times more psychiatric examinations than other children. These children of alcoholics had significantly higher numbers of hospital admissions and stays in health institutions.

Children of Alcoholics' Physical, Emotional and Mental Problems

Research has shown that sons of alcoholics are four times more likely to become alcoholic than others (Goodwin et al., 1973), daughters of alcoholics are three times more likely than other daughters to become alcoholic (Bohman, Sigvardsson and Cloninger, 1981), and grandsons of alcoholic grandfathers are three times more likely to become alcoholic than other grandsons (Kaij, 1960). Although not all children of alcoholics become alcoholic themselves, research reports they are also at higher risk than others to have more physical, mental and emotional problems (Russell, Henderson and Blume, 1985; West and Prinz, 1987).

In comparisons of adoptees, Goodwin et al. (1973) found no difference in the incidence of psychiatric disorders between sons of alcoholics and sons of nonalcoholics. They concluded that increased emotional problems in alcoholics' families were due to environmental influences, noting that "familial alcoholism" does not appear to be associated with an increased predisposition to psychiatric disorders.

However, Penick et al. (1987) compared 371 men in alcoholism treatment programs having one or more first-degree alcoholic relatives with 197 male alcoholics with no first-degree alcoholic relatives and found an increase in psychiatric disorders among the male and female first-degree relatives of the familial alcoholics. The men with a positive family history of alcoholism had more sleep disturbances, severe nightmares, memory impairment and serious withdrawal problems than the male alcoholics with no family history of alcoholism. In addition, the former also suffered disproportionately from depression (48.2% vs. 31.5%), antisocial personality (23.2% vs. 15.2%), panic attacks (13.8% vs. 8%), drug abuse (14.8% vs. 7.6%) and obsessive-compulsive disorder (14.3% vs. 7.6%). A trend for increased prevalence of mania and phobia was also noted. Psychiatric hospitalization for problems not exclusively related to alcohol was one-third higher in the familial alcoholics. Significantly more of the familial alcoholics reported psychopathology among both male and female first-degree relatives. Problem drinking and antisocial personality were more often associated with a male relative, and somatization and panic attacks with a female relative.

Bohman (1978) examined the records of more than 2,000 Swedish adoptees and their parents and found an increased likelihood of alcoholism and criminality in both the male adoptees and their biological fathers. More recently, Bohman et al. (1984) and Sigvardsson et al. (1984) analyzed the same group of Swedish adoptees and identified an increased risk for psychosomatic disorders among female offspring of alcoholics.

In a study of 862 men and 913 women adopted by nonrelatives, Bohman et al. (1987) found that in families with male-limited alcohol abuse, the daughters had multiple somatic complaints. Female relatives from alcoholic families characterized as antisocial had a high frequency of somatization, with frequent disability from abdominal, back and psychiatric complaints.

Goodwin et al. (1971) observed that a higher proportion (30%) of the daughters of alcoholics who were raised by their biological parents were treated for depression than were daughters in the control group (5%). The sons of alcoholics were much more likely to develop sociopathic personality disorder and/or alcoholism. Winokur et al. (1970) also found an increased risk for depression in female relatives of alcoholics. In an examination of a representative sample of 1,771 adults in the United States, Parker and Harford (1988) found that having parents who were alcoholics or problem drinkers placed daughters at

risk for depressive symptomatology and sons at risk for dependent problem drinking.

Nylander (1960) found an increased risk of psychosomatic disorders among girls raised by their biological alcoholic parents. The children in his study population were almost six times (29%) as likely to show signs of depression and anxiety as controls (5%). Teachers were five times (48%) more likely to assess the alcoholics' children as problem children, especially younger boys, than the control group children (10%). In a study comparing 82 children of alcoholic fathers with children of nonalcoholics attending a pediatric outpatient clinic, teenagers from alcoholic family environments were twice as likely to receive psychiatric treatment for emotional disorders and anxiety-depressive syndromes (Herjanic et al., 1971).

Another psychiatric disorder which has been noted in children of alcoholics and indirectly affects health care utilization is bulimia (Pyle, Mitchell and Eckert, 1981). In studying 34 bulimic women, Pyle, Mitchell and Eckert found that half of the women reported alcoholism in at least one first-degree relative.

Bulik (1987) studied patterns of drug and alcohol abuse in 35 bulimic women, 35 healthy control subjects and their first- and second-degree relatives (parents, siblings and grandparents). Alcoholism occurred significantly more frequently in the first- and second-degree relatives of bulimic subjects (both alcoholic bulimics and those who did not exhibit alcohol-related problems) than in those of control subjects.

An association between being a child of an alcoholic and high incidences of asthma has been suggested by Schneiderman (1975).

It should be noted that not all children of alcoholics show negative effects and some appear more resilient and seem to function and cope well (Werner, 1986; 1989). Werner (1986) studied 49 children of alcoholics born in 1955 on the island of Kauai, Hawaii. The children of alcoholics who developed no serious coping problems by age 18 (59% of the study group) differed from those who did in temperament, communication skills, self-concept and locus of control. They also experienced fewer disruptions of their family life in the first two years. Chafetz, Beane and Hill (1971) and Kammeier (1971) also commented on the resiliency of the majority of children of alcoholics they studied.

There are many reports of an increased incidence of child abuse in families of alcoholics. Researchers estimate a range of 11.9% to 69% of identified child abusers are also alcoholics (Orme and Rimmer, 1981). Famularo et al. (1986) studied thirty-one families randomly selected from a group of 246 parents referred to a psychiatric clinic. They found that the group of child-abusing parents had a higher incidence of alcoholism (38%) than the control group whose children were inpatients in a general pediatric hospital (8%). One-half (52%) of the child-abusing families had at least one parent with a history of alcoholism

compared to the control families, where only one-eighth (12.5%) were alcoholics. Behling's (1979) report of 51 cases of child abuse found that two-thirds (69%) involved a history of alcoholism or alcohol abuse in at least one parent.

Physical abuse may directly affect children's injury rates (Putnam, Rockett and Stout, 1985; Chafetz, Beane and Hill, 1971; Roberts and Brent, 1982). Putnam, Rockett and Stout (1985) questioned whether the higher injury rates of children of alcoholic mothers could be due to child abuse or lack of attention and also conjectured that injuries may also be due to risk- or attention-seeking behavior on the part of children neglected by their parents.

Some authors (Orme and Rimmer, 1981; El-Guebaly and Offord, 1977) have concluded that the methodological problems in child abuse and alcoholism research are so great, and the definitions used for alcoholism and child abuse so varied, that little confidence can be placed in findings of causality between familial alcoholism and child abuse.

Increasing evidence of the serious effects of heavy maternal alcohol use on children *in utero* has been reported in the 17 years since "Fetal Alcohol Syndrome" (FAS) was first described in 1973 (Jones and Smith, 1973). FAS consists of a pattern of major and minor malformations, growth deficiencies and developmental disabilities.

Children with FAS may have three types of problems: (1) growth deficiency, which occurs prenatally and continues after birth; (2) a pattern of facial malformations including short palpebral fissures, flat midface, thin upper lip, hypoplastic philtrum, short upturned nose, flat nasal bridge, and/or epicanthal folds; and (3) some evidence of central nervous system abnormality which is usually manifested as microcephaly, mental retardation, motor problems, speech and language problems, tremulousness, and/or hyperactivity. When a child does not meet the full criteria for FAS, the term Fetal Alcohol Effects (FAE) is used (Streissguth, 1986; Iosub et al., 1981).

FAS and certainly FAE cannot be diagnosed from a single laboratory test and are difficult to detect retrospectively from delivery records because the subtle diagnostic features are frequently overlooked in newborns. Difficulty in detection at birth may explain the variations in reported prevalence of FAS among different study populations: from 1 in 100 births to 1 in 750 births (Streissguth and La Due, 1987; Abel and Sokol, 1987).

Not all exposed offspring will be affected; the severity of the effects may be related to the dose of alcohol received. According to Streissguth and La Due (1987), a higher dose of alcohol is required to produce malformations than is needed to produce growth deficiency. Estimates of the proportion of affected children vary from a high of 75% to a low of 20%, depending on the severity of the FAS and the severity of the maternal alcoholism (Streissguth and La Due, 1987).

FAS is the leading known cause of mental retardation. There is a wide variation among IQ scores of children with

FAS; the more severely affected the child's morphology and growth, the more likely the child is to be severely mentally retarded (Streissguth, 1986). Jones and Smith (1973) reported an average IQ of 65 among 20 FAS children. Olegard et al. (1979) found that 19% of 52 children born to 15 alcoholic women had IQs below 70.

In finding that reduced mental performance and reduced size at birth are correlated, Olegard et al. (1979) reported that low birth weight pattern deliveries and smallness for gestational age were increased eight and three times, respectively, for infants with FAS. Perinatal and infant mortalities were increased seven and ten times, respectively. Low birth weights are associated with increased neonatal costs (Abel and Sokol, 1987).

Generally, children with FAS are below the third percentile in height, weight and head circumference. They do not "catch up" as do other low birth weight children (Kyllerman et al., 1985). In addition, children with FAS often have more behavioral and physical problems including higher rates of outpatient therapy, eating problems, difficulty with eye-hand coordination, head and body rocking, clumsiness of upper and lower limbs, impaired concentration, hyperactivity, difficulties with peers and dependency problems (Streissguth et al., 1980; Iosub et al., 1981; Steinhausen, Gobel and Nestler, 1984).

In a ten-year follow-up study of the first eleven FAS cases diagnosed, Streissguth, Clarren and Jones (1985) found that eight children were growth deficient and dysmorphic. Half of the children were of borderline intelligence; the others were severely mentally handicapped and needed complete supervision outside the home. In adolescents, the features of FAS included dental misalignments, malocclusions and Eustachian tube dysfunctions. The Eustachian tube dysfunctions were possibly related to the facial features associated with FAS. The Eustachian tube dysfunctions and malocclusions often necessitated medical treatment for ear infections and/or corrective orthodontia or surgery.

The cost of health care for children with FAS in the United States has been estimated at \$321 million (Abel and Sokol, 1987). Costs include those associated with FAS-related growth retardation, surgical repair of organic anomalies (e.g., cleft palate, Tetralogy of Fallot, and auditory, ophthalmological and dental defects), treatment of sensorineural problems and mental retardation.

Study Design and Methods

Overview

This report describes the health care experience of dependent children of adults who were treated for alcoholism or alcohol-related disorders over a three-year period. It compares their experience to children from other families by analyzing inpatient, short procedure unit and home health care admissions, days and related costs as reported on claims under group subscriber policies held by Independence Blue Cross during the years 1984-1986.

The objective of this comparative study is to identify differences in health care patterns, costs and utilization rates of children of alcoholics and children from nonalcoholic homes. Although it is not an experimental study, it is the largest longitudinal study to date of health care usage by children of alcoholics and the findings indicate the negative impact of family alcoholism on children.

A Health Care Advisory Committee comprised of eight experts from medicine, pediatrics, drug and alcohol treatment and research was formed to assist in the operation of this investigation (see Introduction and Acknowledgements for details).

Data Source

The data for the study were derived from insurance claims filed by all group subscribers of Independence Blue Cross during the years 1984-1986. Independence Blue Cross insures more than 1.6 million subscribers, including dependents. The data provide information about this unusually large pool of individuals, who have access to medical treatment at a variety of hospitals and medical care facilities. The data permit identification of individuals treated for alcoholism during a three-year period and are organized in a fashion that permits retrospective analysis. The data also allow for the identification of children from alcoholic and nonalcoholic families by age group and gender.

The overall subscriber population is comprised predominantly of employees and their families who receive insurance benefits through their employers and unions. Demographically, they are similar to the profile of employed Americans. A small percentage of subscribers are early retirees or unemployed individuals who continue to receive benefits through their union or business association.

The subscribers reside primarily in the five counties of southeastern Pennsylvania, in southern New Jersey and in northern Delaware. The group is socioeconomically diverse, ranging from minimum-wage clerks to chief executives of corporations. It reflects a cross-section of the employed population of greater Philadelphia. Subscribers receiving coverage through Medicare are not included in the data set.

Definition of Parental Alcoholism

The Health Care Advisory Committee determined that a conservative definition of alcoholism should be utilized to ensure the likelihood that no individuals would be falsely identified as alcoholics. Alcoholic parents are defined as parents who received specified treatment for alcoholism or alcohol-related disease within the three-year period of this study. (Appendix B lists the diagnosis categories, drawn from the National Center for Health Statistics ICD-9-CM classifications, 9th revision, used to define alcoholism in this study.) In total, 5,320 alcoholics are identified in the data set. Of these, 2,750 hold family policies that cover dependent children.

Definition of Children of Alcoholics

Five hundred and ninety-five (595) dependent children of these identified alcoholics have at least one hospital admission during the time period studied. These children comprise the study group of children of alcoholics. Their ages range from birth to 23 years. Some of the children over 19 years of age are students.

Definition of the Comparison Population

Dependent children who had one or more claims for hospital admissions during the study period and whose subscriber parents did not meet the definition for alcoholism are defined as members of the comparison group of "other children." The age range is the same as that for children of alcoholics.

Definition of Health Care Services

The data set includes claims for three kinds of health care services:

- 1) *Inpatient*: Hospitalization in an acute care facility.
- 2) *Short procedure unit*: Ambulatory surgery and invasive diagnostic procedures in a facility or hospital unit devoted to those purposes. Criteria for use of the short procedure unit include a prearranged appointment, expectation that the patient will recover within 6 to 10 hours and an escort home.
- 3) *Home health care*: Health services provided in the patient's home.

The data set includes 849 claims for the study group of children of alcoholics. Of these, 633 are for hospital admissions, 196 are for short procedure unit admissions, and 20 are for home health care visits.

Sample Bias

Only alcoholics admitted for treatment or for a diagnosis of alcohol-related disease during the three-year period of the study are included as alcoholic parents. Consequently, active alcoholics who were not in treatment or admitted for an alcohol-related disease may be inadvertently included as

parents of comparison group children. In addition, only inpatient treatment for alcoholism or alcohol-related disease is used to identify alcoholics in this study. Thus, children who might have been identified as children of alcoholics through their parents' outpatient treatment are included in the comparison group instead.

Alcoholism is a key example of a health problem which may underlie another symptom, or go undetected. Therefore, other alcoholics and their children may be excluded because alcoholism may not be listed as the primary diagnosis and the data set contains few secondary diagnoses. Also, alcoholics often use other drugs, including illegal substances. When they enter treatment, their drug abuse may take precedence over their alcohol abuse. Because admission diagnoses for drug treatment were not used as criteria in identifying possible alcoholics, children whose parents abuse other drugs are included in the comparison group rather than the study group.

In general, most individuals insured through Independence Blue Cross come from families where at least one parent is employed. They represent a segment of the population with varying economic resources but which has at least the potential for some economic stability. It is possible that children from uninsured, economically deprived backgrounds have even greater health problems due to poverty and delays in obtaining treatment.

Data Limitations

The Blue Cross data set is organized for business purposes rather than for studies of health care. This presents certain methodological challenges. Of particular note is the fact that the total number of children in subscriber families cannot be ascertained. Blue Cross family policies provide blanket coverage for all dependents, regardless of number, and its computer records list only those members of subscriber families who have filed health care claims. Too, the data set does not include emergency room or outpatient claims, nor are data on mortality available. Furthermore, the data cannot be broken down by race, income or single- and two-parent families.

Finally, a retrospective study of health care claims must rely on the relative accuracy of diagnoses, characteristics of the individual patient and of the reimbursement system being used.

Analysis of the Data

Admission data for the study and comparison groups were examined using the ICD-9-CM classifications for diseases, injuries, impairments and symptoms. This classification system consists of 17 basic diagnosis rubrics, each of which is further broken down into five-digit codes representing more specific diagnoses. Independence Blue Cross created an additional code for substance abuse by abstracting all related codes, making a total of 18 major categories, plus one residual category for medical conditions not

elsewhere classifiable. These rubrics or categories, as they are referred to in the analysis, appear in tables below and are summarized in Appendix C.

Based on their experience and review of the literature, members of the Health Care Advisory Committee recommended that several of the diagnosis categories be examined in greater detail. These include mental disorders, substance abuse, diseases of the digestive and respiratory systems, complications of pregnancy and childbirth, and injuries and poisonings.

Statistical Treatment

There is limited use of statistical tests for two reasons:

1) without knowing the total numbers of children in subscriber households, standard deviations and standard errors cannot be calculated in order to perform statistical tests of significance on the findings; and 2) chance selection is not a factor in any observed differences, since the entire universe of Independence Blue Cross subscribers is included in the study. The high incidence of particular medical problems among children of alcoholics is emphasized by the use of difference of proportions tests.

The rates of admissions, days and charges compiled for the following analysis are calculated in two different ways. Rates of total utilization are based on the number of admissions (or days or charges) of children of alcoholics per thousand subscribers from households with an alcoholic adult member, and the number of admissions (or days or charges) of other children per thousand subscribers from nonalcoholic households. These rates are compiled to permit comparisons of proportionate hospital utilization by children of alcoholics with that of other children. To compare differences within the population of children of alcoholics, rates per thousand are based on the population described, e.g., for daughters of alcoholic mothers, the rate of admissions per thousand daughters of alcoholic mothers.

Findings

Overall Utilization

When health care admissions, days of use and length of stay are compared for children of alcoholics and other children, the data produce striking differences:

- The rate of inpatient admissions per thousand subscribers is 24.3% greater for children of alcoholics than for other children.
- The average length of hospital stay is 28.8% greater for children of alcoholics than for other children.
- The rate of hospital days used per thousand subscribers is 61.7% greater for children of alcoholics than for other children.

Children of alcoholics also use home health care services at a rate per thousand subscribers that exceeds that of other children. Children of alcoholics are admitted to the short procedure unit at a rate similar to that of other children.

The financial implications of the greater hospital utilization by children of alcoholics is evident in Table 2.

- The rate of inpatient hospital charges per thousand subscribers is 36% greater for children of alcoholics than for other children.
- The rate of total health care charges per thousand subscribers, including hospital charges, is 32% greater for children of alcoholics than for other children.

The balance of the findings refer solely to inpatient admissions. The numbers of short procedure unit admissions and home health care services utilized were too small

to permit more detailed analysis. Appendix D provides a breakdown of admissions for these services.

Inpatient Utilization by Children of Alcoholics

Sex of the Alcoholic Parent

Within the study group of 595 children of alcoholics, 436 children have fathers who are alcoholic and 153 have mothers who are alcoholic. In six cases, both parents are alcoholic. These six children have been excluded for purposes of the following analyses, which are based on the remaining group of 589 children.

The data in Table 3 show that the sex of the alcoholic parent appears to have differential effects on children's admission rates:

- The hospital admission rate per 1000 children of alcoholic fathers is 28.6% greater than the rate for children of alcoholic mothers.
- Children with alcoholic fathers are admitted at a rate greater than children of alcoholic mothers for infectious and parasitic diseases; endocrine, nutritional and metabolic diseases; mental disorders; diseases of the respiratory, digestive, genitourinary and musculoskeletal systems; complications of pregnancy, childbirth and puerperium; and signs and symptoms.
- Children with alcoholic mothers are hospitalized for substance abuse at a rate almost twice that of children with alcoholic fathers.
- Admissions for congenital anomalies and perinatal conditions are disproportionately associated with maternal alcoholism.

Table 1

Children of Alcoholics and Other Children: Admissions and Days per Thousand Subscribers and Average Length of Stay

	<u>Children of Alcoholics</u>	<u>Other Children</u>
Admissions/1000		
Inpatient	46.00	37.00
Short Procedure Unit	14.39	15.68
Home Health Care	1.45	.61
Average Length of Stay (Days)		
Inpatient	7.6	5.9
Total Days/1000		
Inpatient	350.12	216.50
Short Procedure Unit	14.10	15.72
Home Health Care	7.85	3.63

Data Source: Independence Blue Cross, 1984-1986.

Table 2
Cost of Health Care for Children of Alcoholics
by Type of Admission

<u>Type of Admission</u>	<u>Total Charges</u>	<u>Charges per Thousand Subscribers</u>	<u>Ratio of Charges: Children of Alcoholics / Other Children</u>
Inpatient	\$3,159,526	\$229,600	1.36
SPU	222,106	16,140	.93
HHC	4,437	322	1.66
TOTAL	\$3,386,069	\$246,062	1.32

Data Source: Independence Blue Cross, 1984-1986.

Table 3
Inpatient Admission Rates of Children of Alcoholics
by Diagnosis Category and Sex of Alcoholic Parent

<u>Diagnosis Category</u>	<u>Rate of Hospital Admissions per 1000 Children of an Alcoholic:</u>	
	<u>Father</u>	<u>Mother</u>
Infectious/Parasitic	45.9	32.7
Neoplasms	13.8	—
Endocrine/Nutritional/Metabolic	55.1	13.7
Blood and Blood-forming Organs	20.6	19.6
Mental Disorders	114.7	71.9
Substance Abuse	29.8	58.9
Nervous and Sense	29.8	19.6
Circulatory	6.9	—
Respiratory	220.2	176.5
Digestive	114.7	45.8
Genitourinary	32.1	19.6
Skin/Subcutaneous Tissue	11.5	19.6
Musculoskeletal	25.23	13.1
Congenital Anomalies	29.8	45.8
Pregnancy/Childbirth	68.8	39.2
Perinatal Conditions	61.9	71.9
Signs and Symptoms	100.9	71.9
Injury/Poisonings	188.1	196.0
Other	16.1	6.5
TOTAL	1,185.8	921.6
(N)	(436)	(153)

Data Source: Independence Blue Cross, 1984-1986.

Sex of the Child and of the Alcoholic Parent

An analysis of hospital utilization rates among daughters and sons by sex of the alcoholic parent is shown in Table 4. Several cells of the table show no admissions and many cells have only a few cases. Accordingly, one must be cautious in making interpretations.

It is noteworthy, however, that sons of alcoholics were admitted to hospitals at a greater rate than daughters of alcoholics, regardless of the sex of the alcoholic parent. When the sex of the alcoholic parent is considered, sons of alcoholic fathers tended to have higher admission rates on most diagnoses than daughters of alcoholic mothers. This difference is particularly evident in admission rates for mental disorders, substance abuse, diseases of the digestive and respiratory systems, congenital anomalies and injuries and poisonings.

Findings by Diagnosis Category

The higher rates of inpatient admissions, average length of stay and charges for children of alcoholics occurred within specific diagnosis categories.

Inpatient Admissions

The inpatient admission rates per thousand subscribers are greater for children of alcoholics than other children in 10 out of the 19 diagnosis categories (Table 5).

The most notable differences are in hospitalization rates pertaining to substance abuse. For children of alcoholics, the substance abuse admission rate per thousand subscribers is nearly triple that of other children. The figures in Table 5 also show a rate of mental disorder admissions for children of alcoholics that is almost double

Table 4

Inpatient Admission Rates of Sons and Daughters of Alcoholics by Sex of the Alcoholic Parent

(Rates based on population analyzed, e.g., for sons of alcoholic fathers,
rate = # of admissions/1000 sons of alcoholic fathers)

Diagnosis Category	Son	Alcoholic Parent:		Son	Daughter
		Father	Mother		
Infectious/Parasitic	53.5	31.1	93.3	12.8	
Neoplasms	20.6	31.1	13.3	—	
Endocrine/Nutritional/Metabolic	61.7	46.6	13.3	12.8	
Blood and Blood-forming Organs	4.1	31.1	26.7	12.8	
Mental Disorders	144.0	72.5	93.3	51.3	
Substance Abuse	45.3	10.4	66.6	51.3	
Nervous and Sense	37.0	51.8	40.0	12.8	
Circulatory	12.3	—	—	—	
Respiratory	242.8	191.7	200.0	166.7	
Digestive	148.1	103.6	93.3	77.0	
Genitourinary	37.0	57.0	13.3	25.6	
Skin/Subcutaneous Tissue	8.2	5.2	—	—	
Musculoskeletal	32.9	20.7	13.3	12.8	
Congenital Anomalies	37.0	5.2	93.3	38.5	
Pregnancy/Childbirth	—	217.6	—	115.4	
Perinatal Conditions	33.0	36.3	133.3	64.1	
Signs and Symptoms	57.6	62.2	40.0	102.6	
Injury/Poisonings	296.3	129.5	213.3	179.5	
Other	218.1	295.3	226.6	371.8	
TOTAL	1,498.7	1,399.0	1,413.3	1,307.6	
(N)	(243)	(193)	(75)	(78)	

Data Source: Independence Blue Cross, 1984-1986.

Table 5

**Children of Alcoholics and Other Children:
Inpatient Admissions per Thousand Subscribers
by Diagnosis Category**

<u>Diagnosis Category</u>	<u>Children of Alcoholics</u>	<u>Other Children</u>
Infectious/Parasitic	1.67	1.80
Neoplasms	0.42	0.67
Endocrine/Nutritional/Metabolic	1.82	0.94
Blood and Blood-Forming Organs	0.73	0.57
Mental Disorders	4.36	2.33
Substance Abuse	1.60	0.54
Nervous and Sense	1.09	1.61
Circulatory	0.22	0.39
Respiratory	9.16	7.40
Digestive	4.14	3.58
Genitourinary	1.24	1.56
Skin/Subcutaneous Tissue	0.44	0.70
Musculoskeletal	0.94	1.41
Congenital Anomalies	1.24	1.48
Pregnancy/Childbirth	2.62	1.53
Perinatal Conditions	1.89	2.13
Signs and Symptoms	2.69	1.97
Injury/Poisonings	8.94	5.68
Other	0.80	0.69
 TOTAL (N)	 46.00 (633)	 37.00 (61,755)

Data Source: Independence Blue Cross, 1984-1986.

that of other children. The rate of injuries and poisonings among children of alcoholics is also more than one-and-one-half times as high as that of other children.

The high incidence of these three categories of medical problems among children of alcoholics compared to other children is confirmed through the use of difference of proportions tests. The proportions of admissions for children of alcoholics for mental disorders, substance abuse, and injuries and poisonings are all significantly greater ($P=.01$) than that of other children (tests not shown).

The rates of endocrine/nutritional/metabolic disease admissions per thousand subscribers are almost twice as high for children of alcoholics as for other children. The number of admissions in this category is low and almost all

are coded as "other metabolic and immunity disorders." Due to the low numbers of cases, no further analysis of this category is included.

Average Length of Stay

As shown in Table 6, children of alcoholics also remain in the hospital longer, on the average, than other children when admitted for substance abuse, mental disorders and ten other diagnosis categories.

When compared with children from nonalcoholic families, children of alcoholics stay in the hospital, on the average, 27% longer for mental disorders; 42.5% longer for substance abuse; 41.6% longer for congenital anomalies; and 17.3% longer for perinatal conditions than other children.

Table 6

**Children of Alcoholics and Other Children:
Average Length of Stay by Diagnosis Category**

<u>Diagnosis Category</u>	<u>Children of Alcoholics</u>	<u>Other Children</u>
Infectious/Parasitic	4.65	3.91
Neoplasms	8.50	7.29
Endocrine/Nutritional/Metabolic	5.72	5.11
Blood and Blood-forming Organs	3.00	4.28
Mental Disorders	31.15	24.53
Substance Abuse	20.18	14.16
Nervous and Sense	6.87	5.35
Circulatory	8.67	7.35
Respiratory	3.66	2.74
Digestive	4.04	3.97
Genitourinary	3.41	4.01
Skin/Subcutaneous Tissue	3.17	4.01
Musculoskeletal	4.00	4.54
Congenital Anomalies	8.24	5.82
Pregnancy/Childbirth	3.39	3.23
Perinatal Conditions	12.38	10.55
Signs and Symptoms	3.78	4.07
Injury/Poisonings	3.62	4.04
Other	5.09	5.71

Data Source: Independence Blue Cross, 1984-1986.

Charges

The rate of charges per thousand subscribers in certain diagnostic categories is higher for children of alcoholics than other children, reflecting the study group's higher rates of inpatient admissions and greater average lengths of stay.

The rate of charges per thousand subscribers for mental disorders is more than twice as great for children of alcoholics as for other children; for substance abuse, the rate for children of alcoholics is nearly four times as high. The cost rate related to complications of pregnancy, childbirth and puerperium among daughters of alcoholics is nearly twice as great as that of other young women. For diseases of the respiratory and digestive systems, the rate of charges is half again as high for children of alcoholics as for other children.

Analysis of Specific Diagnosis Categories

The proportion of admissions for specific diagnoses within several of the larger diagnosis categories was also examined in order to illuminate the broad findings above. For some of these diagnoses, as noted below, the number of

admissions is quite small and the findings should therefore be interpreted with caution.

Substance Abuse

Although children of alcoholics have a significantly higher rate of admissions for substance abuse than other children, there are only 22 admissions for the study group in this category. Overall, children of alcoholics show a slightly higher proportion of admissions than other children for alcohol-related rather than drug-related diagnoses. Almost two-thirds of these admissions are for alcohol dependence, compared to less than half of other children's admissions. The proportion of other children's admissions for "alcohol abuse," a less chronic condition, is almost double that for children of alcoholics.

Mental Disorders

Within this category, children of alcoholics have a greater proportion of admissions than other children for adjustment reactions, a diagnosis usually applied to adolescents with nonpsychotic depression or emotional and behavioral problems. Comparison group members have

Table 7

**Children of Alcoholics: Inpatient Charges,
Charges per Thousand Subscribers and Ratio of Charges to Charges by Other
Children by Diagnosis Category**

Diagnosis Category	Children of Alcoholics:		Ratio of Charges per 1000 Subscribers: Children of Alcoholics/Others
	Total Charges	Charges/ 1000	
Infectious/Parasitic	\$ 62,366	\$ 4,532	.95
Neoplasms	59,215	4,303	.58
Endocrine/Nutritional/Metabolic	94,438	6,863	2.00
Blood and Blood-forming Organs	13,407	974	.47
Mental Disorders	904,058	65,697	2.33
Substance Abuse	99,579	7,236	3.86
Nervous and Sense	60,275	4,380	.65
Circulatory	27,412	1,992	.59
Respiratory	358,774	26,072	1.59
Digestive	239,389	17,396	1.55
Genitourinary	46,430	3,374	.64
Skin/Subcutaneous Tissue	28,297	2,056	1.07
Musculoskeletal	77,310	5,618	.92
Congenital Anomalies	239,686	17,418	1.29
Pregnancy/Childbirth	122,110	8,874	1.97
Perinatal Conditions	236,824	17,210	.75
Signs and Symptoms	109,663	7,969	1.16
Injury/Poisonings	355,661	5,846	1.36
Other	24,632	1,790	.58
TOTAL	\$3,159,526	\$229,600	1.36

Data Source: Independence Blue Cross, 1984-1986.

greater proportions of admissions than children of alcoholics for affective psychoses and for neurotic, personality and other nonpsychotic disorders. More than half of the mental disorder admissions for both groups are for nonpsychotic disorders. Although only a very small number (9) of children of alcoholics' admissions are for schizophrenia, the numbers seem larger than would be expected based on the comparison group's proportionate admissions for schizophrenia.

Diseases of the Digestive System

The proportion of admissions for enteritis and colitis is much higher for children of alcoholics than for other children. Except for appendicitis, which is proportionately more common among other children, admissions for the study and comparison groups are somewhat equally distributed among the other digestive disorders.

Diseases of the Respiratory System

The proportion of asthma admissions for children of alcoholics is 40% higher than for other children. Children of alcoholics also have a slightly higher proportion of admissions for acute respiratory problems and pneumonia than do other children.

Injuries and Poisonings

Broken bones, sprains and dislocations account for a somewhat greater proportion of admissions for children of alcoholics than they do for other children.

Complications of Pregnancy, Childbirth and Puerperium

The total number of admissions (36) for pregnancy and childbirth is low, reflecting the age of the children studied. Almost 90% of the admissions for children of alcoholics

Table 8
Children of Alcoholics and Other Children:
Age Distribution of Inpatient Admissions

<u>Age in Years</u>	<u>Children of Alcoholics</u>	<u>Other Children</u>
0-1	16.9	18.2
2-5	14.1	13.7
6-12	13.3	17.5
13-19+	44.0	39.6
19	<u>11.7</u>	<u>11.1</u>
TOTAL	100.0%	100.0%
(N)	(633)	(61,755)

Data Source: Independence Blue Cross, 1984-1986.

were for medical needs other than normal births, compared to 78% for other children.

Perinatal Conditions

There were 26 perinatal admissions among infant children of alcoholic parents; half had alcoholic mothers and half had alcoholic fathers. Perinatal admissions for children of alcoholics clustered in two areas: low birth weight and respiratory problems. The proportion of admissions for children of alcoholics for these two diagnoses exceeded the proportion of such admissions for other children.

Effects of Age on Admission Rates

The age breakdown of hospital admissions in the study and comparison groups can be seen in Table 8.

Proportionately, children of alcoholics and other children tend to be admitted for inpatient care at similar ages. However, one trend worth noting can be observed in the admissions for mental disorders and substance abuse (Table 9). A slightly larger proportion of younger (6-14 year old) children of alcoholics are hospitalized for these problems, particularly substance abuse, than other children.

Table 9
Children of Alcoholics and Other Children:
Percentage Distribution of Admissions for Mental Disorders
and Substance Abuse by Age

1984-1986

<u>Age Group</u>	<u>Mental Illness</u>		<u>Substance Abuse</u>	
	<u>Children of Alcoholics</u>	<u>Other Children</u>	<u>Children of Alcoholics</u>	<u>Other Children</u>
6-14 years	16.6	14.1	15.8	4.6
15-19 years	56.7	63.0	57.9	75.5
19+ years	<u>26.7</u>	<u>22.9</u>	<u>26.3</u>	<u>19.9</u>
TOTAL	100.0	100.0	100.0	100.0
(N)	(60)	(3,890)	(22)	(908)

Data Source: Independence Blue Cross, 1984-1986.

Discussion

The findings from this important comparative study indicate that children's physical and mental health is damaged by their parents' alcoholism. During three years in the lives of 595 children of alcoholics, these youngsters:

- were hospitalized at a rate 24.3% greater,
- stayed an average of 28.8% more days per admission,
- used hospital days at a rate 61.7% greater, and
- incurred inpatient charges at a rate 36% greater than other children, per thousand subscribers. In addition, children of alcoholics were found to be at a comparatively higher risk for specific illnesses.

Substance Abuse

Substance abuse admission rates, charges per thousand subscribers and average length of stay are notably greater for children of alcoholics than other children. Furthermore, the data suggest that children of alcoholics entered treatment at a younger age than other children. It is possible that alcoholic parents who have gone through treatment may be sensitive to their own children's early signs of addiction and tend to obtain help for them earlier rather than later. However, their higher admission rates and longer lengths of stay in substance abuse treatment may also indicate that their problems in this area are more serious and more difficult to overcome than other children's substance abuse problems.

Mental Disorders

The higher admission rates for mental disorders found among the children of alcoholics in this study may reflect the isolation, tension and stress caused by living with an alcoholic parent. The preponderance of admissions for adjustment reactions — representing almost a third of all cases, compared to 21% of controls — is particularly important.

This psychiatric category may be used to minimize labeling of adolescents who, although they are not psychotic, evidence a variety of problematic behaviors and emotional troubles. One typical symptom leading to the adjustment reaction diagnosis is depression, which other studies have suggested is a common response to the negative experience of living with alcoholism.

The diagnosis may also be used to denote adolescent substance abuse. Consequently, some children of alcoholics with substance abuse problems may have been diagnosed instead as having mental health problems.

Diseases of the Digestive and Respiratory Systems

Children of alcoholics were admitted to the hospital for digestive disorders, particularly enteritis and colitis, at a rate significantly greater than other children. Emotional turmoil and stressful life conditions can cause digestive disorders, and the high proportion of colitis admissions for

children of alcoholics may indicate stress created by alcoholism in the family.

Asthma appeared to be the primary explanation for the greater rate of admissions for respiratory ailments among children of alcoholics. Again, stress may be a culprit, since emotional turmoil has been shown to contribute to breathing problems for the asthmatic.

Management of these chronic conditions requires appropriate compliance with medical regimens. Poor compliance due to inconsistent parenting, instability at home or child neglect could also explain these findings.

Injuries and Poisonings

Children of alcoholics in the study experienced a greater rate of admissions for injuries and poisonings than other children, raising the possibility of child abuse or neglect.

The data show only a slightly greater proportion of admissions for fractures, sprains and dislocations for the study group when compared to other children. However, the data may undercount these injuries, which are often treated without hospital admission. Without further examination of outpatient and emergency room data, it is not possible to conclude whether or not these children of alcoholics were at greater risk for broken bones than other children.

Fetal Alcohol Syndrome

The study was inconclusive regarding the presence of fetal alcohol syndrome (FAS) among this particular group of children of alcoholics. The data fail to show that children of alcoholics were admitted at a greater rate than other children for diagnoses of congenital anomalies and perinatal problems. However, children of alcoholics do have 41.6% and 17.3% greater average lengths of stay, respectively, for congenital anomalies and perinatal conditions. Their rate of charges also is 29% higher for congenital anomalies in infants of alcoholics, although the rate of perinatal charges is lower than the comparison group.

Although the data support the possibility that children of alcoholics had more serious congenital anomalies than other children, the presence of FAS may still be understated. Unless the practitioner is educated about FAS, it is often missed. As a result, claims histories of children with FAS often resemble those of other children.

The findings on admission rates for perinatal conditions and congenital anomalies may also reflect the preponderance of alcoholic fathers over mothers among parents of children in the study population. There were nearly 3 times as many alcoholic fathers (442) as mothers (159) identified, a usual male/female ratio for alcoholism treatment populations. By including the greater number of children of alcoholic fathers in the study population when calculating rates for these two diagnoses, the statistical effects of maternal drinking may have been lost. In fact, when the study population was divided by sex of the

alcoholic parent (Tables 3 and 4), children of alcoholic mothers showed a greater rate of admissions for both perinatal conditions and congenital anomalies than did children of alcoholic fathers.

Recommendations

Findings from this comparative study indicate the tremendously negative impact of parental alcoholism on children and also raise many broad concerns. Of primary importance are the physical and mental health problems parents' alcoholism causes children. A second concern is the cost of health care for individuals in alcoholic families in terms of dollars and in personal suffering. A third issue is the cumulative burden of financial costs of parental alcoholism on the entire health care system.

It is particularly important to share information about the health care needs and utilization patterns of children of alcoholics with health care providers, prevention and education programs, employers and insurers, so that they can plan and provide appropriate early intervention, services and referrals. Early identification and education can be crucial in ameliorating and preventing future problems for children of alcoholics and thus reducing the financial costs. In addition, further research will help expand understanding of the impact of parental alcoholism on children's health, and therefore improve our ability to intervene appropriately.

Inquiry into a child's home life by physicians, school nurses, visiting nurses and other health professionals in contact with children should be absolutely routine. When a child displays the kinds of symptoms associated with children of alcoholics in this study, it is critical that parental alcoholism be explored as a possible cause so that appropriate intervention, care and referrals can be provided.

Professionals from alcoholism agencies should provide training and education for health care workers likely to encounter these children at entry points into the medical system, such as pediatrics units, emergency rooms and mental health clinics. For example, a specialist from a local alcoholism agency could be assigned to a pediatric or orthopedic unit to sit in on care conferences and discharge planning. Alcoholism professionals could also offer workshops or presentations at appropriate conferences for physicians, nurses, allergists, child abuse specialists, family social workers and medical students, or special conferences could be held for these professionals on this issue.

Awareness of the health consequences of parental alcoholism to children may also help health care providers identify the parents' alcoholism, and evaluate and provide them appropriate treatment earlier. Conversely, when alcoholism is first identified in an adult, health professionals should immediately look for physical and emotional problems in the alcoholic's children, so that care can be provided them sooner.

Children should also be directly informed about the effects of parental alcoholism and told how to get help. To reach youngsters and motivate those needing help to seek it, videos, posters and informational materials need to be developed and made available in hospital and doctors' waiting rooms, school nurses' offices, school-based health

centers, and health and mental health clinics.

Community-based prevention and counseling program personnel need education to make the connection that children's problems may reflect life with an alcoholic parent. While services must be provided for the presenting health problem, specific information and services related to parental alcoholism should also be made available. Information about the effects of parental alcoholism on children should also be included in education and treatment programs for adult alcoholics, as a way to motivate them to stop drinking.

It is clear that parental alcoholism exacerbates children's health problems and increases their health care claims, separate from either parent. We believe that direct services for these youngsters, whether or not the alcoholic is treated, can help reduce their health care utilization and costs. Thus, it is in the interest of employers and insurers to provide or cover such services for dependent children. Since denial is inherent in the disease of alcoholism, it is unlikely either the alcoholic parent or the sober spouse will openly request help for their children. Therefore, Employee Assistance Programs should establish ways to connect employees' dependent children with those who can evaluate, assist and refer them to help.

From a cost-benefit point of view, employers and insurers invest in alcoholism and drug abuse treatment because, if effective, it reduces absenteeism and increases productivity. Successful treatment also reduces accidents, thereby decreasing workers' compensation rates and claims, and retains personnel, saving money in retraining and hiring costs. Although it remains to be shown whether health care costs for children of alcoholics will decline following parental treatment, recent research indicates a decline in total family health costs to near-normal rates following effective alcoholism treatment.

The results of this comparative investigation of children of alcoholics suggest a host of promising future research opportunities. At the top of the list is the need for an examination of the health care experience of children from alcoholic families over a longer period of time. The greater rate of hospital admissions among children of alcoholics indicates the need to investigate entire health histories, including outpatient and emergency room data. Also of interest would be studies assessing the reasons for these higher admission rates and whether they represent the effect of delayed treatment for health problems.

This study indicates that children of alcoholics stay longer in the hospital per admission than other children. Since Independence Blue Cross pays on a prospective basis, it would appear that patients stay in the hospital only if they are too sick to be discharged. It may be that children of alcoholics are, on the average, sicker than other children when admitted to the hospital. Delayed treatment may be a factor. Perhaps doctors, aware of the situation at home and fearful that the children will receive inadequate care, choose to keep children of alcoholics longer under hospital supervision. More research is required to find out how

these or other reasons may influence their length of stay.

Although the study focuses on the overutilization of inpatient services by children of alcoholics, the findings also suggest that, in certain diagnostic categories, these youngsters use fewer services than other children. Further investigation into areas of underutilization may shed light on the causes.

Within this study population, the sex of the alcoholic parent appears to have differential effects on children's hospital admission rates. Furthermore, sons and daughters of alcoholics have different admission rates. More research is needed to explore the gender differences which suggest variations in children's health problems and health care utilization by sex of the child and sex of the alcoholic parent. Additional areas of inquiry should include psychological variables in boys and girls that underlie differences between the impact of paternal and maternal alcoholism, and whether alcoholism in men and women has differing effects on parenting and the home environment.

While some children of alcoholics have more, or more serious health problems, others appear to cope well. It is likely that children in this study have brothers and sisters who were not admitted to the hospital. This points out the critical need to study health care patterns of all children in an alcoholic family. We need to learn what factors may protect some youngsters, making them more resilient or less vulnerable. We need to know the effects of birth order, sex or number of children in the family on occurrence, frequency, severity or types of health problems and related health care.

The data set also includes many alcoholics whose children did not make any health care claims on family insurance policies. Additional exploration is required to discover whether some families with alcoholic parents are more likely to have ill children than others, and if so, why. We need to assess the impact of age, both of the child and of the parent at the onset of parental alcoholism. We need to determine whether or not children from single-parent families are more or less vulnerable than others. We need to explore differences in impact of race, class, economic status or ethnic origin.

There were only six cases of dual parent alcoholism in this sample, too few to analyze. Research is needed to find out how the health problems and health care utilization of children of two alcoholic parents compare to those of children with only one alcoholic parent.

Further investigation is called for, too, of specific histories of individual children of alcoholics in order to examine possible clusters of health problems; to see if the same or different children show both psychological and somatic difficulties; and to determine whether specific health problems or health care utilization patterns are linked to any other characteristics of the child or the family.

Other research shows that health costs for alcoholics' families peak around alcoholism treatment and tend to decline after the alcoholic is treated, both for the total family and for the alcoholic. Future research should inves-

tigate whether the health care costs and problems of children whose alcoholic parents have been treated follow this pattern; whether these patterns and costs differ from those of children of untreated alcoholics, and if so, how; whether children's health care admissions are affected by the parent's treatment modality, the resumption of parental drinking, or a parent's readmission for treatment; and the most frequent diagnoses for children before a parent's alcoholism is identified.

One of the major constraints in developing research opportunities is the lack of retrievable data on which to perform studies and research is often hampered by a lack of computerized or large data sets. We urge more insurers to follow the outstanding example of Independence Blue Cross in permitting the research and scientific community access to their large data sets. Increased study of health problems in alcoholic families could yield many benefits, including reduction of health care costs. In addition, collaboration between researchers and the insurance community could allow for methodological difficulties to be addressed prior to data collection. For example, a means of ascertaining actual subscriber numbers could be developed, or matched or random assignment of control group households accomplished to achieve comparable study and control population sizes.

In addition, we urge that a major central data base be developed for the entire research field. The long-term collection of data and construction of a central data base is a vital factor in the development of future research concerning children of alcoholics and could provide information on the health care patterns and costs of children from uninsured and medical assistance families.

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Appendix A

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Appendix B

Specific Diagnoses Used to Identify Alcoholics

Admissions diagnoses used to identify alcoholics were drawn from the National Center for Health Statistics ICD-9-CM Classifications, 9th revision, and included the following:

<u>ICD-9 Code</u>	<u>Diagnosis</u>
VII.3	Alcoholism
291-291.9	Alcohol Psychosis
303-303.9	Alcohol Dependence Syndrome
425.5	Alcoholic Cardiomyopathy
571-571.3	Alcoholic Liver Disease
648.41	Complication of Pregnancy, Childbirth, Puerperium Due to Alcohol
655.80	Suspected Damage to Fetus from Maternal Alcoholism
760.71	Fetal Alcohol Syndrome

Appendix C

Summary Descriptions of Diagnosis Categories Used by Independence Blue Cross

(Based on ICD-9-CM Diagnosis Categories)

The following descriptions are brief outlines and not all-inclusive.

1. Infectious and Parasitic Diseases

Includes diseases generally recognized as communicable or transmissible as well as a few diseases of unknown but possibly infectious origin.

2. Neoplasms

Includes malignant neoplasms, benign neoplasms, carcinoma in situ.

3. Endocrine, Nutritional and Metabolic Diseases

Includes disorders of the thyroid, other endocrine glands, nutritional deficiencies and metabolic and immunity disorders.

4. Diseases of the Blood and Blood-forming Organs

Includes anemias, coagulative defects, diseases of the white blood cells.

5. Mental Disorders

Includes organic psychotic disorders, schizophrenic disorders, affective psychoses, neurotic disorders, personality disorders and other nonpsychotic mental disorders.

6. Substance Abuse

Includes alcohol psychosis, dependence and abuse, and drug psychosis and dependence.

7. Diseases of the Nervous System and Sense Organs

Includes inflammatory, hereditary and degenerative diseases of the central nervous system, of the peripheral nervous system, of the eye, adnexa, ear and mastoid process.

8. Diseases of the Circulatory System

Includes rheumatic fever, rheumatic heart disease, hypertension, pulmonary disease, heart disease, cerebrovascular disease, disease of the arteries, arterioles and capillaries.

9. Diseases of the Respiratory System

Includes acute respiratory infections, chronic obstructive pulmonary disease, pneumoconioses and other lung disease.

10. Diseases of the Digestive System

Includes diseases of the mouth, jaws, esophagus, stomach, duodenum, and enteritis and colitis.

11. Diseases of the Genitourinary System

Includes nephritis, nephrotic syndrome and nephrosis, diseases of the urinary system, male genital organs, female pelvic organs, female genital tract.

12. Complications of Pregnancy, Childbirth and Puerperium

Includes ectopic and molar pregnancy, abortive outcomes, normal deliveries, complications of pregnancy, labor or delivery and puerperium.

13. Diseases of the Skin and Subcutaneous Tissue

Includes infections and diseases of the skin and subcutaneous tissue.

14. Diseases of the Musculoskeletal System

Includes arthropathies and related disorders, dorso-pathies, rheumatism, osteopathies, chondropathies and acquired musculoskeletal deformities.

15. Congenital Anomalies

Includes anomalies and deformities of the nervous, circulatory, respiratory, urinary system, limbs and other organs of the body.

16. Perinatal Conditions

Includes maternal and other causes of perinatal morbidity and mortality.

17. Signs and Symptoms

Includes signs and symptoms, abnormal results of laboratory or other investigative procedures and ill-defined conditions regarding which no diagnosis classifiable elsewhere is recorded.

18. Injuries and Poisonings

Includes fractures, sprains, dislocations, intracranial injuries, internal injuries, open wounds, injuries to the blood vessels, late effects of injuries and poisonings, toxic effects, superficial injuries, contusions, crushing injuries, foreign bodies, burns, injuries to the spinal cord and nerves, trauma and poisonings.

19. Other

Includes other medical illnesses not elsewhere classifiable.

Appendix D

Distribution of Inpatient, Home Health Care and Short Procedure Unit Admissions by Diagnosis Category

1) Distribution of Admissions for Children of Alcoholics by Diagnosis Category and Type of Health Care

Diagnosis Category	Total	Type of Health Care:		
		Inpatient	Home Care	SPU
Infectious/Parasitic	27	23	2	2
Neoplasms	12	6	0	6
Endocrine/Nutritional/Metabolic	26	25	1	0
Blood and Blood-forming Organs	10	10	0	0
Mental Disorders	60	60	0	0
Substance Abuse	22	22	0	0
Nervous and Sense	25	15	4	6
Circulatory	3	3	0	0
Respiratory	128	126	2	0
Digestive	69	57	0	12
Genitourinary	23	17	4	2
Skin/Subcutaneous Tissue	6	6	0	0
Musculoskeletal	14	13	0	1
Congenital Anomalies	20	17	3	0
Pregnancy/Childbirth	51	36	0	15
Perinatal Conditions	30	26	4	0
Signs and Symptoms	37	37	0	0
Injury/Poisonings	127	123	0	4
Other	159	11	0	148
TOTAL	<u>849</u>	<u>633</u>	<u>20</u>	<u>196</u>

Data Source: Independence Blue Cross, 1984-1986.

**2) Children of Alcoholics and Other Children:
Short Procedure Unit Admissions
Per Thousand Subscribers by Diagnosis Category**

<u>Diagnosis Category</u>	<u>Children of Alcoholics</u>	<u>Other Children</u>
Infectious/Parasitic	.15	.13
Neoplasms	.44	.67
Endocrine/Nutritional/Metabolic	—	.02
Blood and Blood-forming Organs	—	.01
Mental Disorders	—	.08
Substance Abuse	—	—
Nervous and Sense	.44	1.13
Circulatory	—	.01
Respiratory	—	.16
Digestive	.87	1.16
Genitourinary	.15	.24
Skin/Subcutaneous Tissue	—	.10
Musculoskeletal	.07	.23
Congenital Anomalies	—	.19
Pregnancy/Childbirth	1.09	.77
Perinatal Conditions	—	—
Signs and Symptoms	—	.05
Injury/Poisonings	.29	.36
Other	<u>10.90</u>	<u>10.36</u>
TOTAL	14.39	15.68

**3) Children of Alcoholics and Other Children:
Home Health Care Visits
Per Thousand Subscribers by Diagnosis Category**

<u>Diagnosis Category</u>	<u>Children of Alcoholics</u>	<u>Other Children</u>
Infectious/Parasitic	.15	.01
Neoplasms	—	.04
Endocrine/Nutritional/Metabolic	.07	.03
Blood and Blood-forming Organs	—	—
Mental Disorders	—	—
Substance Abuse	—	—
Nervous and Sense	.29	.05
Circulatory	—	.01
Respiratory	.15	.03
Digestive	—	.02
Genitourinary	.29	.04
Skin/Subcutaneous Tissue	—	.02
Musculoskeletal	—	.03
Congenital Anomalies	.22	.08
Pregnancy/Childbirth	—	—
Perinatal Conditions	.29	.09
Signs and Symptoms	—	.08
Injury/Poisonings	—	.08
Other	<u>—</u>	<u>—</u>
TOTAL	1.45	.61

Data Source for Both Tables: Independence Blue Cross, 1984-1986.

EVALUATION FORM

Children of Alcoholics in the Medical System: Hidden Problems, Hidden Costs

Please fold as indicated on back and return to Children of Alcoholics Foundation.

Name and Title: _____

Address: _____

1. How did you learn about and acquire this volume?

a) learned about it from _____

b) acquired it: _____ wrote to Foundation to request it

_____ sent to me by a colleague (specify) _____

_____ other _____

2. What are your interests in this subject?

a) primary field of professional interest? (check one only)

_____ health care provider	_____ pediatrics	_____ public health
_____ employer	_____ general medicine	_____ child development
_____ insurer	_____ education	_____ child psychology/psychiatry
_____ drug problems	_____ social work	_____ adult psychology/psychiatry
_____ alcohol problems	_____ basic research	_____ criminal justice
_____ advocacy	_____ support of research	_____ other _____

b) other fields of professional interest (check all that apply)

_____ health care provider	_____ pediatrics	_____ public health
_____ employer	_____ general medicine	_____ child development
_____ insurer	_____ education	_____ child psychology/psychiatry
_____ drug problems	_____ social work	_____ adult psychology/psychiatry
_____ alcohol problems	_____ basic research	_____ criminal justice
_____ advocacy	_____ support of research	_____ other _____

3. What is your primary occupation? (check one)

_____ health care provider	_____ physician	_____ psychologist
_____ employer	_____ researcher	_____ counselor
_____ insurer	_____ social worker	_____ attorney
_____ other, but volunteer in related field	_____ other _____	

4. In what area(s) are you active as a professional or volunteer? (check all that apply)

_____ research	_____ advocacy	_____ public policy development
_____ prevention	_____ administration	_____ volunteer activities
_____ treatment	_____ teaching	_____ other _____

5. Has this been helpful in one or more of the following ways? (check all that apply)

_____ increased my knowledge in areas where I have some background

_____ introduced me to areas where I have little or no background

_____ filled a previously existing need

_____ added new information to existing services

_____ given me a wider grasp of the subject matter

_____ provided new ideas for directions in research, programming or advocacy

_____ other (specify) _____

_____ the volume has not been helpful

6. Have you any comments on the material presented?

7. Please list anyone else who should know about this report. _____

8. Would you like to be added to our mailing list?

_____ yes _____ no

Thank you for helping us evaluate this report.

Migs Woodside
President
Children of Alcoholics Foundation