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Core Competencies for Involvement of Health Care Providers in the Care of Children and Adolescents in Families Affected by Substance Abuse

Hoover Adger, Jr, MD, MPH; Donald Ian Macdonald, MD; and Sis Wenger

ABBREVIATION. AOD, alcohol and other drugs.

The pediatrician's responsibility for alcohol and other drug (AOD) problems among children, adolescents, and families has received increased recognition over the last decade. Although reaching a consensus about the scope of that responsibility has been challenging, several professional organizations and individuals have attempted to clarify the role of the pediatrician and of other primary health care providers who care for children and adolescents.

The American Academy of Pediatrics took an important step forward by creating a set of guidelines for both pediatric education and clinical practice when it released its policy statement on *The Role of the Pediatrician in Prevention and Management of Substance Abuse*. This Statement noted that "inquiry regarding the extent of drug use should be part of the routine inquiry of every teenager presenting for periodic care," (American Academy of Pediatrics, 1983). Macdonald and Blume (1986) agreed and expanded that perspective, pointing to the pediatrician's unique and long-lasting relationship with the family, and recommended that physicians ask about family drinking and drug use as early as the first prenatal visit. The Ambulatory Pediatric Association went even further by developing guidelines for all primary care pediatricians regarding knowledge and skills related to AOD.

Although these statements have helped to define the role of the pediatrician, they do not account for varying levels of interest, comfort, and skill among health providers. Moreover, the need to use preventive interventions that strengthen families and maximize opportunities for enhancing the health and welfare of children and adolescents has become increasingly more apparent. The *Core Competencies for Involvement of Health Care Providers in the Care of Children and Adolescents in Families Affected by Substance Abuse* is a set of statements that articulate three distinct levels of care. In addition, it attempts to recognize and account for the individual differences among health providers. It was developed in a manner not only to endorse a minimal role for all primary health care providers but to provide enough

flexibility for individuals to choose their role and degree or level of involvement. Furthermore, it recognizes the central tenet that although primary care providers might be responsible for identifying the problem, they are not expected to solve, manage, or treat the problem by themselves.

It is suggested that all primary health professionals with responsibility for the care of children, whatever their area of training or discipline, have a minimal level of competence that includes a basic understanding of the medical, psychiatric, and behavioral symptoms of children and adolescents in families affected by substance abuse; be familiar with local resources; appropriately screen for family history/current use of AOD; determine whether family resource needs and services are appropriate; and be able to express an appropriate level of concern and offer support and follow-up. The specific knowledge and skills indicated at level I of the core competencies are suggested as a baseline or minimal level of competence that all primary health care providers should strive to achieve. However, many will want to do more than indicated in level I competencies. For those who wish to be involved at a higher level, however, a different and more advanced set of knowledge and skills will be required. Most important, this is a decision that each provider can make for her/himself. Some will want to attain these additional knowledge and skills, whereas most simply will need to be able to collaborate with and refer to those who have the skill and expertise to provide these specialized services. The end result, however, is increased attention to an important problem and enhanced opportunities for validation, education, support, and treatment for patients and families affected by substance abuse. In summary, it is a vehicle for helping us to brighten the future for children who may be struggling with one of the families' biggest and most burdensome secrets.

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Core Competencies for Involvement of Health Care Providers in the Care of Children and Adolescents in Families Affected by Substance Abuse

These competencies are presented as a specific guide to the core knowledge, attitudes, and skills which are essential to meeting the needs of children and youth affected by substance abuse in families.

There are over 28 million children of alcoholics in America; almost 11 million are under the age of eighteen. Countless other children are affected by substance-abusing parents, siblings or other caregivers. There is an association between child physical, emotional and sexual abuse and neglect, domestic violence and substance abuse in the family. All children have a right to be emotionally and physically safe. No child of an alcoholic or other substance-abusing parent should have to grow up in isolation and without support. Recognizing that no one is unaffected in families with substance abuse, health professionals should play a vital role in helping to optimize the health, well-being and development of children and adolescents from these families and should recognize, as early as possible, associated health problems or concerns.

It is the hope of the National Association for Children of Alcoholics (NACoA) that organizations representing health care professionals will adopt these competencies or competencies modeled from them. Developed by a multi-disciplinary professional advisory group to NACoA, these competencies set forth three levels for professional involvement with children who grow up in homes where alcohol and other drugs are a problem. All health care providers should aspire to Level I. Resources and programs should be made available for the training of professionals who desire to achieve competency at Levels II and III.

Level I

For all health professionals with clinical responsibility for the care of children and adolescents:

1. Be aware of the medical, psychiatric and behavioral syndromes and symptoms with which children and adolescents in families with substance abuse present.
2. Be aware of the potential benefit to both the child and the family of timely and early intervention.
3. Be familiar with community resources available for children and adolescents in families with substance abuse.
4. As part of the general health assessment of children and adolescents, health professionals need to include appropriate screening for family history/current use of alcohol and other drugs.
5. Based on screening results, determine family resource needs and services currently being provided, so that an appropriate level of care and follow-up can be recommended.
6. Be able to communicate an appropriate level of concern, and offer information, support and follow-up.

Level II

In addition to Level I competencies, health care providers accepting responsibility for prevention, assessment, intervention, and coordination of care of children and adolescents in families with substance abuse should:

1. Apprise the child/family of the nature of alcohol and other drug abuse/dependence and its impact on all family members and strategies for achieving optimal health and recovery.
2. Recognize and treat, or refer, all associated health problems.
3. Evaluate resources—physical health, economic, interpersonal, and social—to the degree necessary to formulate an initial management plan.
4. Determine the need for involving family members & significant other persons in the initial management plan.
5. Develop a long-term management plan in consideration of the above standards and with the child or adolescent's participation.

Level III

In addition to Level I & II competencies, the health care provider with additional training, who accepts responsibility for long-term treatment of children and adolescents in families with substance abuse, should:

1. Acquire knowledge, by training and/or experience, in the medical and behavioral treatment of children in families affected by substance abuse.
2. Continually monitor the child/adolescent's health needs.
3. Be knowledgeable about the proper use of consultations.
4. Throughout the course of health care treatment, continually monitor and treat, or refer for care, any psychiatric or behavioral disturbances.
5. Be available to the child or adolescent and the family, as needed, for ongoing care and support.

Children of Substance Abusers: Overview of Research Findings

Jeannette L. Johnson, PhD*, and Michelle Leff, MD†

ABSTRACT. A relationship between parental substance abuse and subsequent alcohol problems in their children has been documented extensively. Children of alcoholics (COAs) are considered to be at high risk because there is a greater likelihood that they will develop alcoholism compared with a randomly selected child from the same community. COAs and children of other drug-abusing parents are especially vulnerable to the risk for maladaptive behavior because they have combinations of many risk factors present in their lives. The single most potent risk factor is their parent's substance-abusing behavior. This single risk factor can place children of substance abusers at biologic, psychologic, and environmental risk.

Since the turn of the century, many reports have described the deleterious influence of parental alcoholism on their children. A series of studies measured mortality, physiology, and general health in the offspring of alcoholic parents and concluded that when mothers stopped drinking during gestation, their children were healthier. Today, research on COAs can be classified into studies of fetal alcohol syndrome, the transmission of alcoholism, psychobiologic markers of vulnerability, and psychosocial characteristics. Each of these studies hypothesizes that differences between COAs and children of nonalcoholics influence maladaptive behaviors later in life, such as academic failure or alcoholism. This research supports the belief that COAs are at risk for a variety of problems that may include behavioral, psychologic, cognitive, or neuropsychologic deficits.

The vast literature on COAs far outweighs the literature on children of other drug abusers. Relatively little is known about children of heroin addicts, cocaine abusers, or polydrug abusers. Nonetheless, many researchers suggest that the children of addicted parents are at greater risk for later dysfunctional behaviors and that they, too, deserve significant attention to prevent intergenerational transmission of drug abuse. Most research on children of other drug abusers examines fetal exposure to maternal drug abuse.

The overview of the research on children of substance abusers points toward the need for better, longitudinal research in this area. Most studies on COAs or other drug abusers are not longitudinal; they examine behavior at one point in time. Given the studies reviewed in this article, it is unclear whether we see true deficits or developmental delay. Longitudinal studies will allow us to predict when early disorders and behavioral deviations will be transient or when they will be precursors to more severe types of maladaptive behavior. Longitudinal research also will enable us to explain specific childhood outcomes. Differences in outcome could be studied si-

multaneously to understand whether antecedents discovered for one are specific to it or are general antecedents leading to a broad variety of outcomes. *Pediatrics* 1999; 103:1085-1099; *development; research; children of alcoholics; genetic; psychosocial.*

ABBREVIATIONS. COA, children of alcoholics; FAS, fetal alcohol syndrome; EEG, electroencephalography; MZ, monozygotic; DZ, dizygotic; ERP, event-related potential; DRD2, D2 dopamine receptor (gene); MM, methadone-maintained; FHP, Family History Positive; FHN, Family History Negative; HVA, homovanillic acid; DBH, dopamine- β -hydroxylase.

Addiction to alcohol and other drugs is a serious problem in the United States. Approximately 10% of American adults and 3% of adolescents in the United States are addicted to alcohol or other drugs.¹ As a society, we should be concerned about the rates of alcohol and drug use among our adolescent population. Determining why one adolescent is more vulnerable than another to drug use has been an area of research spanning the past 2 decades. Reviews of the literature on risk factors associated with drug and alcohol abuse in children or adolescents implicate many factors, such as childhood personality, hyperactivity, antisocial traits, stress, and interpersonal risk factors including low academic performance and commitment and associations with substance-using peers.²⁻⁵

A relationship between parental substance abuse and subsequent alcohol problems in their children has been documented extensively,⁶⁻⁹ although some have found that parental substance abuse is not directly related to their children's substance-using behavior.¹⁰ Several researchers have found that teenagers are more likely to drink and use drugs if their parents drink and/or use drugs.¹¹⁻¹³ Kandel and associates¹³ found that 82% of drinking families raise youth that also drink, and that 72% of families who abstain raise youth who also abstain. Annis¹¹ found that a same-sex, same-use pattern seems to exist. Mothers and daughters have similar patterns of substance abuse (mostly tranquilizers and painkillers), and fathers and sons share their choice in drugs (usually alcohol and cigarettes). Coombs and Dickson¹² found that the substance abuse behavior of both the mother and the father influenced their children's substance abuse behavior. Mothers and fathers of substance-abusing youth tended to drink and to use other drugs more often and more heavily. Chassin and Barrera¹⁴ explored substance use among adolescents over a 3-year period in 246 adolescent children of alcoholics (COAs) and 208 children of nonalcoholics. They noted important developmental differences in the use of alcohol and drugs among COAs. Older adolescent COAs showed steep escalations in drug use. Younger COAs showed escalations in alcohol and other drug use if their fathers had

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experienced alcohol-related consequences. If fathers did not experience alcohol-related consequences to their drinking, COAs showed a strong relationship between substance use and self-control reasons for limiting drinking. The research by Chassin and colleagues¹⁴ also has shown other mediating mechanisms involved in adolescent substance use among COAs. She suggests that substance use among adolescent COAs is mediated through stress and negative affect pathways, decreased parental monitoring, and increased temperamental emotionality. These results have been supported partially by other research.¹⁵ Overall, parental alcohol abuse has been determined to be a risk factor for their children's subsequent use.

RISK FACTORS

Children are labeled "at risk" for many different reasons. These "risk factors" are presumed to increase the likelihood of future maladaptation and can be environmental (eg, high or low socioeconomic status), biologic (eg, inheritance of a gene predisposing toward a disease state), or psychologic (eg, low self-esteem). With a rich tradition extending several decades, the high-risk paradigm has been used to study children at risk for a variety of problems related to their parents' depression, psychopathology, or substance use. COAs are considered to be at high risk because there is a greater likelihood that they will develop alcoholism compared with randomly selected children from the same community.¹⁶ It is important to note, however, that research findings that identify risk factors suggest that these factors are associated with increased risk and do not necessarily constitute a causal relationship.

Children of alcoholic and other drug-abusing parents appear to be especially vulnerable to the risk for maladaptive behavior because they have combinations of many risk factors present in their life. The single most potent risk factor is their parent's substance-abusing behavior; this single risk factor can place children of substance abusers at biologic, psychologic, and environmental risk. Evidence suggests that the inheritance of a predisposition to alcoholism is specific and separate from the predisposition toward other types of drug abuse.¹⁷ The evidence for the inheritance of a predisposition to other kinds of substance abuse is less clear, and there is evidence both for and against this notion.

In this review, we examine some of the research both on COAs and on children of other substance abusers. Parental substance abuse and its subsequent effects on their children are great. The Children of Alcoholics Foundation¹⁸ estimates that there are 28.6 million Americans alive today who were raised in homes where one parent was alcoholic. The number of children younger than 18 years currently living with an alcoholic parent are estimated to total 11 to 17.5 million.⁹ There are few prevalence estimates about the number of children who live in homes where drug abuse, other than alcoholism, occurs.

Previous Reviews of the Literature

Since the turn of the century, many reports have described the deleterious influence of parental alcoholism on their children.¹⁹⁻²² A series of studies published in London in 1910 measured mortality, physiology, and general health in the offspring of alcoholic parents and concluded that when mothers stopped drinking during gestation, their children were healthier.²³⁻²⁵ Much of the research on COAs has been reviewed extensively by others.²⁶⁻⁴⁰ No two authors have classified the research in quite the same way; it is evident, however, that there are a great many ways in which to approach the field. Overall, the research indicates that there is considerable heterogeneity within the COA population and that differences between COAs and children of nonalcoholics are not always substantial with respect to many of the individual risk factors. This may be attributable to the subtypes of COAs and substance abusers. For example, many children have differing numbers of risk factors present in their lives (some children live with more risk factors than do others), and the cumulative effects of multiple risk factors are associated with later behavioral outcomes.

We separate research on COAs into studies of 1) the fetal alcohol syndrome (FAS); 2) the transmission of alcoholism; 3) psychobiologic markers of vulnerability; and 4) psychosocial characteristics. These studies hypothesize that differences between COAs and children of nonalcoholics influence maladaptive behaviors in COAs later in life, such as academic failure or alcoholism. This research supports the belief that COAs are at risk for a variety of problems, which may include behavioral, psychologic, cognitive, or neuropsychologic deficits.

FAS

First described in the medical literature by Jones and Smith,⁴¹ FAS is a cluster of four characteristics found in the offspring of mothers who drank excessively during pregnancy, namely, central nervous system dysfunction, abnormal facial features, behavioral deficits, and growth deficiency. Many studies of infants born to alcoholic mothers report strong relationships between in utero alcohol use and later childhood problems such as minor physical anomalies, hyperactivity, mental retardation, and electroencephalographic (EEG) abnormalities.⁴¹⁻⁴⁵ One study of 322 newborn infants showed a frequency of physical abnormalities twice as high among children of mothers who were heavy drinkers as among children of mothers who were not heavy drinkers.⁴⁶

Longitudinal studies of infants exposed to alcohol abuse in utero have shown the lasting effects of their exposure. A large longitudinal study in Seattle, WA, involving 1529 white, middle-class, pregnant women and their offspring revealed that 12% of the infants of mothers who were heavy drinkers exhibited features of altered growth and morphogenesis, compared with only 2% of children of mothers with lower levels of alcohol ingestion.⁴⁷⁻⁴⁹

Transmission of Alcoholism

There are many studies that support a genetic theory of alcoholism transmission, dating from Amark⁵⁰ to the present. Goodwin^{51,52} reports a 25% prevalence rate of alcoholism among male relatives of alcoholics, which exceeds the estimated population prevalence for male alcoholics of 3% to 5%. The prevalence of alcoholism among female relatives of alcoholics is 5% to 10%, which also exceeds the estimated population prevalence for female alcoholics (0.1%–1%). Researchers agree that the genetic model of alcoholism is multifactorial. Schuckit and colleagues^{53–58} explain that both genetic heterogeneity and environmental influences combine in an unknown manner, placing some people at high risk and others not at risk for developing alcohol abuse or dependence. In high-risk individuals, Schuckit describes a decreased response to alcohol as a genetic risk factor. Tarter⁵⁹ discusses temperament traits interacting with environmental contingencies that increase one's risk for alcoholism. Heath and colleagues⁶⁰ note the relationship between personality and temperament and cardiac responsivity in high-risk children. Wiers and associates⁶¹ posit two different pathways for COAs. They suggest that the child of a multigenerational, primary alcoholic parent may suffer from an inherited mild dysfunction of the prefrontal cortex, leading to neuropsychologic and personality characteristics similar to those of the alcoholic parent. The child of a secondary alcoholic parent may be subject to stress and social learning that may lead to negative affectivity and repressive coping style, leading to substance abuse or dependence.

Studies of Twins

Several researchers have studied the genetic predisposition to alcoholism in identical and fraternal twins in whom at least one of each twin pair was an alcoholic. Because identical twins share the same genes and fraternal twins do not, a higher level of alcoholism among identical twins would support a heritable basis of alcoholism. Many studies typically demonstrate that the frequency of alcoholism in monozygotic (MZ) twins is higher compared with that in dizygotic (DZ) twins.^{62–64} Pickens and colleagues⁶⁵ studied both MZ and DZ male and female twin pairs. They noted a significant MZ/DZ concordance in male twins for alcohol abuse, alcohol dependence, and other substance abuse and/or dependence. For the female twin pairs, there was only a MZ/DZ concordance for alcohol dependence.

Findings from other studies of twins indicating high concordance of alcoholism among MZ twins (and thus a genetic basis for alcoholism) are contradicted by the study of 902 male twins in Finland.⁶⁶ This study showed no statistically significant differences in alcoholism rates between identical and fraternal twins. It did indicate, however, that the frequency and amount of drinking was significantly similar for identical than for fraternal twins. In a

study of 3810 twin pairs from Australia, Heath⁶⁰ showed important genetic influences for frequency and quantity dimensions. Findings from other studies of twins are shown in Table 1.

Adoption Studies

Examining children born to alcoholic parents adopted at birth and raised by nonalcoholics is a useful method to study genetic and environmental variables associated with alcoholism later in life. Scandinavian adoption studies, especially, provide a convincing picture of the possible genetic influence of alcoholism.^{67–73} In one representative study, male adoptees whose biologic fathers were alcoholic were four times as likely to become alcoholic.⁷¹

Goodwin⁵² has been one of the most active investigators of adopted COAs. From his many studies, he^{51,52,67,68,74} concludes that sons of alcoholic biologic parents adopted at birth were four times more likely to become alcoholics than were sons of normal control fathers. Alcohol problems experienced by adopted sons included early onset of heavy drinking, loss of control, hallucinations, and treatment for drinking. Significant alcoholism was experienced by adopted sons biologically parented by alcoholics.

Cadoret and co-workers⁷⁵ studied 197 adult adoptees (95 male and 102 female) of alcoholic biologic parents. They determined that a genetic factor is present for which alcoholism is a marker and that exerts its effect in women as a gene/environment interaction leading to major depression. McGue and colleagues⁷⁶ studied 653 adopted families, with one adopted child and other siblings (either biologic children or other adoptees), and found that the relationship between parental problem drinking, family functioning, and adolescent alcohol involvement was moderate and significant among birth offspring, not among adoptive offspring.

Cutrona and associates⁷⁷ studied both male and female adoptees and describes that for female adoptees, both early life family conflict and psychopathology in the adoptive family interacted with genetic factors to increase the women's risk for alcohol abuse or dependence. This was not true for the male adoptees studied.

Gender Differences

In the literature, gender differences in risk for substance abuse are shown.^{65,77,78} Hill^{79,80} describes the recent literature on the genetic mediation of alcoholism in women. Moskalenko and co-workers⁸¹ compared female to male alcoholic inpatients and found that women were more likely to have an alcoholic father and/or an alcoholic spouse. Orford and Velleman⁸² studied 169 16- to 35-year-old offspring of alcoholics and found that women who had a positive relationship with an alcoholic father were at greater risk for alcohol or other drug use (Table 1).

Biologic Studies

Biologic mechanisms that differentiate COAs from children of nonalcoholics involve several different

TABLE 1. Summary of Studies

Author	Sample	Comparison Group	Measures	Findings
<i>Alcoholic proband studies</i>				
De Jong and Roy (1993) ¹⁸⁷	249 Male alcoholics	None	Structured interviews and questions about male relatives' alcohol use	FHP alcoholics tended to be younger than FHN alcoholics; guilt and bringing more prevalent in FHP group (contrast to other studies which show guilt and bringing more prevalent in type 1 alcoholism)
Hill (1992) ¹⁸⁸	29 Pairs of alcoholic siblings	None	Diagnostic interview	Possible type 3 alcoholic: early onset of alcoholism with favorable environment (ie, without antisocial fathers)
Moskalenko et al (1992) ⁸²	49 Female and 19 male alcoholic inpatients	None	Clinicogenealogic investigation	More rapid course of alcoholism, higher frequency of alcoholism in parents (with fathers' alcoholism more malignant), and higher frequency of alcoholism in spouses of female alcoholics
<i>Offspring of alcoholics studies</i>				
Orford and Velleman (1991) ⁸³	169 16–35 Year-old offspring of alcoholics	None	Parent–child relations and adulthood alcohol and other drug use	Women who had positive relations with an alcoholic father were at greater risk for alcohol or other drug use
<i>Studies of twins</i>				
Kendler et al (1994) ¹⁸⁹	1030 Pairs of female same-sex twins born in US between 1934 and 1971	None	Structured interviews with subjects and their parents	Familial resemblance for alcoholism was attributable to genetic factors, with heritability of liability between 51% and 59%
Pickens et al (1991) ⁶⁵	50 MZ and 64 DZ male and 31 MZ and 24 DZ female same-sex twin pairs, one twin identified through alcohol treatment programs	None	History and structured interview	Significant MZ/DZ differences in concordance in male twins for both abuse and dependence, and only dependence in female twins, modest influence on overall risk in both sexes heritability estimates (0.35 for males, 0.24 for females)
Prescott et al (1992) ¹⁹⁰	3049 Female and 1070 male twins, 50–96 years old	None	Questionnaires aimed at alcohol and other drug use, psychiatric status	Males having higher prevalence of alcohol abuse, substantial family resemblance for alcohol abuse and alcohol problems; median estimate of genetic variance was 38.5%, for shared environmental influence was 15.5%
Prescott et al (1992) ¹⁹¹	3049 Female and 1070 male twins 50–96 years old	None	Self-report measures	Twins with more frequent social contact are more similar for lifetime and current alcohol use. Among drinkers, the degree of twin resemblance appears to be regulated by shared genes rather than by shared environment
Heath et al (1991) ⁶⁰	3810 Adult Australian twin pairs	None	Questionnaire on drinking/abstinence	For frequency and quantity dimensions, there is an important genetic effects influence (heritability estimates were 66% in women and 42%–75% in men for frequency; 57% in women and 24%–61% in men for quantity). No genetic effects on the abstinence dimension seen

TABLE 1. Continued

Author	Sample	Comparison Group	Measures	Findings
Koopmans and Boomsma (1996) ¹⁹²	403 Dutch families with a twin age 15–16, 805 families with a twin 17 y or older	None	Questionnaires for both parents and twins concerning alcohol and tobacco use, sport, health, social, religion, personality factors	Resemblance for alcohol use between parents and ≥ 17 -y-old twins could be explained by genetic relatedness, for the younger group of twins, shared environmental influences were more important
<i>Adoption studies</i>				
Sigvardsson et al (1996) ⁷³	577 Women and 660 women adoptees	None	Data from national registries in Sweden	Both type 2 and severe type 1 alcoholism were confirmed as independently heritable forms of alcoholism in male adoptees
Cutrona et al (1994) ⁷⁷	160 Female and 140 male adoptees 18–40 y	None	Questionnaire, structured interviews	Early life family conflict and psychopathology in adoptive family interacted with a biologic background of alcoholism for women, increasing the probability of alcohol abuse and/or dependence
Cadoret et al (1996) ¹⁷	102 Female adoptees	None	History and structured interview	Antisocial biologic parents produced aggressive and conduct-disordered offspring who in turn became drug abusers/dependents as adults
Cadoret et al (1996) ⁷⁵	197 Adult adoptees (95 male and 102 female) of alcoholic biologic parents	None	Structured interviews	A genetic factor is present for which alcoholism is a marker and that exerts its effect in women as a gene-environment interaction leading to major depression
McGue et al (1996) ⁷⁶	653 Adopted families, with one adopted child and other siblings (either biologic children or other adoptees)	None	Mail survey assessing drinking behavior and family functioning	Relationship between parental problem drinking, family functioning and adolescent alcohol involvement was moderate and significant among birth offspring, not among adoptive offspring; whereas nonbiologic sibling correlation for involvement with alcohol was significant
<i>Children of other substance abusers</i>				
Smith and Frawley (1992) ¹⁶⁷	175 Nonalcoholic, cocaine-dependent patients	None	Michigan Alcoholism Screening Test, family history questionnaire	34% Had an alcoholic first-degree relative, similar to rates reported by alcoholic patients. Suggests a more general susceptibility to addictive disease
Noble et al (1993) ¹⁶⁸	53 White cocaine-dependent patients	None	Structured interview looking at psychologic environmental, and sociocultural variables, and genotyping from whole blood	Potent routes of cocaine use, interaction of early deviant behavior and parental alcoholism associated with the A1 allele; strong association of the minor alleles (A1 and B1) of the DRD2 with cocaine dependence
Kosten et al (1991) ⁷⁸	201 Opioid addicts and their 877 first-degree relatives	None	Structured interviews and structured family history	Strong association of parental alcoholism with alcoholism among proband addicts, rates of parental alcoholism were higher in alcoholic female than in alcoholic male probands, suggesting greater female loading needed; alcoholic parents appeared to transmit a nonspecific tendency for either drug or alcohol abuse to female children

TABLE 1. Summary of Studies

Author	Sample	Comparison Group	Measures	Findings
<i>Event-related potentials studies</i>				
Hill et al (1995) ¹⁹³	98 Alcoholic males, 39 nonalcoholic brothers (high risk)	80 Males (low risk)	ERP (auditory)	No difference seen in either the N250 or P300 amplitudes for the high-risk and low-risk males
Polich et al (1994) ¹⁰⁶	Meta-analysis of alcoholism risk studies			Smaller P300 amps were obtained from FHP males. Paradigms using difficult visual tasks yielded the most reliable effects
Steinhauer and Hill (1993) ¹⁰⁷	51 High-risk children	42 Low-risk children	ERP (auditory)	Older high-risk males showed the greatest reduction in P300 amplitude; prolonged centrofrontal negativity showed less reduction for high-risk children
Hill et al (1995) ¹⁹⁴	11 High-risk children	9 Low-risk children	ERP (auditory)	At this 8-year follow-up, there remained differences between the high-risk and low-risk groups (lower P300 amplitude seen in the ERPs of high-risk children). In addition, the high-risk children who are now alcohol-dependent had ERPs that differed from those for the remainder of the sample
Hegerl et al (1995) ¹⁹⁵	53 Alcohol-dependent subjects, one week after withdrawal		ERP (auditory)	Patients with antisocial tendencies showed a significantly stronger-intensity dependence of their evoked responses of primary auditory cortices. This may indicate low serotonergic neurotransmission
<i>EEG studies</i>				
Ehlers et al (1995) ¹⁹⁶	17 Family History Positive males	19 Family History Negative males	EEG	FHP males were found to have a lower EEG attractor dimension
<i>Other drug studies</i>				
Guo et al (1994) ¹¹¹	16 Boys exposed to opiates in utero and living with opiate-abusing mothers (IU/LS), and 14 boys living with opiate-abusing mothers	13 Boys with no exposure to opiates	ERP (auditory)—auditory rare event monitoring task and Sternberg memory task	P200 component was decreased for the IU/LS and the LS groups in the AREM and Sternberg tasks. On the Sternberg memory task, % correct also was impaired in the IU/LS and LS groups
Cowley et al (1996) ²⁰⁰	27 Sons of alcoholics	23 Male control subjects	Plasma GABA measured at baseline and after diazepam or placebo doses; personality questionnaire	No difference in baseline GABA nor altered plasma GABA response to diazepam. Significant correlation seen between baseline plasma GABA and both high novelty-seeking and low-harm avoidance scores on the personality questionnaire

TABLE 1. Summary of Studies

Author	Sample	Comparison Group	Measures	Findings
Gabel (1995) ²⁰¹	65 Male youth (6–15 y) in residential treatment	None	HVA and DBH blood levels	Youth of substance-abusing fathers had greater levels of HVA than youth of nonsubstance-abusing fathers. Younger boys (12 y) of antisocial fathers had lower DBH activity than did youth of comparable age with nonantisocial fathers
Moss et al (1995) ¹⁹⁹	81 FHP boys (age, 10–12 y)	103 FHN boys (age, 10–12 y)	Salivary cortisol collected pre- and post-ERP task, State Trait Anxiety Scale, Child Behavior Checklist, Impulsivity	Cortisol hyporesponsivity was associated with dysregulated behaviors (aggressivity, impulsivity) prevalent among the FHP boys.
Hill et al (1992) ²⁰⁰	66 FHP alcoholic males with 18 nonalcoholic brothers	33 FHN males	Baseline heart rate and heart rate while engaged in two auditory tasks	FHP males found to have a higher baseline heart rate. Differences in the anticipatory deceleration were greater in control brothers than in FHP brothers for the counting task
Finn et al (1992) ²⁰¹	40 FHP (multigenerational) males, 19 FHP (unigenerational males)	36 FHN males	Stress Reactivity/Alcohol Challenge Protocol, Personality Data	Multigenerational males had a pattern of increased sensitivity to the cardiovascular reactivity-dampening effect of alcohol, cardiovascular hyperreactivity to unavoidable shock when sober, and the personality characteristic of experience seeking
Moss et al (1992) ²⁰²	42 FHP males (age, 10–12 y)	60 FHN males (age, 10–12 y)	Activity monitor during tasks requiring concentration, effort, and constraint on motor activity, and baseline activity	Under conditions that demanded effort, concerted attention, and behavioral suppression, the FHP boys had ~24% higher activity than control boys

physiologic systems.⁸³ Compared with children of nonalcoholics, COAs differ on EEG findings,⁸⁴ event-related potentials (ERPs),⁸⁵ and endocrine deviations.⁵⁶ Begleiter and colleagues⁸⁵ showed that the P3 component of the ERP, an electrophysiologic measure of cognitive processing, is decreased significantly in COAs compared with children of nonalcoholics. This line of research promises to be instrumental in the future identification of biologic markers for alcoholism. However, the research has not yet successfully identified a premorbid biologic pattern to predict those who become alcoholic from those who do not.

Psychobiologic research is still in the early stages of development, and many studies are subject to methodologic limitations. Few findings have been replicated to the extent that conclusions can be regarded as definitive, especially when applied in cultural settings or age groups that are different from those used in the research sample. Sufficient research has been conducted; however, pieces of the puzzle still are missing to suggest a preliminary picture of biologically transmitted vulnerability toward alcoholism in COAs.

Results of these studies indicate that COAs react differently to alcohol or other drugs because of differences in biochemical transmission. Researchers have long hypothesized that COAs may suffer chemical imbalances that make them prone to substance-abusing behaviors. Alcohol and other drugs may provide increased beneficial and pleasurable effects in COAs that are not experienced by children of nonalcoholics. This could provide stronger reinforcement for continued drinking among COAs. Research has demonstrated that COAs have higher levels of blood acetaldehyde and increased feelings of pleasure and relaxation from alcohol ingestion⁵⁴; increased elation and/or decreased muscle tension in response to alcohol ingestion⁸⁶; decreased feelings of intoxication at the same blood alcohol levels, compared with children of nonalcoholics⁸⁷; and a possible serotonergic deficiency or an exaggerated level of serotonin when ingesting alcohol.⁸⁸

Temperament Variables

Tarter⁸⁹ and Rowe and Plomin⁹⁰ examined temperament in COAs as a possible precursor to subsequent

alcohol or other drug abuse. Kumpfer⁹¹ cautions against overgeneralization of this research by suggesting that these temperament traits may only describe a subset of children who have inherited one of the major vulnerability syndromes associated with noncompliant, antisocial, and/or hyperactive behavior. Indeed, the findings of many of these studies may have been affected significantly by sample selection and lack of appropriate controls. Some studies report hyperactivity among children of substance abusers.⁹²⁻¹⁰² Many of these studies identify significant, but rather weak, linkages between hyperactivity and familial alcoholism. In addition, some support for the genetic transmission of hyperactivity has been established, which confuses causal assumptions.⁹⁵ Other studies report: 1) decreased ability in COAs to return to emotional normality after emotional distress¹⁰¹; 2) increased aggressive behavior (or decreased social inhibitions) among COAs^{96,97,102,103}; and 3) increased tendency to be "hot tempered,"⁶⁸ with decreased emotional control, low frustration tolerance, and increased moodiness and depression in COAs.¹⁰⁴

Neurophysiologic Studies

In reviewing the electrophysiologic research in alcoholism, Porjesz and Begleiter¹⁰⁵ reported that the most consistent finding was the diminished P300 amplitude of the ERP seen in family history-positive men. Results of recent neurophysiologic studies in alcoholism listed in Table 1 are briefly summarized. Polich and colleagues¹⁰⁶ found smaller P300 amplitudes in family history-positive males. Steinhauer and Hill¹⁰⁷ also found decreased P300 amplitude, especially in high-risk, older males. Hill⁸¹ followed high-risk individuals over an 8-year period and demonstrated continued differences in the high-risk individuals when they were compared with a low-risk group. The ERPs of children who were both high-risk and abusing alcohol were different from those of the other nonalcohol-abusing high-risk and low-risk groups. When the ERPs of alcoholic men, their high-risk relatives, and low-risk male controls were compared, no differences were found in the P300 component during auditory tasks. One ERP study looked at boys exposed to opiates in utero¹⁰⁸ and found that the P200 component of the ERP was decreased similarly in these two groups, as opposed to the control group, suggesting an environmental influence on a neurophysiologic process.

Biologic Marker Studies

A few studies have investigated potential biologic markers. These include studies of various neurotransmitters (GABA, metabolites of dopamine), salivary cortisol, cardiovascular responsiveness, and motor activity. Eskay and Linnoila¹⁰⁹ reviewed the literature (Table 1). This field of research may be promising; however, the findings have not been replicated or confirmed to any convincing degree.

Psychosocial Research

Psychosocial studies have examined a wide range of variables associated with psychological and envi-

ronmental characteristics of COAs. In this section, we will review the research involving family studies (including family violence), cognition, affect and behavior, medical problems, and physical health.

Family Studies

Transmission of alcoholism in family members involves many different factors.^{30,110,111} Parental alcoholism disrupts family life and contributes to dysfunction in the offspring, which, in turn, could affect adolescent substance abuse.⁴⁰

One important area of research examines family rituals, ie, dinners, holidays, or vacations.^{112,113} Bennett and colleagues showed that the degree of organization and disruption in the alcoholic family would distinguish the differential well-being of adult COAs.^{111,114,115} Family ritual disruption is significantly associated with differential transmission of alcoholism. Maintaining family rituals during periods of heavy parental drinking results in fewer transmittable cases of alcoholism compared with those families that alter their rituals. Ritual stability in alcoholic families during childhood and adolescence appear to influence later alcoholism. Thus, those families showing more stability also evidence less alcoholism in adult COAs.

Alcoholic families report higher levels of conflict than do nonalcoholic families.¹¹⁶ Drinking is the primary factor in family disruption. The environment of COAs has been characterized by a lack of parenting, poor home management, and a lack of family communication skills, thereby effectively robbing COAs of modeling or training on parenting skills or family effectiveness.¹¹⁷ The following family problems have been frequently associated with alcoholic families: increased family conflict; emotional or physical violence; decreased family cohesion; decreased family organization; increased family isolation; increased family stress including work problems, illness, marital strain, and financial problems; and frequent family moves.^{28,29,115,118-121}

Substance-abusing parents often lack the ability to provide structure or discipline in family life, but simultaneously expect their children to be competent at a wide variety of tasks earlier than do nonsubstance-abusing parents.^{119,120} Unable to do everything perfectly all the time, children in these families may perceive themselves as failures. Young COAs are negatively effected when the significant caregiver in the family (usually the mother) is heavily involved in alcohol or other drug abuse; the child is still young; the family becomes significantly involved in the abuse problem; the family becomes socially isolated; or there is a lack of an extended family to provide balance and encouragement to the child.^{119,120}

Family Violence

With respect to the overall negative impact of parental drinking, family violence has been one area that has received considerable attention. According to Sher,³³ although clinical reports often indicate a strong connection between parental alcoholism and family violence, the empirical data give a highly inconsistent picture. Family violence cannot be re-

lated conclusively only to parental alcoholism. Studies focusing first on family violence and second on incidence of parental alcoholism (as well as those reflecting on the dynamics of alcoholic families and subsequent assessment of family violence) both have resulted in highly inconsistent rates of reported spousal and child abuse. Mayer and Black¹²² report extremely wide-ranging rates (2%–62%) of alcoholism among parents who abuse their children. Sher³³ found that the reported rate of child abuse among alcoholic parents varied between 0% and 92%. In studies of COAs, widespread beliefs on the association between parental alcoholism and family violence may precede any conclusive research.

Although contradictory conclusions emerge from a review of the literature, some studies find significant relationships between living in an alcoholic home and physical child abuse cases.^{122,123} However, Orme and Rimmer¹²⁴ found no relationship between child abuse and living in a home where at least one parent was alcoholic. Although data are sparse, a slight relationship exists between acts of incest in alcoholic parents and their children.^{125,126} The typical family model of an incest victim is that of a chronically depressed mother, an alcoholic and violent father, and an elder daughter forced to assume maternal roles in the family.

Cognition

Lowered academic functioning in COAs has been reported by several researchers.^{53,97,127} Some data, however, do not agree with these findings.¹²⁸ COAs, partially because of the lack of parental supervision, are typically characterized as having both social and academic problems at school. Kumpfer and deMarsh¹¹⁹ report that these children frequently are absent or tardy and poorly clothed and fed, and receive less help from parents with their schoolwork. Lowered levels of intellectual functioning in COAs have been reported by some researchers,^{34,92,129,130} but not by others.^{131–133}

Many researchers offer different explanations for the inconsistencies found in the literature. Tarter and co-workers¹³⁴ suggested recently that an anterior cerebral dysfunction was responsible for the observed cognitive deficits in COAs, implicating a possible biologic basis for the observed cognitive differences in them. After examining perceptions of cognitive competence and actual cognitive performance, Johnson and Rolf¹³⁵ suggested that the observed negative perceptions of cognitive competence in COAs may effect the motivation to perform at an optimal level. Werner's¹³⁶ research shows that cognitive deficits may not characterize COAs as a group. Her longitudinal study on the island of Kauai compared a subgroup of COAs with problems (eg, repeated or serious delinquencies, mental health problems requiring treatment) to COAs without problems. She showed that COAs with problems scored lower on verbal and quantitative cognitive measures. Werner suggested that only a subgroup of COAs were at risk for cognitive deficits.

Affect and Behavior

Research shows that COAs have more adjustment problems in home, health, social, and emotional domains,¹³⁷ but these problems do not always meet clinical diagnostic levels. In a study conducted by Nylander and Rydelius,¹³⁸ COAs raised in low socioeconomic environments were compared with children raised in high socioeconomic environments. Both groups were found to be more inclined than children of nonalcoholic biologic fathers to develop social maladjustment problems and addictions later in life. Furthermore, children from lower-class families showed no significantly increased inclination for addiction compared with the group of children from higher socioeconomic status groups, thus indicating that it was parental alcoholism, rather than socioeconomic status, that contributed to the child's behavioral problems.

Earls and colleagues¹³⁹ reported recently on the frequency of psychopathology in COAs. Results from extensive structured interviews with 75 children 6 through 17 years of age showed that these children were diagnosed more frequently with a behavioral disorder, an attention-deficit disorder with hyperactivity, an oppositional disorder, or a conduct disorder. An earlier study corroborates this finding showing that COAs present more frequently with behavioral problems similar to those behaviors associated with these psychiatric disorders.¹⁴⁰ Mutzell¹⁴¹ has also published similar findings. Others, however, do not support this contention.⁵⁹ These authors demonstrated that parents diagnosed with substance abuse do not necessarily impart maladjustments in physical or mental health to their children.

Wolin and associates¹¹⁴ provide convincing data showing that children from intact (eg, 2-parent) alcoholic families function less successfully on aggregate measures of emotional and behavioral functioning than do children from intact nonalcoholic families. They compared a homogeneous sample of 64 COAs to 80 children of nonalcoholics on an extensive psychosocial battery that included measures of self-concept, behavior problems, and psychiatric symptomatology. COAs scored significantly lower on 6 of the 13 measures of behavioral and emotional functioning.

Other research illustrative of the findings of behavioral problems in COAs shows:

- Lack of awareness of the perceived impression of one's behavior on others, lack of insight into personal relations, and lack of empathy for other persons¹⁴²;
- Decreased social adequacy and interpersonal adaptability^{34,96};
- Increased levels of anxiety and depression, low self-esteem, and lack of control over the environment.^{34,96,116,131,133,135,143–146} All researchers but Tarter and colleagues¹³³ found a positive relationship between parental alcoholism and impaired emotional development in children;
- More diagnostic disorders among COAs that reach clinical levels¹⁴⁷;

- Higher rates of oppositional and conduct disorders, but not of attention deficit disorders¹⁴⁸;
- A tendency to engage in more delinquent behavior, compared with controls.¹⁰ These findings are not consistent; Hill and Muka¹⁴⁹ and Hill and Hruska¹⁵⁰ found no differences between the two groups.

Medical Problems and Physical Health

Recent research has examined the medical and physical health problems in children of substance-abusing parents. Woodside and associates¹⁵¹ found that COAs spent more days in the hospital, incurred greater hospital charges, and were more susceptible to specific illnesses such as mental illness, substance abuse, injuries, and poisonings. These problems, however, do not always differentiate COAs from normal controls. For example, Dobkin et al¹⁵² found that COAs were not sicker than were children of nonalcoholics. There were subgroup differences that showed that daughters of alcoholics and sons of nonalcoholics living in nonintact families were more likely to have used psychological services, similar to sons of alcoholics in intact families.

CHILDREN OF OTHER DRUG-ABUSING PARENTS

The literature on COAs far outweighs the literature on children of other drug abusers. Relatively little is known about children of heroin addicts, cocaine abusers, or polydrug abusers.^{153,154} Many researchers, nonetheless, suggest that the children of addicted parents are at greater risk for later dysfunctional behaviors and that they, too, deserve significant attention to prevent intergenerational transmission of drug abuse later in life.¹⁵⁵⁻¹⁶⁰ Children of substance-abusing parents are at great risk for behavioral problems and physiologic damage when exposed in utero to their mother's drug addiction. Some of these problems may last well through maturation. We currently lack the necessary longitudinal data allowing any firm conclusions about the long-term effects of parental substance abuse. Even if children are not exposed to chemicals in utero, they are at greater risk for childhood behavioral problems if their parents are involved in the drug culture. Most research on children of other drug abusers examines fetal exposure to maternal drug abuse. The following section reviews the published literature on this topic. We have categorized this section into family studies/heritability, fetal exposure, and psychosocial risk factors.

Family Studies/Heritability

Family history variables are considered one of the leading risk factors contributing to substance-abuse behavior.⁹¹ Croughan¹⁶³ summarized the brief literature on family studies of drug abuse by concluding that family factors play a major role in substance use and abuse habits. Parents' and adolescents' use of illicit substances is strongly correlated. Adolescents who use drugs are more likely to have one or more parents who also use drugs.^{8,11,162-165} Parental attitudes about their children's drug-taking behaviors may be as important as actual drug abuse among the

parents.¹⁶⁶ If adolescents perceive their parents are permissive about drug use, then they will be more likely to use drugs themselves.

As with studies on alcoholism, researchers now suggest that genetics may play a role in drug use and abuse.⁷² Two recent studies dispute this. Kosten et al⁷⁸ studied opioid addicts and found gender differences in drug versus alcohol transmission. Women required genetic loading to become alcohol-dependent. They also found that the transmission of drug use compared with the transmission of alcohol was specific for women and not for men. In another study, Smith and Frawley¹⁶⁷ found increased rates of alcohol abuse/dependence in relatives of nonalcohol-abusing, cocaine-dependent patients, suggesting a more general genetic inheritance for addiction, rather than for abuse/dependence, of a specific substance.

A molecular genetic study was reported in the literature. Noble et al¹⁶⁸ studied the allelic prevalence of the D2 dopamine receptor (DRD2) gene in cocaine-dependent male subjects. They found a significantly higher prevalence of both the A1 and B1 alleles of the DRD2 gene in these subjects, compared with community samples and with nonsubstance-abusing subjects. They postulate that perhaps a gene, located in the q22-a23 region of chromosome 11, confers susceptibility to cocaine dependence.

Fetal Exposure

Because most drugs cross the placenta, pregnant addicts risk passive drug dependency in their fetus.¹⁶⁹ Fifty-eight percent^{10,000} of the 17 000 heroin-addicted women entering National Institute on Drug Abuse-funded drug treatment programs have children living with them.¹⁷⁰ Prenatal drug withdrawal, caused by a pregnant woman's withdrawal, can inhibit fetal oxygen consumption, resulting in hypoxia or death. Postnatal drug withdrawal is characterized by the neonatal abstinence syndrome that includes hyperirritability, tremors, gastrointestinal dysfunction, respiratory distress, and amorphous autonomic system problems. Infants of heroin addicts or methadone-maintained (MM) mothers exhibit more tension, activity, and poorer coordination than their age-matched peers.¹⁷¹⁻¹⁷⁵ Cocaine abuse during pregnancy is a significant predictor of low birth weight and gestational age.¹⁷⁶

Infants of drug addicts also are at risk for a variety of other problems. Child abuse or neglect is a significant concern for these infants.¹⁷⁵ Infants of drug-addicted women also are at risk for HIV infection.

Psychosocial Risk Factors

The scarcity of research on school children of heroin-addicted parents is discussed in a literature review by Hayford and associates.¹⁷⁷ This review includes only 11 studies, 10 of which are about infants. The few clinical reports available describe psychologic and social problems for the children of addicted parents.^{156,159} Bauman and Levine¹⁷⁸ compared preschool children of MM mothers to children of non-drug-addicted mothers. On an extensive battery that included tests of intelligence and personality, they

showed that children of MM mothers were more impulsive, immature, and irresponsible. Furthermore, children of MM mothers performed poorly on intelligence tests. Sowder and Burt¹⁷⁹ also report decreased IQ scores among 3- to 7-year-old children of MM mothers.

Studies of school children of addicted parents are compromised by the possibility of fetal exposure to heroin. Distinguishing environmental from genetic effects is difficult when the child may have been contaminated in utero by the mother's substance abuse. Wilson and colleagues^{180,181} reported behavioral disturbances in heroin-exposed children 12 to 24 months of age. Sardemann and colleagues¹⁸² found delayed language development in heroin-exposed children 24 to 32 months of age. Learning problems and behavioral disturbances in 33 children of addicted parents also have been reported.¹⁵⁹

Questions about differences in personality, psychosocial competence, and affect in children of addicted parents remain unanswered. Wilson and colleagues¹⁸⁰ compared four groups of children on a comprehensive psychologic assessment battery. These four groups, each with 77 children between 3 and 6 years of age, were 1) exposed to heroin in utero; 2) not exposed to heroin in utero, but their mothers were involved in the drug culture (either through marriage to an addict or through substance abuse subsequent to the birth of the child); 3) a high-risk comparison group (birth complications attributable to medical problems); or 4) a socioeconomic comparison group. The extensive assessment battery included perinatal measures, a physical examination, social and environmental information, parent's reports, psychometric measures (primarily measures of intelligence), sensorimotor tests, and behavioral measures. Not surprisingly, the heroin-exposed group scored lower than all other groups on physical, intellectual, sensorimotor, and behavioral measures. The children whose mothers were actively involved in the drug culture scored slightly higher than did the heroin-exposed group, but significantly lower than the two comparison groups.

CONCLUSIONS

This overview of the research on children of substance abusers points toward the need for better, longitudinal research in this area. Most studies on COAs or other drug abusers are not longitudinal; they examine behavior at one point in time. Given the studies reviewed in this article, it is unclear whether we see true deficits, or developmental delay. Longitudinal studies will allow us to predict when early disorders and behavioral deviations will be transient or when they will be precursors to more severe types of maladaptive behavior. Longitudinal research also will enable us to explain specific childhood outcomes. Differences in outcome could be studied simultaneously to understand whether antecedents discovered for one are specific to it or are general antecedents leading to a broad variety of outcomes.

In 1974, Anthony¹⁸³ suggested the possibility that there were different groups of children of substance

abusers and that all children of substance abusers could not be considered a single, unitary entity. Similar experiences affect children differently because of individual differences in factors such as temperament, intelligence, and environmental resources. Therefore, every summary of children of substance abusers should take into account that there is most probably no single profile of children of substance abusers.

Most importantly, however, there actually may be subgroups of children of substance abusers who, despite all odds, do enjoy good health from birth; experience a positive environment at home; and develop rather normally into socialized, competent, and self-confident individuals. Certain individuals may be more competent in adapting to stressful living environments than are others. This is what many have referred to as the resilient individual. Such a child is able to compensate for and cope with the various negative biologic or environmental influences in his/her life. Certain individuals may be able to manipulate their environment by choosing roles and goals in life that stabilize their developmental process and bring them the positive reinforcement they need to develop a positive self-image and eventually a relatively healthy life. Other individuals may be able to master the environment and to conceptualize the environment in such a way as to choose positive behaviors in life that compensate for whatever problems are present. Garmezy^{184,185} posits that resilient characteristics include effectiveness in play behavior, work behavior, and love relationships; self-esteem; self-discipline; and the ability to think abstractly. Some evidence from Miller and Jang¹⁸⁶ bears witness to this. In their 20-year study of children from lower-class multiproblem urban families, they found that parents' alcoholism was related to increased problems during childhood and an increased probability that the child of an alcoholic would develop drinking problems later in life. The greater the degree of parental alcoholism, the greater the negative influence on the children of the family. However, they also found that although parental alcoholism might contribute to problems for their child in later adulthood, predicting intergenerational transmission of alcoholism is impossible. Thus, Anthony's¹⁸³ proposal that children of substance abusers actually may be a complex group of individuals that cannot be described by single, unitary profiles of personality or behavior may prove to be the rule, rather than the exception.

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Screening, Early Identification, and Office-based Intervention With Children and Youth Living in Substance-abusing Families

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ABSTRACT. All health care professionals with clinical responsibility for the care of children and adolescents must be able to recognize, as early as possible, associated health problems or concerns in children of substance-abusing parents, and to be able to assist these children and families in seeking treatment and promoting health. Health care providers can have a tremendous influence on families of substance-abusing parents because of their understanding of family dynamics and their close long-standing relationship with the family. Information about family alcohol and other drug use should be obtained as part of routine history-taking and when there are indications of family dysfunction, child behavior or emotional problems, school difficulties, and recurring episodes of apparent accidental trauma, and in the setting of recurrent or multiple vague somatic complaints by the child or adolescent. In many instances, family problems with alcohol or drug use are not blatant; rather, their identification requires a deliberate and skilled screening effort.

Combining the principles of anticipatory guidance, screening, and early identification, with the acknowledgment that families should be included in the process, leads to a clear conclusion that screening for children affected by parental substance abuse must occur at all ages across infancy, childhood, and adolescence. Health care providers need to be trained in the identification and management of children and youth exposed to parental addiction. Such training must begin during undergraduate education in the health professions and be reinforced by role-modeling among health professions

faculty as well as practicing providers. *Pediatrics* 1999; 103:1099–1112; *substance abuse, families, screening, early intervention.*

ABBREVIATIONS. AOD, alcohol and other drugs; ATOD, alcohol, tobacco, and other drugs; AUDIT, Alcohol Use Disorders Inventory; CAST, Children of Alcoholics Screening Test; SMAST, Short Michigan Alcoholism Screening Test.

To effectively address the issue of parental problems with alcohol and other drugs (AOD), health care providers need to be trained in the identification and management of children and youth exposed to parental addiction. Alcoholism and other substance abuse is widespread in our society. In a recent study, 38% of Americans stated they had a family member with alcoholism.¹ Because of its high prevalence and lack of socioeconomic boundaries, child health care providers should expect to encounter families with alcoholism and other drug abuse daily. A review of the literature reveals the wide range of important morbidity experienced by the children of substance-abusing families. In utero exposure to AOD can have devastating consequences on the developing fetus. Children and adolescents are at increased risk of physical and sexual abuse. School children manifest more psychosomatic illnesses; emotional, anxiety, and conduct disorders; and school problems including hyperactivity. Several recent studies suggest strongly that children of women who are problem drinkers have an increased risk of experiencing serious, unintentional injuries, and that children exposed to two parents with alcohol problems are at even greater risk.² Studies of the link between parental substance abuse and child maltreatment suggest that substance abuse is present

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in at least half of families known to the public child welfare system.³

If these families and children are identified early, some of the associated morbidity may be avoided. Child and adolescent health care providers can have a tremendous influence on families of substance-abusing parents because of their understanding of family dynamics and their close long-standing relationship with the family. Information about family alcohol and other drug use should be obtained as part of routine history-taking and when there are indications of family dysfunction, child behavior or emotional problems, school difficulties, and recurring episodes of apparent accidental trauma, and in the setting of recurrent or multiple vague somatic complaints by the child or adolescent. In many instances, family problems with alcohol or drug use are not blatant; rather, their identification requires a deliberate and skilled screening effort.

A recent study indicated that fewer than half of pediatricians ask about problems with alcohol when taking a family history.⁴ More family medicine practitioners than pediatricians asked about problems with alcohol, suggesting that training and practice orientation may be important. The likelihood of asking about problems with alcohol did not appear to be influenced by the pediatrician's self-report of knowledge about alcoholism but rather by whether the pediatrician had a personal family history of problems with alcohol.⁴ In a similar study focusing on recognition of family substance abuse among hospitalized children, attending physicians identified only 5% of families determined subsequently to have alcoholic parents.⁵ Thirty-three percent of pediatric faculty reported feeling little or no responsibility for substance-abuse referrals of patients' family members.⁵ In contrast, Graham and colleagues found that patients wanted their physicians to ask about family alcohol problems and felt that the physician could help them and the abusing family member deal with their problems.⁶

A family history of alcohol and other drug abuse is more likely than many other aspects of history to affect a child's immediate and future health. A thorough understanding of family members' use of AOD is as important as a history for hypertension, cancer, or diabetes mellitus. In addition, family problems with alcohol or other drugs can jeopardize a parent's ability to carry out necessary therapeutic regimens for their child.

This background paper will discuss conceptual approaches to interviewing children, youth, and families; methods for screening and identifying families at high risk for substance-abuse problems; family issues in substance abuse; and approaches to early intervention in the primary care setting with children and families affected by substance abuse. The purpose of this discussion is to establish a clinical framework for child and adolescent health care that obviates the need to address family substance abuse and, therefore, clarifies the specific educational and training needs put forth by this initiative.

SCREENING VERSUS ASSESSMENT

The primary task of initial screening is to identify families with alcohol or other drug use problems that put their children and youth at risk for having physical or mental health complications. Screening questions identify those individuals most likely to have a problem related to alcohol or other drug use. Information gathered should help to decide whether there is a need for additional assessment by either the primary care provider or a consultant. It is helpful to keep in mind that screening is an important and time-efficient first step to identifying the probable existence of a problem, but that it differs from assessment and establishing a final diagnosis. Assessment is a more lengthy and structured process designed to determine the extent of the problem, explore comorbidities, and assist in treatment planning for the entire family.

Screening must occur at three different levels. The first is screening the child or adolescent for their own physical or mental health problems that may be associated with substance-abuse problems among family members. As the child grows older, there is an increasingly important opportunity to establish diagnostic concerns and related treatment plans that can be implemented with the child or adolescent directly. Many older children and adolescents can be assessed fully by the primary care provider without need for referral.

The second screening concern relates to identifying other family members at high risk for substance-abuse problems. It is likely that family members who appear to be at high risk for substance-abuse problems will need referral for more detailed assessment by substance-abuse professionals. Screening for, and intervening with, other family members affected by the family situation are necessary endeavors to maximize the health of the child. Third, as adolescents grows older, it is increasingly important to identify their own alcohol and other drug use problems, because children from homes with addiction problems are at higher risk for developing their own problems with AOD.

Although the ability to do an in-depth assessment and make an actual diagnosis may be beyond the time limitations and skills of many practitioners, all child and adolescent health care providers are responsible for screening and initial management or referral. The difficulty encountered sometime in obtaining accurate social and psychological histories and behavioral self-reports related to alcohol use by family members should not deter the physician from including such histories and interviews in routine office procedures.

INTERVIEWING CHILDREN, YOUTH, AND FAMILIES

Over the past 20 years, there has been an increasing level of interest in, and appreciation for, the complexity of communication skills needed to establish effective physician-patient/family relationships. Recent efforts to organize concepts and knowledge about medical interviewing have established useful

models for the medical interview.⁷ One particularly useful model for child and adolescent health care views the medical interview as having three central functions: 1) to collect information regarding a potential problem; 2) to respond to the patient and family's emotions; and 3) to educate the family and influence behavior.⁸ These functions are highly germane to the identification and intervention of children living with substance-abusing parents, because all three functions may need to occur simultaneously and are necessary to promote the well-being of these children adequately.

Collecting Information

To collect information about potential parental substance abuse, health care providers will need to 1) screen for and identify the family alcohol or drug problem; 2) understand the child's response to his/her perceived situation; 3) monitor changes in the child's behavior or health condition; and 4) provide themselves with a knowledge base regarding the child and family sufficient to develop and implement a treatment plan. Children should be encouraged to tell their story in their own words. This may require the physician to help create or facilitate the child's narration, to organize the flow of the interview, to use appropriate open- and closed-ended questions to clarify and summarize information, to show support and reassurance, and to monitor nonverbal cues.⁷ Health care providers will need to acquire the knowledge base of psychosocial and family issues that contribute to the child or adolescent's health condition. In addition, they may need to understand and respond to the patient and the family unit.

Many children of substance-abusing parents display particular illness behaviors, that is, they develop a particular way of responding to their perceived overall situation. It is well established that children and youth, based on individual and cultural differences, respond in different ways to similar biomedical and psychosocial conditions. Without an understanding of the psychologic and social underpinnings of illness behavior, the clinician may fail to collect all the relevant information related to the child's health problems.

Establishing Rapport

The second function of the pediatric interview involves the communication of interest, respect, support, and empathy between the clinician and the parent and between the clinician and the child or adolescent, with the goal of forming a relationship with the family.^{7,8} By recognizing and responding to the child and family's emotional responses, the provider can ensure the child or family's willingness to provide information and can ensure relief of the child's physical or psychologic distress. Attending to a patient or family's emotions is essential for effective communication and treatment planning with any emotionally complex issue, particularly one as potentially controversial as parental substance abuse. The clinician needs to hear the patient's (or the family's) story with all its associated emotional distress. The emotions may range from fear to sad-

ness, anger, or shame. A patient or family member verbalizing these feelings in the presence of someone who can tolerate them and not be frightened is, in itself, therapeutic. The nonusing parent may be as confused and frightened about the problem as the child. The open communication of fear and anxiety has been found to be related to satisfaction and compliance.⁹ The empathic clinician, by understanding the patient's situation, can decrease the child and family's anxiety, thereby increasing their trust, with associated willingness to offer more complete information and follow through with treatment recommendations.

Education and Behavior Change

Dealing with parental substance abuse requires education of the family and behavior change not only by the young patient, but by all family members as well. The third function of the medical encounter must build on the successes of the first two functions. Care must be taken to ensure the child and family's understanding of the nature of addiction, its influence on family function and individual family members, and its role in undermining a child's health. The physician likely will need to negotiate additional assessment or treatment of family members as well as a specific treatment plan for the child's physical and mental conditions. Emphasis may need to be placed on the child and family's coping styles and simple first-pass efforts at lifestyle change. This will require understanding and working with the social and psychologic consequences of the parental substance abuse.

These three functions often are interdependent. For example, an effective therapeutic relationship enables the child and family to share with the clinician important medical and personal information, thereby improving the chances of determining the nature of the problem correctly.

BARRIERS TO ADDRESSING FAMILY SUBSTANCE ABUSE

The underrecognition of substance abuse among parents and families and the failure to provide targeted services to the children of substance-abusing parents are deeply ingrained in our history and attitudes.¹⁰ A diagnosis of substance abuse is still associated with shame and rejection and therefore is avoided by children, families, and health care providers. Barriers to intervention with substance-abusing families include unfamiliarity with effective methods for detection, assessment, and early intervention with families; time constraints; lack of financial incentives; lack of adequate training in the essential knowledge and skills; and lack of support from other professionals. Although health professions training in communication skills, family systems theory, behavioral interventions, etc, is improving, many clinicians still express the concern that they lack the essential knowledge and skills in this area. Furthermore, many physicians still believe that asking such questions may be perceived as too intrusive and would alienate families. Unless the physician can demonstrate a nonjudgmental attitude, a

genuine willingness to help, and a feeling of hopefulness, only the most blatant chronic and late-stage cases will be detected.

Pediatricians commonly note a lack of adequate skills for interviewing families and adolescents, providing effective interventions for behavioral health problems, and for handling denial by family members. The most common reason cited by health care professionals for not discussing sensitive topics such as parental substance abuse is a lack of time. Having a clear sense of the goals, methods, and structure of a screening interview may relieve the sense of time constraint. Involving office nurses or health educators in an office-wide screening program or using parental written questionnaires that include substance-abuse screening questions also may be useful.

The attitudes and beliefs of the health care professional also can be a barrier. Some providers feel that alcohol and other drug abuse should be handled by mental health or addiction treatment professionals rather than by primary care providers, or they have stereotypes about the so called typical family member who has substance-abuse problems, or they do not perceive their role as extending to the child's family.

Many health care professionals avoid looking for behavioral or substance-abuse problems because they are uncertain as to how to handle the problem once uncovered. Similarly, they rationalize that there is no way to help the family anyway, particularly with only two or three visits. Some health care professionals have attempted to address substance abuse or other family problems in the past and experienced discomfort, anger, or resentment toward them and, as a result, are reluctant to try again.

Overcoming many of these barriers requires continuing education in the necessary knowledge, skills, and attitudes outlined in the accompanying guidelines. Such education must begin during undergraduate training in the health professions and should be reinforced by role-modeling among health professions faculty as well as by practicing providers. A recent study found that resident physicians record more information about alcohol and drug use if their faculty preceptors have themselves received training about addiction.¹¹ In many respects, a shift in the cultural paradigm of health care must occur that enhances the value and importance of behavioral and family health within child and adolescent health care. The leadership of professional societies and government agencies that help to establish best practice guidelines also must give credibility and priority to this paradigm shift. The old concept that nothing can be done for a substance-abusing parent until s/he hits bottom has been replaced by successful techniques for earlier intervention. The idea that attainment of abstinence by the parent is sufficient to reverse the family's problems and the notion that nothing can be done to help the child as long as the parent continues to drink or use drugs are two common misconceptions that health care providers need to avoid.¹⁰

A DEVELOPMENTAL LIFESPAN PERSPECTIVE ON SCREENING

Anticipatory guidance throughout the lifespan of childhood and adolescence is a well-established principle of child health care. From the prenatal visit through each of the regularly scheduled health maintenance visits that occur from birth to 18 years of age, there are well-established tenets of health education, screening for health morbidities, and anticipatory guidance. These visits represent at least 20 opportunities for screening, early identification, and intervention for children living in families affected by substance abuse. The recent development of the American Medical Association's *Guidelines for Adolescent Preventive Services* not only recommends annual health maintenance visits for adolescents, but also includes three family assessment and counseling visits during the adolescent period.¹² This recognition and emphasis on the role families play in a patient's health are laudable, particularly with its emphasis on parenting issues and family communication and conflict, and its open recognition of the role of family problems in adolescents' health. Combining the principles of anticipatory guidance, screening, and early identification with the acknowledgment that families should be included in the process leads to a clear conclusion that screening for children affected by parental substance abuse must occur at all ages in infancy, childhood, and adolescence.

The National Cancer Institute's *Program for Preventing Tobacco Use During Childhood and Adolescence* already has established this precedent.¹³ In this program, it is recognized that child health providers can screen, identify, educate, and intervene with children and families at all stages. Child health care providers are in a unique position to intervene in the early stages of parental substance abuse through identification of effects on their children because of the frequency of contact they have with most families throughout childhood and by taking advantage of the long-term relationships they have.

Discussions related to substance-abuse and related problems should begin with the prenatal visit by focusing on the responsibility of parents, parental lifestyle, and effects of parental alcohol and other drug use on the fetus, infant, child, and adolescent. Parents serve as important role models for their children. Attitudes and beliefs regarding alcohol, tobacco, and other drugs (ATOD) develop early in life. Parents need to be aware that their attitudes and beliefs can strongly influence and play a major role in shaping their child's behavior. Hence, it is important for the health care professional to explore the attitude of the family toward ATOD use and to provide basic education, screening, and early intervention services that are appropriate to the age and development of the child and the family situation.

If inquiries about parental substance abuse are incorporated into the family history portion of a clinical interview, they may seem less out of place to all involved. If one prefaces one's questions with phrases such as, "Now I'm going to ask you about

diseases that can run in families or have an effect on children's health," it may seem more natural and less intrusive to families.

Prenatal Visits

The earliest and perhaps the best time to bring up the subject of parental ATOD use is at a prenatal visit, especially if both parents attend. Concern for the unborn child's health should be the focus. It may be less threatening to first ask whether there have been alcohol or other substance-abuse problems in the parents' families. Questions about AOD can be coupled with questions about nutrition and smoking as part of a standard routine.

During pregnancy, parents are naturally concerned about the health of the fetus. Hence, it is worthwhile framing questions in two different contexts—the family history and the health of the fetus. Questioning may start addressing the use of over-the-counter medications, then prescription medications, then smoking, then alcohol and, finally, other drugs. An example of useful lead-ins is "Many parents seem to be confused about whether it is safe to drink alcohol during pregnancy. What is your understanding?" Questions also can be extended to the father.

Infancy and Early Childhood

During infancy and early childhood, the target of screening efforts continues to be the parents. Young adult parents are less likely to visit their own physician than are older adults. Health care professionals may be the only physician many parents of young children visit professionally. As a result, this group of parents can be more difficult to reach with health prevention messages and early interventions. Yet early childhood is a critical time in child development, because the effects of parental substance abuse can be profoundly harmful.

A good way to begin an interview with a parent may be by asking "How are things going for you?" When verbal or nonverbal responses indicate depression, fatigue, unhappiness, or other emotional or interpersonal discomforts, it may be useful to pursue the underlying causes such as personal or spousal substance abuse. For example, "People handle stress in different ways. Some people exercise, some sleep, some people eat more, others smoke cigarettes or use alcohol or other drugs. How are you handling it?"

The objective during infancy and early childhood is to reduce the amount and frequency of ATOD use occurring in the family to which the young child is exposed. Child health care providers should learn about the alcohol and other drug use habits of all parents of infants and young children. This can be done in the context of a global family health assessment and must build on established rapport and basic interviewing skills. Emphasis should be placed on how substance abuse can affect parenting decisions, exacerbate stress and marital problems in the home, create a potentially unsafe home environment, and model drug use behaviors for children. The use of established substance-abuse screening tools such as the CAGE (see definition below) and Alcohol Use

Disorders Inventory (AUDIT) may be helpful (Fig 1).¹⁴⁻¹⁷ If parents already have made a change in their alcohol or other drug use habits, this should be positively reinforced. At a minimum, screening young adult parents for substance abuse raises an important issue, gives feedback to the parents, and establishes the willingness of the provider to discuss the issue at a later time if needed.

School Children

When children are asked from whom they learn most about health, the second most frequent response, after mothers, is their physician. To children, physicians are seen as powerful medical experts as well as role models for appropriate health behavior. It is important for the physician to reinforce nonuse of ATOD to counterbalance factors from within the family or environment that serve to support their use.

This developmental period provides the framework of knowledge and attitudes that will aid children when they are faced with more proximal pressure to use alcohol or other drugs. Parents should be encouraged to examine their own beliefs and practices concerning ATOD use. Children whose parents drink alcohol are more likely to do so than are children whose parents do not.^{18,19} Children from families where alcoholism and/or drug abuse are present are particularly at risk for the development of substance-abuse problems. Children of alcoholics are four to five times more likely to develop alcohol dependence than are other children. Parents should be asked directly about their use of ATOD.

Anticipatory guidance about alcohol and other drug use should begin early in childhood when family standards and values are being assimilated. Well-child visits during the early school years provide many opportunities to discuss alcohol and other drug use with children and their parents together. Health care professionals can initiate or enhance the dialogue between children and their parents by asking if alcohol and other drug use is being discussed in school and at home, inquiring about the specifics of what is being taught, and assessing whether the child understands the messages being delivered. It is important to ask whether alcohol or drug use is discussed among friends, whether alcohol or other drugs are present in the child's environment, about their perceptions of why some people use AOD, and whether or not such use is harmful. This attention to common parenting and child behavior problems is valuable in preventing later problems.

Adolescents

Families continue to exert significant influence on adolescents and on the behaviors in which teenagers choose to engage. Early identification of families with substance-abuse problems is critically important to the prevention of substance abuse among adolescents themselves. Family issues to address include parent-child interactions and maladaptive family problem-solving, which often involve avoidance of issues and conflict.^{20,21} Families with marital discord, financial strains, social isolation, and dis-

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- C** Have you ever felt the need to *Cut down* on your drinking?
- A** Do you get *Annoyed* at criticism by others about your drinking?
- G** Have you ever felt *Guilty* about your drinking or something you have done while drinking?
- E** *Eye opener*: Have you ever felt the need for a drink early in the morning?
-

rupted family rituals (such as meal times, holidays, and vacations) also increase an adolescent's risk of problem alcohol use.²² Adolescents are particularly at risk if parents are either excessively permissive or punitive or if parents offer little praise or seem persistently neglecting of the adolescent.

Clear parent-defined conduct norms are an important protective factor.^{19,21,23} Adolescents least likely to use AOD are emotionally close to their parents, receive advice and guidance from their parents, have siblings who are intolerant of drug use, and are expected to comply with clear and reasonable conduct rules. The parents of nonusers typically provide praise and encouragement, engender feelings of trust, and are sensitive to their children's emotional needs.

Alcohol use should be included as a primary consideration in all behavioral, family, psychosocial, or related medical problems. The identification and assessment of high-risk behaviors and predisposing risk factors are key aspects in the early recognition of alcohol-related problems. As a routine part of the adolescent visit, there should be an assessment of risk by reviewing risk factors and behaviors with youth and their parents.

ESTABLISHED SCREENING MEASURES

There remains a dearth of rigorously designed research studies on screening and early intervention for children and youth from families affected by substance abuse. Considerably more research has been conducted and well-summarized elsewhere on methods for screening adolescents for their own alcohol and other drug abuse.²⁴

Screening for alcohol or other drug-use problems within families and other caregivers must begin with a careful and detailed psychosocial history. Information about the structure, function, and interpersonal problems of families, parents, children, and adoles-

cents provides a necessary background from which the need for additional screening efforts can be determined. Evidence of child behavior problems, early school failure, parenting difficulties, family conflict, or changes in the home environment are commonly present in families affected by substance abuse. The suggestions for screening discussed below are intended to provide examples and a framework for building on a baseline psychosocial history when additional screening is indicated for possible family substance abuse. Often additional screening will need to be conducted with a parent or family member directly. However, there also may be situations when a school child or adolescent should be interviewed alone to gather relevant information.

Despite potential advantages of early detection through family screening, reviews of existing screening instruments and research directions for substance-abuse screening have ignored this opportunity.²⁵ Some screening measures can be used as proxy reports on another family member, whereas others are intended for direct use with suspect family members. Child and adolescent health care providers may need to develop additional comfort in asking substance-abuse screening questions directly to parents or other family members. Screens for alcohol abuse are better developed and used more widely than those for other forms of psychoactive substance use.

Screening Measures for Problems in the Family

Based on the nature of a presenting medical problem or as a result of problem areas in the psychosocial history, screening may involve asking the child or adolescent patient questions directly, and often alone, that are developmentally appropriate, and addressing their perceptions of problematic substance use in the family. By age 7 or 8, most children have developed accurate perceptions of the role of AOD in

their parents' lives. The child can provide valuable information in response to simple questions such as, "Do you think that anyone in your family has a problem with alcohol or other drugs? Do you think that either your mother or father drinks alcohol too much? Have you seen either your mother or father use drugs?" Older children and adolescents should be asked if they are concerned about their parents or another family member for any reason.

One technique to maximize the usefulness of responses to screening questions is to apply them to all members of the household. This can be done while interviewing an older child or adolescent, or with one family member when talking about others. For example, "Has anyone in your household or your family ever neglected their usual responsibilities when drinking or taking drugs?" "Have you ever felt someone in your household or family should cut down on their drinking or drug taking?" "Do you ever wish someone in your family didn't drink so much? . . . Who is that?"

The CAGE questionnaire is a four-item alcohol screening instrument with demonstrated relevance for primary care in clinical, educational, and research settings (Fig 1).¹⁴⁻¹⁶ The CAGE asks whether the respondent has ever "needed to Cut down on their drinking; felt Annoyed by complaints about their drinking; felt Guilty about their drinking; or, had an Eye-opener first thing in the morning." The Family CAGE is a modified version of the commonly used CAGE questionnaire that simply broadens the standard CAGE items to include "anyone in your family" (Fig 2). One can use the Family CAGE questions to provide a proxy report regarding another individual such as a parent or an older sibling. For example, if the patient is a 12-year-old who currently is not using alcohol or other drugs, but is concerned about a parent's use of alcohol, the health care professional could screen for concerns about the parent's alcohol use by asking the CAGE questions to the child in the following manner: "Do you think your mother needs to cut down on her alcohol use? Does your mother get annoyed at comments about her drinking? Does your mother ever act guilty about her drinking? Does your mother ever take a drink early in the morning as an eye-opener?" One or more positive answers to the Family CAGE can be considered a positive screen and needs additional assessment. The Family CAGE is intended to screen for alcohol problems in families, not to diagnose family alcoholism. A positive finding on the Family CAGE implies a greater relative risk for alcoholism in the family and should be followed by a more thorough diagnostic assessment.

In a recent study, one positive response on the Family CAGE was more sensitive than asking about perceived family alcohol problems.²⁶ In the same study, 48% of adult patients had a score of ≥ 2 . The specificity of the Family CAGE for family alcohol problems was 96%, the positive predictive value 90%, the sensitivity 39%, and the negative predictive value 62%.²⁶ The Family CAGE also correlates with family stress, family communication problems, marital dissatisfaction, and use of drugs other than alcohol. The ability to use the Family CAGE in this

manner offers the potential for great flexibility for the pediatric encounter and allows for a comfortable way of collecting pertinent screening information about or from patients and parents. By substituting the words *drug use* for *drinking*, the Family CAGE also can be used to screen for problematic use of drugs other than alcohol. Additional research on the application of the Family CAGE is needed.

Screening for the Impact of Family Substance Abuse

A longer written screening tool that may be useful is the Children of Alcoholics Screening Test (CAST).^{27,28} The CAST was developed as an assessment tool that could identify older children, adolescents, and adult children of alcoholics. This 30-item self-report questionnaire measures patients' attitudes, feelings, perceptions, and experiences related to their parents' drinking behavior, using a yes/no format. It may be useful when a written questionnaire is the preferred method with older children or adolescents.

The Family Drinking Survey also addresses how family members have been affected by a family member's alcoholism.²⁹ It is adapted from the CAST, the Howard Family Questionnaire, and the Family Alcohol Quiz from Al-Anon and is suitable for use with adolescent patients or nonusing parents. It addresses the effects of family alcoholism on the patient's emotions, physical health, interpersonal relationships, and daily functioning. When patients or their parents have positive responses to the CAST or Family Drinking Survey, they are beginning to reveal the impact of the substance abuse on the family and on themselves. As the evidence of family dysfunction becomes more apparent, the health care provider should have more concern about the impact of the substance abuse. As the family becomes more submissive to the impact of the substance abuse, they more clearly distinguish themselves as an "alcoholic or drug abuse family."

Many substance-abusing parents themselves are children of substance abusers. Inquiring about family histories of addiction while completing a three-generation genogram with parents can help them put their own substance abuse in an intergenerational context. This motivates some parents to seek treatment to prevent passing on this self-destructive behavior to their own children as their parents did to them. It also can sensitize parents to the emotional devastation they are causing their children by acknowledging their own childhood experiences.

An important consideration of children, youth, and parents is the confidentiality of the information gathered. Although many family members are eager to facilitate help for the alcoholic family member, others are more reluctant. If the presenting patient or nonusing parent is reluctant to share his/her concerns, the physician can encourage individual counseling.

Attendance at meetings of Al-Anon, Alateen, or Adult Children of Alcoholics groups are important for family members. Whether or not the family member affected obtains treatment, other family members may need to learn to care for themselves, and 12-step programs can be extremely supportive.

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- C** Have you ever felt that anyone in your family should *Cut down* on their drinking?
- A** Has anyone in your family ever felt *Annoyed* by complaints about their drinking?
- G** Has anyone in your family ever felt bad or *Guilty* about their drinking?
- E** *Eye opener*: Has anyone in your family ever had a drink first thing in the morning to steady nerves or get rid of a hangover?
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Screening Measures for Older Adolescents or Adult Family Members

The signs and symptoms of alcohol and other drug abuse in adolescents often are subtle. More telling than physical signs may be the indication of dysfunctional behaviors. A sudden lapse in school attendance, falling grades, or deterioration in other life areas may become more apparent as alcohol or other drug use escalates.³⁰ Often problems with interpersonal relationships, family, school, or the law become more evident as use increases. Depressive symptoms such as weight loss, change in sleep habits and energy level, depressed mood or mood swings, and suicidal thoughts or attempts may be presenting symptoms of alcohol or other drug use.

A general psychosocial assessment of an adolescent's functioning is the most important component of a screening interview for alcohol misuse or abuse. Begin with a discussion of general topical areas, including home and family relationships, school performance and attendance, peer relationships, recreational and leisure activities, vocational aspirations and employment, self-perception, and legal difficulties. The information gathered helps to determine whether alcohol or other drug use is a cause of behavioral dysfunction and the degree of patient impairment.

It is often useful to ask about alcohol or other drug use directly, for example, "Tell me about your use of alcohol," or "When did you last drink alcohol?" If they do not use alcohol, explore their reasons for nonuse and affirm their decision. If they have used alcohol, ask whether they have ever been concerned about their use. If so, what is the nature of their concern, have they had periods of nonuse or cutting down, is there evidence of loss of control by breaking

promises or rules, and is there evidence of the adolescent rationing their use? If the teen has never been concerned about his/her use, inquire whether anyone else has ever expressed concern about his/her use of alcohol. What was the nature of that concern and what was the patient's attitude toward it? Is there evidence of remorse or guilt for behavior while using or obtaining alcohol?

McLellan and Dembo have reviewed screening and assessment measures recently for adolescent alcohol and other drug use.²⁴ Several established measures suitable for use both with adolescents and with adult family members are discussed below. Both adolescents and adult family members may need referral to professionals trained to conduct assessments.

The four-item CAGE questionnaire discussed above has proven useful in screening for alcohol problems both with adolescents and with adults.¹⁴⁻¹⁶ Although a positive response to the CAGE questions is not diagnostic of alcoholism, answering yes to two or more questions is highly suspicious and warrants additional evaluation. A variant of the CAGE suggested for use in pregnant women, called the T-ACE, substitutes tolerance for the question on guilt while including questions on annoyance, cutting down, and eye-openers.³¹ For example, "How many drinks does it take to make you feel high?" An answer of more than two drinks is considered positive.

A recent study found that four criteria most frequently endorsed by those with alcohol problems are 1) blackouts, 2) objections by family members or close friends, 3) withdrawal symptoms when the abused substance is not immediately available, and 4) neglect of responsibilities.³² From these general ideas developed the following brief questionnaire (the BONS) for use with adult alcoholics that also can

be used while interviewing parents: 1) Have you ever been drunk enough that the next day you could not remember what you had said or done? 2) Have your family or friends told you they objected to your drinking? 3) Have you ever neglected some of your usual responsibilities when drinking? 4) Have you ever had the shakes after stopping or cutting down on your drinking, or the morning after drinking? A positive response to any of these four questions should be considered a positive screening for high risk for alcohol problems.

The AUDIT is a 10-question screening measure that is administered most easily in written form.¹⁷ It was developed by the World Health Organization specifically to be used in primary care settings and has been used extensively in an international intervention trial. The AUDIT incorporates questions about drinking quantity, frequency, and binge behavior, along with questions about consequences of drinking. Unlike the CAGE, it assesses alcohol use and problems over the last 12-month period.

Brief screening questionnaires such as the CAGE and AUDIT are most useful as an entry into meaningful direct discussion about alcohol use and the parent's self-perception of their use. These clinical aids are not intended to be diagnostic instruments; rather, they facilitate gathering information, which can be used to complement the psychosocial history. Experienced interviewers will not simply ask each question within the CAGE or any other screening tool, but will use the areas targeted by these questions to briefly probe the critical issues behind alcohol or other drug use. For example, when a parent acknowledges a previous attempt to cut down on drinking, this provides an excellent opportunity to explore their self-perceptions of problems they themselves have noted as a result of drinking. When a parent admits to feelings of guilt because of behaviors while drinking, they have a palpable sense of the need for change and may feel motivated because of it. Questions such as those in the CAGE often allow the parent to define the direction of the interview in a useful manner. Familiarity with the general content of these screening measures can help the health care professional better understand the objectives of an alcohol use screening interview and, as a result, become a more sophisticated interviewer.

Another well-validated screening device is the Short Michigan Alcoholism Screening Test (SMAST).³³ This screen is designed to be self-administered and includes 13 questions related to concerns of others about the respondent's ability to carry out personal and social obligations. It does not, however, include questions about the physical effects of addiction. The SMAST can be given during an interview or as a written questionnaire to parents when an early suspicion of possible substance-abuse problems is developing.

There are several slightly longer written questionnaires that also have been found to be useful, including the Drug and Alcohol Problem Quick Screen,³⁴ the Adolescent Alcohol Involvement Scale,³⁵ and the Personal Experience Screening Questionnaire.³⁶ The Problem Oriented Screening Instrument for Teenagers is a 120-item questionnaire that serves as the

screening battery for 10 functional areas influenced by adolescent alcohol or other drug use.³⁷ It is linked to a more comprehensive evaluation process called the Adolescent Assessment and Referral System, which may be useful in clinical settings where adolescents undergo comprehensive assessment.³⁸ The Drug Use Screening Inventory enables practitioners to screen and assess the multiple problems of adolescents who abuse AOD in a manner that guides treatment selection and evaluation.³⁹

Family Mapping

The genogram, or family tree, is a versatile clinical tool that can help clinicians obtain family and social history. Often, when patients and their families see the constellations of family disease and problems highlighted on the family tree, they appear to take them more seriously, as if they realize their implications for the first time. The process of the physician and the patient/parent drawing the family tree together facilitates the physician-patient-family relationship. Asking about family information in a structured, matter-of-fact way helps the interviewer remain objective and reduces physician discomfort. The genogram also seems to foster honesty by lowering the patient or parent's resistance to talking about embarrassing or painful matters. Asking older children or parents about their family invites them to move into a rational thinking mode and encourages them to be less governed by the intense feelings that may be associated with the family.

In addition to asking traditional questions about the family such as who lives at home and what are the parents' occupations encourages asking questions such as, "Who in the family has emotional difficulties?", "Who in the family does not get along well with each other?", "Why?", "Who is divorced or having marital problems?" The genogram is best used to ask questions about relationships, family conflicts and turmoil, who are the strong personalities in the family, who helps solve problems and who creates them, and histories of psychiatric illness or substance abuse. This process fills in many details that can be linked to the physician's knowledge of the patient's primary family to help create a more complete understanding of the family context. It also will reveal genetic vulnerability.

THE FAMILY FROM A SYSTEMS PERSPECTIVE

For the family to meet the basic needs of its members and society, it must 1) physically protect and sustain its members by providing shelter, safety, food, and clothing; 2) promote a sense of individuality or autonomy, so that each member can think and feel independently; 3) promote a sense of connectedness, so that each member meets emotional needs for affection and intimacy appropriately; 4) foster a sense of competence and self-worth, so that each member feels good about him/herself and contributes productively to society; and 5) encourage each member to develop a sense of right and wrong and conform to basic values and rules of society. It is useful to keep in mind that all families have strengths, some more than others. To help an indi-

vidual, it is as important to identify the strengths of a family as it is to detect its weaknesses.

Children of substance-abusing parents often grow up in chaotic family environments that lack consistency, stability, and emotional support. Poor communication, permissiveness, undersocialization, and neglect are common and can be devastating. A basic understanding of family systems and the characteristics of healthy and substance-abusing families is essential to identifying and working with high-risk children and youth.⁴⁰ Families affected by substance abuse frequently develop issues around boundaries, communication, problem-solving styles, and role assignments. Recognizing these family systems issues is an important aspect of working with children from all backgrounds.

Substance abuse, like other chronic illnesses, is progressive over an extended period, has periods of flare-ups and remissions, and can cause psychologic and physiologic disability. Both family and patient may go through stages of dealing with substance abuse similar to those of other chronic illnesses, including denial and disbelief; shock, anger, disorganization; loss; attempts to eliminate or escape the problem; and acceptance and recovery. Many of the patterns or coping mechanisms used by members of the substance-abusing family also are found in family members of patients with other chronic diseases. These patterns can vary in the amount of dysfunction and pain they cause the family. Although the economic burden of chemical dependency may be similar to that with other chronic illnesses, the stigma, shame, and guilt are greater. By comprehending the impact of substance abuse on a family, a physician can develop a model that will be useful in understanding family patterns in other chronic illnesses.

Families gradually adjust to the negative impact of substance abuse. Gradual changes occur in the family's coping styles and behaviors that eventually permit the disease to continue. These enabling behaviors add to the dysfunction in the family. The family must recognize their contribution to the disease process to facilitate treatment. It is easy to identify how alcoholic behavior affects the family, but the impact of enabling behavior on the substance abuser can be more difficult for the family to understand. Family members become enablers because they care about the family member affected and therefore protect him/her from the negative consequences of his/her illness. Paradoxically, the results of the caring and protecting can lead to delayed treatment and can be disastrous for the chemically dependent person.

Family Disease Model

As the substance abuse progresses, the family's actual life becomes divergent from the family's intended lifestyle. There is little congruence between what the family wants their life together to be and what it has actually become. Because the realization of the disparity is very painful, suppression of feelings and secretiveness is common. If family members begin to be concerned that substance abuse may be the cause of their problems, they develop strategies to preserve their intended integrity. A dysfunctional

family system develops around the disease that is protected by defense mechanisms, isolation, rules, and roles. As the members slip deeper into these behaviors, reality becomes distorted and the pain of the family dysfunction is displaced away from the cause, the family disease of substance abuse.

Denial is the defense mechanism used most commonly. Its primary purpose is to maintain ego integrity in the abuser and family members. Denial may stem from ignorance of what chemical dependence is or may be motivated by wishful recall of previously happy times. The family denial can be stronger than that of the affected member and usually is related to the amount of stigmatization felt by the family members. Because of the power of the denial, the illness can progress notably, and physicians can feel frustrated in their attempts to confirm a suspected diagnosis with a family member. Because denial is below the level of awareness, family members do not acknowledge that denial is occurring. Once denial begins, it becomes automatic and progressive.

Minimization is the attempt to dilute the action of the substance abuser and lessen the impact on the family. For example, a wife may say that her spouse yells a lot but has never hit her, thus, she does not believe that he is a substance abuser.

Projection attributes the cause of the problem to another person or thing. A husband may cover for a wife's marijuana use by complaining that the children are behavior problems.

The isolation that develops around the family is both social and emotional. Because of the shame associated with substance abuse, family members do not share their painful experiences with anyone inside or outside of the family. The boundaries around families become rigid and impermeable, with a restricted flow of information passing into and out of the family. In such situations, normal needs may be gratified in abnormal ways. For example, the incidence of sexual abuse is reportedly high in substance-abusing families.⁴¹

Family Rules

As in any system, rules develop for self-regulation and order. In the chemically dependent family, the rules restrict behavior, limit creative problem-solving, and restrict autonomy. The emphasis is on following the rules and not on developing intimate, nurturing relationships. Although not overtly required, the following rules have been described clinically:

1. Don't talk—Even young children learn not to share painful observations. A mother with strong denial will not confirm her child's observation of Dad's out-of-control drinking behavior. When observations are not validated, family members stop making them and important issues are not discussed. The drinking is neither mentioned nor confirmed, and the family secret grows. Everyone knows it is there, but no one mentions its existence.
2. Don't feel—When painful experiences are not shared, feelings do not get words attached to them

and they remain undefined. Comments such as "No, I wasn't scared," "I never get angry," and "Why should I cry, it wouldn't help" are frequent. The only feeling that usually gets displayed is anger. Instead of understanding that anger is a normal reaction to certain experiences, anger is often used explosively in chemically dependent families as a defense to prevent others from approaching the real problem.

3. Don't trust—Chemically dependent people often make promises and plans with the best of intentions of fulfilling them. Nonabusing family members add to the inconsistency in the environment by expecting behaviors that they realize the chemically dependent person cannot perform. For example, a father who always arrives home very late on pay day will be asked to bring ice cream for dessert. Subsequently, the disappointed children are angry at both Mom and Dad when dinner ends with no dessert and feel that both parents broke their promises.

Family Roles

Roles help maintain balance in the family system and provide another method for individuals to insulate themselves against the emotional pain of living in a chemically dependent family. There are two reasons why the physician must understand these roles. First, patients may describe themselves in these terms, and it is supportive for the patient when the physician understands. Second, and more important, when individuals use role-dominated behaviors, they do not develop to their full potential. If physicians understand the behaviors, albeit through stereotypic roles, they are in a better position to recognize the limitations in their patient's life, to diagnose the health problems related to maladaptive behaviors, and to assist the person in learning more functional conduct. Individuals who feel trapped in role-related behaviors may suffer from stress-related illness or may demonstrate behavioral manifestations of their emotional pain. Physicians who understand these behaviors and associated symptoms can be helpful in uncovering the underlying problem of substance abuse, in explaining to the family how they are being affected, and in helping the patient understand the ways that chemical abuse is affecting various members of the family.

Wegscheider has described one potentially useful model to conceptualize family roles in the alcoholic family.⁴² The so-called chief enabler protects the chemically dependent person from facing the consequences of his/her disease by assuming the alcoholic's responsibilities and by shielding his/her actions from others. They do not understand that they can not control the chemically dependent person's AOD use or other behaviors. Although enablers look responsible and capable, they can harbor a variety of negative feelings. Although they work hard to maintain stability, the situation can deteriorate. Frustration, anxiety, and stress-related symptoms are an understandable corollary of enabling behaviors.

The so-called family hero brings pride to the family by being successful at school or work. At home,

the hero assumes the responsibilities that the enabling parent abdicates. By being overly involved in work or school, he/she can avoid dealing with the real problem at home and patterns of workaholicism can develop. Although portraying the image of self-confidence and success, the hero may feel inadequate and experience the same stress-related symptoms as the enabler.

The so-called scapegoat diverts attention away from the chemically dependent person's behavior by acting out his/her anger. Because other family members sublimate their anger, the scapegoat has no role model for healthy expression of this normal feeling. They become at high risk for self-destructive behaviors and may be hospitalized with a variety of traumatic injuries. Although all the children are genetically vulnerable to alcoholism, this child is often considered the highest risk because of his/her association with risk-taking activities and peers. Although tough and defiant, the scapegoat is also in pain.

The so-called lost child withdraws from family and social activities to escape the problem. Family members feel that they do not need to worry about her/him because s/he is quiet and appears content. S/he leaves the family without departing physically by being involved with television, video games, or reading. This child does not bring attention to her/himself, but also does not learn to interact with peers. Many clinicians have noted that bulimia is common in chemically dependent families and feel this child is prone to satisfy his/her pain through eating.

The so-called family clown brings comic relief to the family. Often the youngest child, s/he tries to get attention by being cute or funny. With family reinforcement, his/her behavior continues to be immature and s/he may have difficulty learning in school.

Another approach for understanding the alcoholic family has been proposed by Steinglass and colleagues.^{43,44} Through careful study, these research clinicians have found that families differ in their responses to the effects of alcoholism. They affirm that the family's priorities, rituals, behavioral styles, and use of energy and resources are altered by the presence of alcoholism. Most families are successful at maintaining their primary tasks and are not identified as problematic. In families in whom the alterations are the greatest, the disease is passed on to the next generation. When the family is able to resist the full effects of the disease, the children do not necessarily recreate an alcoholic family after their own marriages.

EARLY INTERVENTION WITH SUBSTANCE-ABUSING FAMILIES

Early intervention is a transitional component in the continuum of substance-abuse care, which is intended to fall somewhere between prevention and treatment, and can be distinguished in terms of target population and specific objectives.⁴⁵ A useful definition of early intervention would include services directed at 1) individuals or families whose use of ATOD places them or other family members at an unacceptably high level of risk for negative conse-

quences; 2) individuals whose use of ATOD has resulted in clinically significant dysfunctions or consequences for themselves or family members; and 3) individuals or families who exhibit specific problem behaviors hypothesized to be precursors to ATOD problems. In the case of children of substance-abusing parents, an early intervention for the parent and family also should be viewed as prevention for the child. In addition, interventions by primary care providers, which lead to changes in the family's functioning and overall health, can be seen to affect the entire family. Therefore, prevention, intervention, and treatment rapidly become indistinguishable and concurrent when working with substance-abusing families.

Early intervention services can be distinguished from prevention in that early intervention services target specific individuals rather than the general population. Target populations have been defined based on ATOD use per se, on use patterns suggestive of abuse, on the occurrence of use-related consequences for the family member or child, or on the presence of risk factors within the family known to be associated with high risk for substance abuse. Abuse might be defined by patterns of use that place users and their family members at unacceptably high levels of health risk. Use in inappropriate settings, such as before driving, may be indication for intervention, even before negative consequences have occurred. Using a consequence-based definition for problem drinking, it is not patterns of use that determine the need for early intervention. Rather it is the appearance of negative consequences, which should include health risks or poor outcomes for anyone in the family of a substance abuser. Some substances, such as crack cocaine, heroin, or methamphetamines, are sufficiently dangerous that any use is, in fact, cause for intervention.

Behavioral medicine is the interdisciplinary field concerned with the application of behavioral principles and strategies to the modification of lifestyle patterns for the prevention of disease and enhancement of health. Studies have demonstrated that physician-delivered health education and counseling can lead to improvement in health status.⁴⁶ Although the development of brief interventions is in a formative stage and many evaluations are not rigorous, the weight of evidence supports brief interventions as a promising method for reducing alcohol-related problems.²⁵ There remains little research that specifically addresses the efficacy of brief interventions offered by child and adolescent health care providers to families affected by substance abuse.

Traditionally, physician training has emphasized a biomedical model, which is oriented toward diagnosis and treatment of diseases, rather than a systems model that embraces prevention and health promotion.⁴⁷ Moreover, traditional medical training promotes a paternalistic and directive style, which is less likely to lead to change in patient or parental behavior than a collaborative and patient/family-centered style that involves the child and family in the process of change.

Babor notes the difficulty of introducing behav-

ioral technologies into medical practice and suggests that new academic programs will be needed if brief interventions are to be widely used by health practitioners. To be able to provide effective brief interventions for AOD use problems, physicians require 1) knowledge of patient education and behavior change interventions; 2) interviewing and assessment skills to make accurate evaluations of risk for substance-abuse problems; and 3) health promotion skills to help children and their families reduce risk or maintain health behaviors. With insufficient knowledge and skills, health care providers may lack the confidence to intervene successfully. The primary impact of brief interventions is motivational, triggering a decision and commitment to change within an interpersonal context.⁴⁸ Review of the extensive literature on motivational enhancement is beyond the scope of this review, but there are several useful resources worthy of review.⁴⁸⁻⁵³

It is important to recognize that the substance-abusing parent is a whole person with dreams, desires, and strengths, as well as difficulties. Genuine concern combined with clear feedback can be useful; for example, "I am concerned that your husband's alcohol use may be causing a problem for the family. . . or may be affecting your son's health." The focus of the concern should be the parent's needs as well as those of the children and spouse, an approach that can be difficult to maintain. Statements such as, "Dealing with substance-abuse problems can be difficult. I want to be helpful to the whole family," may be useful.

It is important for the physician to remember that a positive screen does not make a diagnosis. A diagnosis that is reached too hastily and without a complete and thorough assessment may sever the physician-family relationship rather than strengthen it. The physician should advocate additional exploration into the area, either with him/herself or with a specialist. For example, "I am concerned that you may have an alcohol use problem. In my opinion, we need to gather more information about this possibility. I would like you to see a specialist to help us determine if a problem with alcohol exists." It is important for the physician to express his/her concern for the parent and child and the belief that substance abuse is not a moral weakness but a treatable disease. The physician also should play an important role in educating the family and child and can help the parent to explore the links between parental substance abuse and family dysfunction. Referral to other professionals or community resources, as well as personal follow-up, is a key component of office-based intervention.

To help the family members obtain treatment, the physician must realize that the family has three issues to confront. The first is for family members to acknowledge their denial, ie, to recognize that a family member has the disease of chemical dependency and needs treatment. By using the family in the process of diagnosis, the physician not only gathers important and persuasive information about the patient, but also helps the family members break through their own denial.

The second issue is for the family to understand the physical, psychological, social, and spiritual impact of the substance abuse and that each one may need help or treatment. If the nonsubstance-abusing family member has presented to the physician with physical symptoms or has discussed family disruption, this information can be suggested as an indication of how the family is being affected by the disease. Often individual and family therapy is indicated.

The third issue is for family members to realize that they did not cause the alcoholism, but that their behavior can contribute to the disease. The physician should assist the family members in understanding their behaviors that keep the chemically dependent individual from facing the consequences of his/her use. By examining their enabling behaviors, the physician can help family members learn healthier actions and, perhaps, motivate the substance-abusing person into treatment. Parents can be afforded the guidelines established by the National Institute on Alcohol Abuse and Alcoholism for nonrisky drinking, namely, two drinks daily, and no more than four on a single occasion for men; and no more than one drink daily for nonpregnant women. One drink is defined as 12 oz of beer, 4 oz of wine, or 1.5 oz of liquor.

Even if the chemically dependent person does not obtain treatment, the family can find relief from its pain. Often a 12-step program can be helpful. Al-Anon is recommended for spouses and other adults living with a chemically dependent person, and Alateen is recommended for older children and adolescents. Support groups also may be available through the child's school.

In addition to self-help groups, physicians can refer family members for therapy to counselors if the presenting problems warrant additional treatment. Because family members often do not recognize the extent to which they have been affected, it is important that the referral be made to a therapist who understands the impact of family substance abuse.

School children and adolescents living with substance-abusing parents need to hear that the family's problems are not their fault, that their parent has a disease that is beyond their control and for which they need help, that many other young children feel the same way they do and have had the same experiences, and that there is help available for them directly.

SUMMARY

Screening and early identification of children affected by parental substance abuse must occur at all ages across infancy, childhood, and adolescence. Health care providers need to be trained in the identification and management of children and youth exposed to parental addiction. Such training must begin during undergraduate education in the health professions and must be reinforced by role modeling among health professions faculty as well as among practicing providers. All health care professionals with clinical responsibility for the care of children and adolescents must be able to recog-

nize as early as possible associated health problems or concerns in children of substance-abusing parents and must be able to assist these children and families in seeking treatment and promoting health.

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Prevention and Intervention Strategies With Children of Alcoholics

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ABSTRACT. *Objective.* This article was designed to give pediatricians a basic knowledge of the needs of children who live in families with alcoholism. It briefly presents issues involved in the identification and screening of such individuals and provides primary attention to a variety of preventive and treatment strategies that have been used with school children of alcoholics (COAs), along with evidence of their effectiveness.

Methodology. A literature search including both published and unpublished descriptions and evaluations of interventions with COAs.

Results. The scope and nature of the problems of growing up in an alcoholic home are presented. The risk and protective factors associated with this population have been used as a foundation for preventive and treatment interventions. The most common modality of prevention and intervention programs is the short-term small group format. Programs for COAs

should include the basic components of information, problem- and emotion-focused coping skills, and social and emotional support. Physicians are in a unique position to identify and provide basic services and referrals for COAs. School settings are the most common intervention sites, but family and broad-based community programs also have shown promise in alcohol and other drug prevention.

Conclusions. Several COA interventions have demonstrated positive results with respect to a variety of measures including knowledge of program content, social support, coping skills, and emotional functioning. Rigorous studies are needed to understand better the complex ways children deal with parental alcoholism. A need remains for empirically sound evaluations and for the delineation of research findings. *Pediatrics* 1999;103:1112-1121; *children of alcoholics, familial alcoholism, substance abuse, prevention, treatment.*

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ABBREVIATIONS. COA, children of alcoholics; NSE, National Structured Evaluation; SAP, student assistance program; SMAAP, Stress Management and Alcohol Awareness Program; CASPAR, Cambridge and Somerville Program for Alcoholism Rehabilitation; SFP, Strengthening Families Program; COSA, children of substance abusers.

SCOPE OF THE PROBLEM

The exact number of children of alcoholics (COAs) in the general population is unknown. A recent estimate is that there are 26.8 million COAs in the United States. Of these, >11 million are younger than age 18.¹ Our understanding of the effects of parental alcoholism on children continues to grow. Originally, many believed young COAs to be relatively unaffected by parental alcoholism because of their immaturity.² Later, researchers seemed to have the opinion that all children experienced negative outcomes. More recently, researchers have begun to delineate the wide variety of outcomes experienced by COAs.³ Researchers are continuing to study the effects of parental alcoholism on children to understand the processes that determine these outcomes.

Often COAs deal with parental alcoholism and its consequent effects for many years. Research indicates that COAs are at greater risk for a host of behavioral and emotional problems, including developing an addiction. In fact, 13% to 25% of all COAs are likely to become alcoholic themselves.⁴

Many variables play a role in how, or whether, children will be affected by parental alcoholism. Although there is a strong genetic component to alcoholism, other psychosocial factors influence transmission, because not all COAs become alcoholic. It is clear that genetic and environmental variables contribute individually and interactively to produce a variety of outcomes for COAs. Therefore, prevention and intervention should focus on those moderating and mediating variables that impact the psychosocial factors influencing transmission.

Prevention researchers often take a public health model in approaching the primary prevention of emotional problems. According to Albee,⁵ to prevent something, we must first identify or describe what it is we wish to prevent. Then the causative forces that lead to the undesirable state or process must be identified and removed. Another strategy is to strengthen the individual to resist the causative agent. Specifically, Albee suggests a competency model, which is presented below:

$$\text{pathology} = \frac{\text{organic cause} + \text{stress}}{\text{social support} + \text{competency} + \text{self-esteem}}$$

Albee's model suggests that building competence through increasing coping skills will reduce the incidence of psychopathology. Research on COAs indicates that this equation holds for the risk status of COAs. It has been observed that all the factors in the denominator of the model can be modified through intervention.⁶ Thus, appropriate goals for primary prevention for COAs would include the reduction of stress and the development of self-esteem, social competence, and a strong social support system.

CHOOSING GOALS FOR PREVENTION AND INTERVENTION

Recent research has concluded that despite risk, many COAs are remarkably well-adjusted.^{3,7,8} However, work in the area of developmental psychopa-

thology suggests that adjustment to stressful environments is more complicated than understood previously. For example, Luthar⁹ found that although some children living in highly stressful environments appeared to be coping well, they in fact had high rates of internalizing problems, such as depression and anxiety. Rather than accepting a stereotypical view of COAs,¹⁰ professionals involved in both research and service delivery should work toward understanding the unique and complex patterns of adjustment to parental alcoholism.

In an effort to understand how COAs cope, researchers have looked at mediating variables (those factors that explain the relationship between parental alcoholism and children's coping) and moderating variables (those factors that change the strength of the causal associations). These factors can be conceptualized along a number of dimensions. Some factors are intrapsychic (eg, self-awareness) and primarily involve processes within the individual, whereas other factors (eg, social support) are interpersonal and involve processes among persons. From another dimension, some factors (eg, intelligence or temperament) tend to be primarily genetic, whereas others (coping strategies) are shaped primarily through experience. Identification of these variables is important because they provide potential targets for intervention.

Researchers have identified three types of factors that have been found to influence the stress-adjustment relationship in children. These include: individual-level factors (eg, activity level, reflectiveness, cognitive skills, and positive responsiveness to others); family milieu factors (eg, families marked by warmth, cohesion, and the presence of a caring adult); and environmental factors (eg, presence of some external support from a teacher, neighbor, parent of peers, or even an institutional structure such as a school or church).¹¹⁻¹³ (For a more complete review, see Johnson and Leff in this issue.)

INDIVIDUAL-LEVEL INFLUENCES

The majority of research regarding factors that influence COA status and outcomes has concentrated on individual variables related to the temperament and personality of the child. In an effort to frame the linkages among variables that influence COA outcomes, Emshoff⁶ presented a hypothetical developmental approach for examining the impact of parental drinking on child adjustment.

Parental alcoholism has been associated with several biologic outcomes in children, such as increased rates of hyperactivity or attention deficit disorder.¹⁴ Although a causal link has yet to be established,¹⁵ adverse biologic outcomes may set the stage for later behaviors such as discipline problems in school or delinquency, both of which predict future substance abuse.^{3,14,16,17} Children who experience behavior problems in school are less likely to perform well on cognitive tasks. In general, COAs do less well on academic measures; have higher rates of school absenteeism; and are more likely to leave school, be retained, or be referred to the school psychologist than are non-COAs.^{3,14,18-20}

Consequently, poor school performance acts to isolate COAs from their peers.²¹ Unfortunately, COAs already are at a disadvantage socially because of limited access to appropriate role models. These processes contribute to COAs' overall lower sense of social support, another variable related to substance abuse.²² Therefore, COAs must face problems with less social support and limited coping strategies, which may lead to lowered self-esteem, a variable that is negatively related to stress.²³ Lower self-esteem, along with lowered internal locus of control, and emotional, psychiatric, and adjustment disorders are likely contributors to depression.¹⁴ It should not be surprising that COAs have a higher than normal incidence of alcoholism and other substance abuse.^{3,4,14}

The relationships outlined in Emshoff's model are not hypothesized to represent linear relationships. Because of the interrelatedness of these pathways, the connections between these variables are likely to be complex. In short, biologic influences are linked with lowered cognitive abilities that, in turn, influence interpersonal skills and behavior.

FAMILY-LEVEL INFLUENCES

The family environment is the primary influence on children, especially COAs. Family socialization has been described as the link between the individual (psychologic and biologic) and the larger culture (sociodemographic and structural factors). The young person learns social behavior, including drinking behavior, during the ongoing socialization process with parents, older siblings, and peers.²⁴

For example, McCord²⁵ found that father-son transmission of alcoholism was more likely when the mother held the alcoholic father in high esteem. Wolin and colleagues found that ritual-deprived families heighten their children's vulnerability to alcoholism by permitting personal hardships to damage identity-building elements in their life, whereas children from ritual-protected families were less vulnerable to repeating the parent's alcoholism.²⁶ Other family process variables that reduce the incidence of adverse outcomes include low conflict and violence, good communication patterns, and cohesion.²⁷ More recently, Robinson and Rhoden²⁸ have examined the effects of alcoholism on four essential family tasks: creating an identity, setting boundaries, providing for physical needs, and managing the family's emotional climate.

ENVIRONMENTAL INFLUENCES

Although there has been much less research regarding environmental influences that affect COA adjustment, some contextual variables have been found to mediate the relationship between parental alcoholism and adjustment. For example, stressful life events may mediate the relationship between family alcoholism and mental health status of COAs.²⁹ Additionally, social support from peers or caring adults can be either helpful in the coping process or reduce the need for coping.^{12,13,30} Furthermore, a good relationship with the nonalcoholic parent has been suggested as a factor that protects the

child from the negative effects of parental alcoholism,^{27,31,32} although more recent research failed to support this hypothesis. There are many more environmental influences that might buffer children from the negative effects of parental alcoholism such as the school or the church. Unfortunately, these settings have yet to be researched adequately.¹³

PREVENTION AND INTERVENTION MODELS

In response to these individual and environmental risk factors, several types of programs have been developed for COAs. "Universal prevention" programs are designed for the general population. "Selective prevention" programs are those designed specifically for identified or self-identified COAs. "Indicated prevention programs" are designed for children with addicted parents who also have specific emotional or behavioral problems. In this article, we make a general distinction between "prevention" and "intervention" programs. Prevention programs target children not because of their own behavior, but because of the behavior of an adult caregiver. Intervention programs usually target children who already are exhibiting some symptomatology themselves. Most of the COA programs discussed in this article include both prevention and intervention to some degree, although each may have a primary focus of one or the other. It would not be incorrect to label all these programs as "preventive interventions."

Windles and Searles³³ outlined the prevention objectives of The National Council on Alcoholism. Using a public health model, the organization has defined primary prevention as preventing a problem before it starts. Therefore, the objective of prevention programs for COAs is to deter the development of drinking problems by targeting risk factors associated with drinking problems or other dysfunctional behaviors. The focus of the prevention effort might be general, as in broad-based community prevention programs, or specific to particular high-risk groups.

Two primary prevention models were proposed. First, the distribution of consumption model is aimed at the societal control over the availability of alcohol. This involves raising the drinking age, increasing the price of alcohol, and limiting sale hours, as well as other strategies. The second model is the sociocultural model, which focuses on education and enhancement of individuals' competencies through information, values' clarification, and skills-building techniques. These types of prevention programs can be community-wide; through media campaigns; or targeted at schools, recreational activities, or physicians' offices.³⁴

Broad-based programs target all COAs, whether or not they are identified. The National Structured Evaluation (NSE)³⁵ study examined virtually every type of prevention activity, excluding treatment. Included in the evaluation were environmental change programs designed to change the community environment without intervening directly with individuals at risk for alcohol and other drug problems. The NSE found that examples of environmental approaches included some of the most effective pro-

grams and had the most consistent record of effectiveness across all types of outcomes.

One benefit of such broad-based primary prevention is that it avoids labeling because all children are targeted for intervention. A more tailored application of this approach is classroom guidance on alcoholism and the effects of alcoholism on the family. Targeting all children in the normal classroom setting precludes the need for screening and consent and provides a valuable service to all children. However, denial may keep the COA from absorbing all the information.

Primary prevention models are now shifting to an emphasis on correcting misperceived social norms about drug use and expectations about drug use consequences. Social norms and related social influences are significant predictors of adolescent drug use and significant mediators of primary prevention programs.³⁶ This represents a systems level approach in that a decrease in social norms and acceptance of drug use through prevention might have radiating positive effects on all youth, not just those participating in the program.³⁷

INTERVENTION MODALITIES

Selection of prevention and intervention content should be guided by scientific knowledge about the risk and protective factors associated with all three levels of variables. Hawkins and colleagues³⁸ provide a comprehensive review of the research, including individual, interpersonal, and contextual factors that contribute to the risk of substance abuse among adolescents and young adults. Researchers in this area recognize that the presence of multiple risk factors increases the risk for substance abuse.⁷

However, not all COAs require intervention or even treatment. At the same time, some COAs will need treatment beyond what can be provided through prevention and intervention programs. In that case, more intensive treatment is needed to deal with specific problems such as substance abuse or depression. For most COAs, education and support given in a primary prevention program as outlined here will provide sufficient help.

The design of prevention programs is a complicated but necessary process. For example, the influence of the child's developmental stage must be considered during program design. Elementary school children do not always have realistic perceptions of relationships and causal links and thus often feel responsible for the drinking parent. The middle school years are the period in which many children begin drinking alcohol and using other drugs. For this reason, experts agree that prevention should be focused on the preteen years.⁶ Older adolescents often experience both self-esteem and mental health problems. A consideration of these developmental issues is necessary to obtain desired program outcomes.

Another area that is often ignored when designing prevention and intervention programs is the influence of the child's cultural and ethnic background. Recent research suggests that not all children respond to stress in the same manner. Barrera and

associates³⁹ found that Hispanic adolescents were more resilient than their white counterparts. But whether this finding reflects a true group difference or measurement error is unclear. For example, other researchers have suggested that measures of stressful life events may not reflect adequately the lives of minority, primarily poor populations of youth.⁴⁰ Experts in the field of substance abuse suggest that culturally appropriate interventions are more effective than are generic prevention interventions,^{41,42} and results from recent evaluations seem to support this finding.

Whatever the age or background of the child, the importance of peer influence and mutual support⁴³ makes group intervention the logical means of intervention with COAs. Group treatment has been highly recommended by many experts in the field^{6,44} because it reduces feelings of isolation, shame, and guilt.⁴³ As an additional benefit, there is some empiric evidence that group interventions allow participants both to receive and to give support.⁴⁵ Typically, these groups are for COAs only, or for others concerned about a loved one's drinking. Occasionally, programs provide groups for the entire family or concurrent parent and child groups.

Program content is often based in social learning theory and emphasizes role-playing, modeling, practice of resistance skills, and feedback. Significant effects on the reduction in use of cigarettes, alcohol, and marijuana have been found in general prevention programs.⁴⁶⁻⁴⁸ Recently, Roosa and co-workers⁴⁹ tested the effects of protective factors such as social support and coping skills with a sample of COAs. Other programs emphasize environmental influences while integrating with other health and prevention programs. Community-based programs use multiple channels for delivery, based on the rationale that the more youths are exposed to consistent prevention strategies, the less likely they are to use substances.³⁷

Although each intervention program is unique in some way, there are several intervention strategies that are relatively common across programs. These strategies include information, training in skill development, focus on social support and socioemotional needs of children, and emphasis on alternatives to substance use. These strategies have been developed for prevention efforts with diverse populations, but are applied (and sometimes adapted or customized) to groups of COAs.

Information/Education

It is common for COAs to have misunderstandings about alcoholism. Most programs provide some amount of information regarding alcohol and alcoholism to reduce misconceptions and to provide an accurate basis for education throughout the intervention. O'Rourke⁵⁰ outlined 10 topics often included in education programs. The disease model is promoted most commonly as a means of understanding the behavior of the alcoholic parent. Terms such as tolerance, blackouts, and withdrawal usually are presented during the education phase. Understanding

these concepts helps the child reduce self-blame and guilt about parental drinking.

COA risk status is a common component of the information/education phase of intervention. It is important that COAs understand their risk for a variety of psychosocial problems, especially alcoholism. COAs should not be made to feel that they will definitely become an alcoholic if they drink, but COAs who are aware of their risk status drink significantly less (in frequency and quantity) than do COAs who are unaware of their risk status.⁵¹ Finally, misconceptions that COAs have in terms of the positive effects of drinking on cognitive and social performance should be addressed.^{52,53}

Skills Building

Promotion of specific competencies is often the focus of COA prevention and intervention. Focus on competency is an alternative to the more popular deficit model of prevention. For COAs, competencies can be viewed as protective factors that help children cope with stress, thereby reducing their risk status.

Some programs teach appropriate emotion-focused and problem-focused coping skills.⁷ Emotion-focused coping involves a modification of emotional distress without changing the source of the distress. It is an indirect process by which the child seeks social support or uses strategies, such as distancing or reframing the negative aspects of the situation, to emphasize the positive. Because COAs do not have control of parental drinking, it is an important coping skill. Children can be taught to look for external support, such as another family member or a friend's parent.

Problem-focused coping involves strategies to change or to manage the problem situation. This might include specific survival skills such as how to live within an alcoholic home and how to handle situations such as driving with a drunk parent and explaining parental behavior to friends. Other skills include information about decision-making, problem-solving, communication, and peer-resistance skills. Children can be taught how to use both emotion-focused and problem-focused techniques in conjunction to manage their stress. Of course, an important part of successful interventions is the provision of opportunities to practice these newly acquired skills.

Social Support and Socioemotional Issues

Four areas of functioning are often identified as important aspects of personal-social competence and coping for COAs and therefore are important areas for intervention: self-esteem, self-efficacy, the ability to establish and maintain intimate relationships, and the development of effective strategies for expressing feelings and solving problems.⁷ Personal-social competencies can influence the level of adaptation despite physical vulnerability and lack of control over stressors.^{5,54,55}

Social support is a natural result of group participation. Sharing common reactions and coping mechanisms builds group cohesion. Many participants

learn for the first time that they are not alone in dealing with parental alcoholism.

A focus on socioemotional issues such as depression, anger, guilt, and mistrust is important, whether within the context of therapy or within the context of prevention. Many COAs cope quite well; others appear to cope well but do not. For the child who merely appears to be functioning well, problems in these areas may not be readily apparent. The denial of these children serves a protective function requiring group facilitators to exercise patience and sensitivity. Extra support is needed as children adapt to their changing awareness about parental drinking.

Self-esteem often is a direct or indirect goal of COA interventions. COAs often use a perfectionist focus as a means of acquiring self-esteem. Self-esteem based on perfection obviously is unattainable, thus setting the child up for failure. Learning alternative ways to feel good about oneself is an important focus of interventions. The more the COAs understand the disease process, acquire healthier means of coping, and are supported by others who share the same experience, the better they will feel about themselves.

Group leaders should be knowledgeable about COA issues. For example, they should be cognizant that COAs may have problems with interpersonal boundaries, a characteristic common in alcoholic families. Leaders should be especially sensitive to feelings of abandonment children may experience when the group terminates.

Alternative Activities

Alternative activities provide opportunities for COAs to participate in activities that exclude alcohol, tobacco and other drugs. Healthy alternative activities (eg, sports activities, peer leadership training institutes, experiential programs such as Outward Bound) can help build a sense of self-efficacy, increase self-esteem, provide a positive peer group, and increase life skills such as problem-solving and communication. Programs may be focused exclusively on alternative activities or may include them as part of a comprehensive prevention program.

SETTINGS FOR PREVENTION AND INTERVENTION

Prevention and intervention efforts should address risk and protective factors for substance abuse across the various levels that we have reviewed. The options for where the actual prevention or intervention program occurs are also varied. Ideally, prevention and intervention will be most effective when multiple risk and protective factors are addressed within the multiple settings in which children live. For example, physicians that care for children and their families represent the first line of defense. Additionally, the school is an obvious point for all levels of prevention. Parents, as the primary educators of children, can participate actively in prevention efforts. Finally, community settings, although often overlooked, may provide creative means of reaching greater numbers of at-risk children.

The Role of Primary Care Physicians

Although not often thought of as a setting for prevention, primary care physicians have the unique opportunity to prevent problems through education and to provide early intervention when necessary. Adger⁵⁶ outlined recently the role of the primary care physician in the identification, prevention, and intervention of substance-abuse problems in children. The Committee on Substance Abuse of the American Academy of Pediatrics recommends that pediatricians include information about substance abuse in their anticipatory guidance to all children and adolescents. Physicians should possess the knowledge to recognize risk factors, identify the signs and symptoms of substance abuse, evaluate the extent of alcohol use, and offer appropriate counseling and referral when necessary. The Guidelines for Adolescent Preventive Services established by the American Medical Association recommends both primary (eg, patient education and anticipatory guidance) and secondary (eg, early intervention) preventative strategies to reduce adolescent substance use. The Guidelines for Adolescent Preventive Services also recommends that physicians routinely ascertain their patients' risk factors including a family history of alcoholism and conduct screenings for all school children and adolescents. These screenings should begin during prenatal visits and continue with developmentally appropriate information as the child and family mature.

Physicians have additional help providing services to their young patients. *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents*⁵⁷ was initiated in 1990 by the Maternal Child Health Bureau of the Health Resources and Services Administration and the Medicaid Bureau of the Health Care Financing Administration. These guidelines were developed in response to the economic, social, and demographic causes of morbidity and mortality among this country's children. The project takes a comprehensive view of health, emphasizing physical well-being, mental health, cognitive development, and social efficacy. A central goal of the program is to involve health professionals, families, and educators in a comprehensive prevention effort that recognizes the contextual forces impacting children.⁵⁸ The guidelines provide an important and previously missing link in prevention efforts for children, that of integrating health services with education and human services.

Wolin and Wolin⁵⁹ caution that pediatricians should not regard COAs as a homogenous group with uniform genetic vulnerability. Nor should they accept a clearly defined profile of psychopathology for all COAs. Pediatricians are encouraged to view COAs as having a myriad both of strengths and of weaknesses. The "damage model" tends to overlook strengths but is attractive because of its reliance on deficits and technical terms for identifying pathology.⁵⁹ The investigators encourage pediatricians to use the "challenge model" by encouraging youths to explore creative endeavors, participate in mentoring programs, extracurricular activities, and community

activities.⁵⁹ A pediatrician can become a supportive adult outside the family to provide guidance, encouragement, empathy, and resilience.

SCHOOL SETTINGS

In general, group settings, usually within schools, appear to be the primary mode of program delivery. The school is a logical place for intervention because it is the environment in which large numbers of children are available for long periods of time, and it is the setting in which problems relating to parental alcoholism will be most consistently discernible.⁴³

Furthermore, prevention programs within schools ease access to needed information and services. Children, particularly COAs, have limited access to out-of-school programs, especially when transportation is difficult. Children likely may resist attending programs in mental health centers because of the negative stigma or embarrassment.

Finally, an additional benefit is that the school is part of a network of community agencies and can serve as a focal point for the mobilization of prevention and intervention services with regard to specific COA issues. Since 1986, when the Drug Free Schools and Communities Act was signed into law, schools have been the primary agency involved in alcohol prevention. This legislation provides financial resources to reinforce and coordinate the efforts of schools and to provide education and intervention in the areas of alcohol and drug abuse. Unfortunately, although it is recognized that educational settings are logical sites for prevention and intervention efforts, few school-based programs designed specifically for COAs have been described in the literature.⁴³ Several programs that have been discussed in the literature are reviewed here.

Student Assistance Programs

Modeled after employee assistance programs, student assistance programs (SAPs) are comprehensive prevention programs that attempt to provide prevention and early intervention services for high-risk youth. As such, SAPs typically focus on COAs as one high-risk group. SAPs can be found at the elementary, middle, and high school levels. They vary as to problem focus, staffing, programming, and evaluation techniques. Generally, they are designed for prevention and early intervention of high-risk behaviors, especially substance abuse.⁶⁰ There are several models, but usually masters level counselors are placed in schools or at local centers. They provide individual and group interventions for students with family, school, peer, alcohol, drug, or other personal problems. Typically, the SAP has a core team that includes key members of a school's staff.⁶¹ Students may self-refer to the program or they may be referred by school personnel or parents.

Anderson² described the structure and focus of SAPs as including three core components. First, the SAP has a structure and process of identifying students who are abusing substances or who are at risk. Second, there is a community component that provides professional resources for prevention and intervention when necessary. Finally, there is an after-

care component to reintegrate students returning from treatment.

As SAPs have developed, staff have become better trained and more adept at identifying and referring students. Support for SAPs has developed at both the district and state levels. In Minnesota, for example, SAPs have been legislatively mandated for all schools. Since 1988, SAPs have been moving toward professionalism with the establishment of professional organizations, journals, and increasing emphasis on evaluation.⁶²

Stress Management and Alcohol Awareness Program

The stress management and alcohol awareness program (SMAAP) is an 8-week, school-based preventative intervention designed specifically for COAs.⁴⁹ The framework is a person-centered, competency-building intervention that uses various psychoeducational techniques to strengthen children's competence. These include the enhancement of self-esteem, provision of alcohol-related information, and emotion and problem-focused coping strategies.

A noteworthy feature of the SMAAP was that children self-selected into the program. The recruitment strategy was developed by Emshoff and Moeti⁶³ and refined by Gensheimer and colleagues.⁶⁴ The process includes showing a film depicting experiences of COAs to all students in the targeted grades, holding an informational follow-up meeting to discuss the film and explain the program, and finally extending an invitation to all children who are interested in participating.

A recent revision of SMAAP⁶⁵ added practice with coping skills and updated information that reflects recent information concerning misconceptions COAs often have about the effects of alcohol use on cognitive ability and social competence.^{52,53} The revised curriculum included the use of a "personal trainer" who met weekly with the participants to help them develop personal skills, build self-worth, and reinforce coping skills outside of school.⁶⁵ Using the recruitment procedure described previously, children with parental permission were randomly assigned to undergo the program immediately or to one of two delayed-treatment control groups.

Results demonstrated that children who participated in SMAAP were more likely than were controls to report increased knowledge, social-support, and emotion-focused coping behavior. Outcome findings were strongest for program knowledge. The positive changes in reports of coping were similar to the pilot⁶⁶ in that the intervention improved children's report of coping, although the effect sizes were small. There was some support for increased problem-solving and social competence ratings by teachers, although teachers were not blind to who participated in the intervention at any given time. The results also showed an overall significant increase in the expected reduction of tension resulting from alcohol consumption. This unintended negative side effect is an important one to be clarified in future prevention research as more positive alcohol-related expectancies have been related to greater alcohol use by adolescents.^{53,67} There were no differences be-

tween groups that underwent and those that did not undergo the personal trainer component.

Students Together And Resourceful

Students Together And Resourceful is an intervention that is based from a community psychology orientation. One goal was to provide students with accurate information concerning alcohol, alcoholism, and family reactions to alcoholism to understand the etiology of alcoholism and to reduce self-blame. A secondary goal was to increase social competence and both the quantity and the quality of peer relations. Group exercises were designed to facilitate the identification, acceptance, and expression of feelings. A related goal was that of improving the social network of participants. Specific skills such as problem-solving, decision-making, stress management, and refusal skills were emphasized. In short, the intervention was designed to do what parents normally do: help children learn to live with themselves in their environments, establish good relationships, and make constructive decisions and follow them through.

A strength of this program was the use of a wait list control group that received the intervention at a later time. The analyses consisted of comparisons between the control and treatment groups over time, strengthening the argument that outcomes were a result of the intervention. Participants were successful in establishing stronger social relations, a sense of control, and improved self-concept. Participants reported increases in the number of friends, peer involvement, and perceived social support. Participants also reported decreased loneliness and depression.⁶

CASPAR

The Cambridge and Somerville Program for Alcoholism Rehabilitation (CASPAR) is a pioneer in the COA prevention field offering a range of prevention and intervention services. Classroom teachers and CASPAR staff conduct classes on alcohol and other drugs for primary through 12th grade students. The goal of this approach is to prevent the development of substance abuse and related problems in a general population of children. CASPAR also has programs for high-risk groups of youth at all grade levels. Groups are conducted by adult staff in school and community settings (eg, housing developments and recreation centers) and by trained peer leaders in after-school groups in junior high schools.⁶⁸ Students then can either self-refer or be referred by parents, teachers, community agencies, other students, or CASPAR personnel.

Evaluation data have provided interesting findings. Students participated in either COA-specific groups or a basic education group. COAs in the basic alcohol education groups consistently reported that they learned useful information and indicated that they would drink differently and were drinking less as a result of participation than did non-COAs and children in the COA group. However, children in the alcoholic families group reported more positive learning experiences. Although COAs seemed to

gain more from groups dealing directly with parental alcoholism, more children were willing to attend the basic education group where they could avoid self-identification as a COA and still were able to learn useful information.^{69,70}

Children of Drug Abusers and Alcoholics

Children of Drug Abusers and Alcoholics is an early intervention program for high-risk children 4 to 10 years of age who live with at least one parent (or guardian) addicted to alcohol and/or other drugs. The program consisted of two 12-week components, one for children and one for families. Children were involved in small group activities involving art and play therapy activities. One evening each week, children participated with their parent or guardian in a family interaction group in which the families participated in unstructured art and play therapy activities. Results demonstrated improved competence and behavior as measured by the Child Behavior Checklist. However, the evaluation results should be interpreted with caution because of the lack of a control group.⁷¹

THE FAMILY

Strengthening Families Program (SFP)

The SFP is a family intervention that has been shown to reduce risk factors; increase resilience; and decrease alcohol, tobacco, and drug use among elementary school children of substance abusers (COSAs).⁷² The basic intervention consists of a parent training program and social skills training for the children, as well as a family relationship enhancement program. Typically, the program is conducted in churches, schools, or community centers in sessions of 2 or 3 hours.

Kumpfer and associates⁷³ offer several suggestions for successful implementation of family-focused interventions. It is crucial that focus groups include members who are representative of the target population. Innovative recruitment strategies should include outreach to community agencies, schools, churches, housing authorities, and youth service agencies, among others, in an attempt to involve hard-to-reach families.

The SFP has been modified for a variety of cultural groups including rural and urban African American COSA, Hawaiian COSA, Hispanic COSA, and rural preteens.⁷³ Evaluation studies showed that the basic program with minor cultural revisions was more effective than a substantially revised program. The investigators concluded that the core content of the program should not be deleted when making cultural revisions. As a result of positive outcomes of SFP replications, the National Institute on Drug Abuse has chosen the SFP as one of three model substance-abuse prevention programs for dissemination.

COMMUNITY-BASED PROGRAMS

Community-based prevention programs may target other family members as well as members of the larger community. These programs operate from a

model that recognizes that both the family and the community influence the child. Community-based programs are moving toward multiple channels of service delivery as a means of increasing "dosage."³⁷ Wherever the setting, ensuring confidentiality and minimizing the stigma of alcoholism and of COA status must be considered as important factors in designing prevention and intervention programs. Alateen is a self-help program that normally meets in various community settings such as churches or community centers. The Midwestern Prevention Program is a good example of a broad-based community prevention program using many modes of intervention strategies.

Alateen

Alateen is a program for COAs based on the Alcoholics Anonymous 12-Step Program of Recovery. Very few evaluation data on the effectiveness of Alateen are available. Hughes⁷⁴ found that Alateen participants had more positive scores on a mood state and self-esteem scale than did COAs who did not participate in Alateen. Peitler⁷⁵ compared Alateen to group counseling and no treatment in sons of alcoholics 4 to 16 years of age. Group counseling had more positive effects than did Alateen in improving self-worth and reducing withdrawal and antisocial tendencies.

The Midwestern Prevention Project

The Midwestern Prevention Project is a comprehensive, multicomponent community trial for prevention of adolescent drug abuse. Although it is not a program that targets COAs specifically, we include it here as an example of a comprehensive prevention effort with solid evaluation findings. The program integrates demand and supply reduction strategies, resistance skill training programs, and local school and community policy efforts aimed at institutionalizing prevention programming and limiting youth access to drugs. The program is an example of a combination of both strategic primary prevention and a comprehensive prevention approach.

The intervention consists of five program components: a mass media campaign, school involvement, parent involvement, community organization, and health policy. The evaluation took place in two major metropolitan areas, with the school being the unit of analysis. Results demonstrated that adolescents in schools assigned to the intervention condition showed consistently lower prevalence rates of cigarette, alcohol, and marijuana use than did adolescents in schools assigned to the control condition. By the 4th year, 9th/10th graders in intervention schools showed less cocaine and crack use. Mediation analyses have shown a decrease in social acceptance of substance use and perceived norms about drug use^{36,37} and that these changes have a significant mediational effect on subsequent drug use.

CONCLUSIONS

Our understanding of the factors that influence adjustment has grown tremendously over the last decade. We now understand that the patterns of

adjustment are not as simple as once thought and that children may be affected in subtle ways. To be effective, prevention and intervention programs must be based on our knowledge of the mediating and moderating factors of the exposure-adjustment relationship.

Evaluation research with COAs indicates several basic prevention components that should be included in programs for COAs. These include information and education, skills-building in the areas of coping and social competence, social support and an outlet for the safe expression of feelings, and finally healthy alternative activities.

Furthermore, there are many settings where prevention and intervention with COAs can be conducted. Primary care physicians should be trained to screen, identify, and refer COAs to appropriate programs. Additionally, doctors can use their resources to advocate for policy changes that will help ensure the mental health of their young patients and their families. Programs in schools can be expanded to reach more young people through school-wide alcohol and drug education. Although not well-researched, parental and family training is a promising area that has been shown to reduce child and adolescent risk factors. Comprehensive community programs that target social norms regarding alcohol and other drugs is another promising, yet underutilized, resource.

Finally, future research should work to clarify the differences between COAs and children exposed to other forms of stress or family dysfunction. Above all, more stringent methods are needed to improve both program design and evaluation methods. Future research can further our understanding through the use of better sampling procedures, random assignment, control groups, appropriate sample sizes, use of developmentally and culturally appropriate instruments, and precise definitions of parental alcoholism. Another important area for future research concerns how different cultural and ethnic groups are impacted by parental alcoholism, how they should be recruited into programs, and which intervention components provide relevant information and skills to particular groups.

Emshoff and Anyan⁷⁶ called for the use of an action research model that would frame an interactive relationship between research and intervention. As researchers continue to search for links among characteristics of COAs, their families, and ways to protect them from negative outcomes, this approach remains relevant. Longitudinal evaluations of programs will lead to improved programs and provide information to help researchers understand the length of program effects. Finally, the delineation of evaluation information is critical to improve services for COAs.

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The Social Ecology of Addiction: Race, Risk, and Resilience

John M. Wallace, Jr, PhD

ABSTRACT. *Objective.* The purposes of this article are to inform pediatricians and other health professionals of key contextual risk factors that elevate black and Hispanic Americans' likelihood to use substances and to discuss selected protective mechanisms that may shield members of these populations against substance use.

Method. The article selectively reviews the literature on the epidemiology, etiology, and consequences of alcohol and other drug use among white, black, and Hispanic adults and youth.

Results. The extant research suggests that historical and contemporary racialized practices and ideologies influence racial/ethnic differences in substance use outcomes, both directly and indirectly, through their influence on the communities in which people of different racial/ethnic groups are placed, through their influence on the structure and process of people's interpersonal relationships, and through the impact that they have on individuals' psychology and behavior.

Conclusions. Although the emphasis of pediatricians' and many other helping professionals' work focuses on individuals and individual-level behaviors, these behaviors can only be properly examined, diagnosed, and treated when they are understood in light of the community and societal contexts in which they occur. *Pediatrics* 1999;103:1122-1127; alcohol, racial and ethnic differences, racism, risk factors, ethnic identity.

ABBREVIATION. SES, socioeconomic status.

As a result of America's rapidly changing demographic profile, the populations that pediatricians and other helping professionals serve are becoming increasingly diverse in their racial and ethnic composition. Today, there are 264 million Americans; 82% of them are white, 12% are black, and 10% are Hispanic. By the year 2050, it is projected that 75% of America's 393 million citizens will be white, 15% will be black, and 25% will be Hispanic.¹ The expected rapid growth of America's black and Hispanic populations is linked to the fact that they are significantly younger than their white counterparts (median age, 29 and 26 years, respectively, vs 35 years for whites). Nationally, more than one third of the black (34%) and Hispanic (36%) populations are younger than 18 years of age, compared with only one quarter (24%) of the white population. Given the expected future growth of the black and Hispanic populations and the fact that

black and Hispanic young people already make up the majority of the youth population in many urban centers, the health of America's nonwhite youth is of increasing importance to pediatricians and to the nation as a whole.

In addition to their relative youthfulness, America's black and Hispanic populations share a number of other demographic commonalities that have important implications for helping professionals. For example, relative to their white counterparts, black and Hispanic children, youth, and families are more likely to be poor, headed by a single parent, unemployed, to lack health care and to be concentrated in crowded urban environments that are detrimental to their mental and physical health. Racial and ethnic differences in poverty, and its associated personal and community conditions, often result in racial and ethnic differences in exposure and vulnerability to risk for a host of social problems, one of the most pressing being substance abuse and its sequelae.

The abuse of alcohol, tobacco, and other drugs has been identified as a cause of nearly 500 000 premature deaths in America annually.² In addition to its cost in human life, alcohol and other substance abuse has been found to relate to motor vehicle crashes, violent crimes, a variety of physical maladies, domestic violence, child abuse, and numerous other social problems.³ In view of the widespread use of licit and illicit drugs, alcohol, tobacco, and other drugs affect virtually every person in America in some way. Nevertheless, the cost that substance abuse exacts from Americans is not distributed equally across the population; rather, its impact is experienced disproportionately by black and Hispanic adults, families, and children.

Research that identifies empirically the risk factors for racial/ethnic differences in alcohol and other substance use and related problems is sorely lacking. Although there is a large and growing body of research on intrapersonal and interpersonal risk factors for substance use, recent reviews of the literature^{4,5} have generally ignored racial/ethnic differences in substance use and racial/ethnic differences in the macrolevel risk factors to which nonwhite populations are disproportionately exposed. Accordingly, the purposes of this article are to inform pediatricians of some of the key contextual risk factors that might elevate black and Hispanic Americans' likelihood to use substances and to discuss selected protective mechanisms that may shield many members of these populations against substance use. Before addressing these broader issues, however, the article reviews briefly the epidemiology of alcohol and other drug use and related consequences among white, black, and Hispanic adults and youth.

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RACIAL/ETHNIC DIFFERENCES IN THE EPIDEMIOLOGY OF ALCOHOL USE AND ABUSE

Data from recent national surveys of secondary students indicate that lifetime, annual, 30-day, and heavier prevalence of alcohol and other drug use is generally higher among Hispanic 8th graders than among black and white 8th graders; by 10th grade, white and Hispanic students' alcohol and other drug prevalences are more comparable. By 12th grade (when there has been significant dropping out among Hispanic students) white students' prevalences typically match or exceed those of Hispanic students, whereas black students' use remains lower than that of the other two groups.⁶⁻⁹ For example, 30-day alcohol prevalences are 32%, 25%, and 19% among Hispanic, white, and black 8th graders, respectively.¹⁰ By 10th grade, white and Hispanic students' alcohol prevalences are identical (41%), whereas black students' prevalence (28%) is lower than that of the other groups. Among 12th graders, 55% of white students, 49% of Hispanic students, and 35% of black students report using alcohol in the last 30 days. The same general pattern of racial/ethnic differences by grade level differences exist in binge drinking (ie, having 5 or more drinks in a row in a single sitting in the last 2 weeks) and in the prevalence of drunkenness.

Among adults, recent national data indicate that annual and current alcohol prevalences generally are highest among whites, at an intermediate level among Hispanics, and lowest among blacks.^{11,12} For example, among adults 18 to 25 years of age, the white, Hispanic, and black 30-day prevalences are 65%, 50%, and 45%, respectively. Among 26- to 34-year-olds, 66% of whites, 56% of Hispanics, and 55% of blacks reported any alcohol use in the last 30 days. For Americans 35 years of age and older, the 30-day alcohol prevalences were 52% for whites, 47% for Hispanics, and 36% for blacks. In general, the prevalence of heavy drinking among white, black, and Hispanic adults is comparable with their patterns of 30-day use. It should be noted, however, that there are substantial gender differences in alcohol use patterns, with the within-racial/ethnic group differences being particularly large for black and Hispanic men and women. For example, data from the 1992 National Alcohol Study indicate that 28% of white men, 35% of black men, and 22% of Hispanic men report that they abstained from any alcohol use in the year before the survey. Among women, only 36% of white women abstained, compared with 51% of black women and 48% of Hispanic women. On the other end of the drinking spectrum (5 or more drinks, in a single sitting, once a week or more) Hispanic males had the highest prevalence (23%), followed by black males (15%) and white males (12%). Among females, heavy drinking prevalences were considerably lower, with 3% of white females, 5% of black females, and 3% of Hispanic females reporting alcohol use at this level. Trends in alcohol use from 1984 to 1992 suggest that black and Hispanic drinkers who drank heavily in 1984 were more likely than white drinkers to still be heavy drinkers

in 1992, that there were greater numbers of blacks and Hispanics than whites who became heavy drinkers during the period, and that the average number of drinks taken among heavy drinkers was generally higher among blacks and Hispanics than among whites, with these differences being particularly prominent among males.¹³

Relatively high levels of abstinence, coupled with patterns of heavy, sustained use among blacks and Hispanics who do drink, is consistent with the notion that there are "two worlds" of minority alcohol use, a relatively large abstaining and light drinking world, and a much smaller, heavy drinking world.¹⁴ This "two worlds" phenomenon may help to explain, at least in part, why black and Hispanic Americans experience higher levels of alcohol-related problems than their white counterparts, although their overall alcohol prevalence rates are comparable with, if not lower than, those of whites. The next section describes the nature and magnitude of racial/ethnic differences in alcohol-related problems and consequences in greater detail.

RACIAL/ETHNIC DIFFERENCES IN THE CONSEQUENCES OF ALCOHOL USE

Black and Hispanic youth and adults disproportionately experience a variety of negative mental, physical, and social consequences of alcohol use, although their levels of use often are comparable with, or even lower than, those of white Americans. For example, a large state-wide study of New York 7th- to 12th-grade students found that the average number of alcohol-related problems black and Hispanic drinkers experienced was higher than the number experienced by white drinkers, although black and Hispanic youth were less likely than were white youth to drink or to be heavy drinkers.¹⁵ The findings for black students who drank were particularly striking; these students experienced the highest average number of alcohol-related problems although they consumed the least amount of alcohol.

Similarly, among adults, there are significant racial/ethnic differences in alcohol-related mortality, morbidity, dependence, and negative social consequences, despite similar patterns of use. For example, relative to white people, black people disproportionately suffer many physical consequences of alcohol abuse, including cirrhosis of the liver, esophageal cancer, hypertension, obstructive pulmonary diseases, severe malnutrition and fetal alcohol syndrome.¹⁴ For many alcohol-related causes of death other than cirrhosis, Hispanics have been found to have similar or lower mortality rates than whites.³ One important exception to this general conclusion is the finding that the mortality rate among Hispanics from alcohol-related motor vehicle crashes exceeds that of whites and blacks.¹⁶

Beyond mortality, a series of recent studies suggest that black and Hispanic drinkers experience significantly higher levels of negative social consequences and a greater number of dependence-related problems than do white drinkers.¹¹ The dependence-related problems that past research has examined include admission to public substance abuse treat-

ment centers, the salience of alcohol seeking behavior, relief drinking, impaired control and symptoms of tolerance and withdrawal; the social consequences include financial problems, belligerence, legal problems, health problems, spousal problems, problems with other people, and job-related problems.^{11,14,17} Longitudinal analyses of racial/ethnic disparities in alcohol-related problems suggest that relative to whites, the experience of problems is more chronic among blacks and Hispanics, that there has been a greater increase in the percentage of blacks and Hispanics who experienced alcohol-related problems, and that the magnitude of the racial/ethnic disparities in several of the problems actually have increased over time.¹⁸

In summary, although patterns of alcohol and other drug use do not differ greatly across racial/ethnic groups, there are significant racial/ethnic disparities in the experience of problems and negative social consequences associated with the use of alcohol and other substances. Although the disproportionate experience of negative alcohol-related consequences among blacks and Hispanics has been reliably established, explanations for these findings are limited. Most research that seeks to explain racial/ethnic differences in substance use tends to focus on individual and interpersonal risk factors. What I suggest below, however, is that many of the racial/ethnic disparities in alcohol and other drug use patterns are attributable to racial/ethnic differences in socioeconomic status (SES) and to contextual level risk factors to which black and Hispanic Americans are disproportionately exposed.

RACIAL/ETHNIC DIFFERENCES IN RISK FACTORS FOR ALCOHOL AND OTHER DRUG ABUSE

There is a large and growing body of research on the risk factors and correlates of alcohol and other drug use and problems.^{7,9} These risk factors can be categorized into at least three broad domains: individual factors, interpersonal factors, and contextual factors. Individual-level risk factors include genetic predisposition, temperament, and personality characteristics such as sensation-seeking and positive attitudes toward and beliefs about substance use; interpersonal risk factors include substance use among family members and friends. Key contextual factors include laws and norms favorable to substance use, the availability of substances, and neighborhood poverty and disorganization.⁹ As noted above, most empirical research on racial/ethnic differences in alcohol and other drug use has focused on individual and interpersonal risk factors as key explanators for racial/ethnic subgroup disparities in use and problems. More recently, however, researchers have hypothesized and begun to test empirically models that suggest that much of the racial/ethnic disparity in heavy substance use and the disproportionate experience of substance-related problems are linked to: 1) racial/ethnic differences in various indicators of SES; and 2) racial/ethnic differences in exposure to contextual-level risk factors.

There are substantial racial/ethnic differences in virtually every measure of SES including income,

employment, poverty, net worth, and return on educational investment. In short, relative to white Americans, black and Hispanic Americans have lower incomes, are more likely to be unemployed, have less wealth, receive less pay for equal years of education, and are much more likely to live in poverty.¹⁹ For example, only 11% of white Americans live at or below the federal poverty level, compared with 28% of black Americans and 29% of Hispanic Americans. For children younger than age 18, the race gap in poverty rates is even greater, with 16% of white children living at or below poverty, compared with 40% of black and Hispanic children.¹ Given the fact that extreme economic deprivation has been found to be an important correlate of substance use and problems, a disproportionate number of black and Hispanic children, youth, and families clearly are at elevated risk.

Socioeconomic factors have been found to be important in helping to explain black–white differences in substance use and problems. In fact, recent research suggests that black adults' disproportionate experience of negative substance use related outcomes are strongly related to their economic disadvantage. For example, national data reveal that although economically disadvantaged black men experience more alcohol-related problems and consequences than do disadvantaged white men, high SES black men actually experience significantly fewer alcohol problems and consequences than high SES white men.^{18,20} Examining the relationship between SES (ie, educational attainment) and substance use among women, another recent study found that although similar proportions of black and white women who had not completed high school were heavy drinkers, black women with 12 years of education or more were significantly less likely than were their white counterparts to be heavy drinkers.²¹ Further, controlling for sociodemographic differences explained black women's initially higher likelihood to have a history of, or current, alcohol disorder.

Related to racial/ethnic differences in SES, there are significant differences in the social contexts and community environments in which black, white, and Hispanic Americans live. In addition to being more likely than white families to be poor, black and Hispanic families are significantly more likely to live in rural and urban areas of concentrated poverty—communities in which at least 20% of the residents are poor. In fact, four times as many blacks and three times as many Hispanics live in poverty areas than live outside of them.²²

Research on contextual risk factors for substance abuse, such as community-level indicators of poverty, laws, and norms that encourage use and the high levels of drug availability, clearly indicate the black and Hispanic Americans are at higher risk than white Americans. A recent study that examined the relationship between alcohol problems and racial/ethnic differences in individual and community-level poverty found that black and Hispanic men were twice as likely as white men to be in the lower classes and four times as likely to live in poor neigh-

borhoods. Black and Hispanic drinkers in poor neighborhoods reported higher numbers of alcohol-related problems than did white drinkers in poor neighborhoods, but only the difference between black and white men was statistically significant.²³ Insight into the higher levels of alcohol problems experienced by black men was provided through additional investigation of the characteristics of the high-poverty communities. Relative to white and Hispanic high-poverty areas, black poverty areas were characterized by lower family incomes, higher unemployment, higher population density, and greater numbers of retail alcohol outlets.²³

High levels of alcohol availability through the physical location of retail outlets is just one form of availability that characterizes black and Hispanic communities disproportionately. Past research has identified at least three forms of alcohol availability: physical, social, and economic.²⁴ Important aspects of physical availability are the location, number, and density of retail outlets that sell alcoholic beverages, and whether beverages are sold for off-premises use only or for on-premises consumption.²⁴ The on-premise/off-premise distinction may be important in that the drinking styles and consumption patterns associated with each are potentially very different. For example, on-premise establishments such as restaurants and taverns may sell alcohol but because of the relatively high per ounce cost of alcoholic beverages in these establishments and because the patrons of these establishments typically consume food along with their alcohol, excessive consumption and drunkenness may be less likely to occur. On the other hand, off-premise establishments such as "package" or liquor stores sell alcohol in large quantities, chilled, and ready for immediate consumption, be it on the street corner, in a nearby park, or in a motor vehicle. This type of drinking pattern is more likely to result in excessive drinking, public drunkenness, automobile crashes, and perhaps even physical altercations that result in injury or homicide. In fact, a study published recently found a strong relationship between the level of assaultive violence and the density of retail alcohol outlets in the community.²⁵

Two other important aspects of physical availability are the form and size of alcoholic beverage containers and the concentration of ethanol in the beverages.²⁴ Both of these aspects of physical availability are disproportionately marketed toward blacks and Hispanics in the form of high alcohol content 40 ounce, and more recently 64 ounce, malt liquor bottles.

The social availability of alcohol refers to the promotion of alcoholic beverages at the point of purchase, within the community, and in the mass media.²⁴ Both the scientific research literature and the popular press suggest that the social availability of alcohol is disproportionately high in black and Hispanic communities. For example, a report on the 25 largest urban markets indicates that >70% of the advertising money spent for the eight sheet billboards is directed at black Americans, and alcohol advertisements account for nearly 40% of that amount, second only to the amount for cigarettes.²⁶

Similarly, recent studies of billboard content found that black and Hispanic communities have significantly more billboards that feature alcohol and tobacco products than do other communities.^{27,28}

In addition to billboards, black- and Hispanic-oriented print media are another avenue through which alcohol producers increase the social availability of alcohol. A content analysis of 42 national magazines found that the four black-oriented magazines included in their sample exposed readers to almost 12% of the alcohol ads in the total sample, a percentage almost twice than expected, assuming that the advertisements were distributed equally across magazines.²⁹ Based on these findings, the authors concluded, "readers of these magazines [*Ebony*, *Jet*, *Black Enterprise*, *Essence*] are indeed exposed to a higher than expected number of alcohol ads" (p 458).²⁹ The study also revealed that alcohol advertisements in black-oriented magazines were 1) more likely than general audience magazines to expose readers to human models versus just the alcoholic product itself; 2) more likely to feature black models, a strategy that might enhance the readers' likelihood to identify with and thus emulate the model; and 3) more likely to use celebrity models, persons who "serve as powerful role models for inducing imitative behavior" (p 459).

The social availability of alcohol in black and Hispanic communities extends beyond billboard and magazine advertisements. Alcoholic beverage producers give their products high levels of social availability through their support of more black- and Hispanic-oriented charities, cultural activities, and community service efforts than perhaps any other private industry. Alcohol industry-sponsored activities include special history promotions, national concert tours, athletic competitions, bus tours, college scholarships, and other civic and cultural events targeted specifically toward blacks and Hispanics.^{26,30,31}

In addition to its social availability, alcohol's economic availability is also germane to the present discussion. Economic availability refers to the real price of alcoholic beverages in relation to disposable income and the cost of other beverages.²⁴ Cheap wine and malt liquors are widely available and aggressively marketed in black communities.²⁶ The physical, social, and economic "hyperavailability" of alcohol is clearly a contextual-level risk factor to which black and Hispanic Americans are disproportionately exposed.

Related to the availability of alcohol and other drugs is the racial/ethnic differences in exposure and opportunities that community residents, including youth, have to acquire and use drugs. Past research indicates that relative to white youth, black and Hispanic youth are more likely to 1) perceive that marijuana, cocaine, or heroin would be fairly easy or very easy to obtain in their community; 2) have seen someone selling drugs in their community occasionally or more often; and 3) report seeing people who are drunk or high in their community occasionally or more often.¹¹ Demonstrating the importance of racial/ethnic differences in availability as a key risk factor for racial/ethnic differences in use, a

recent study found that higher crack cocaine use among blacks and Hispanics relative to whites was completely explained away when community-level availability of the drug was controlled.³²

Laws governing who can and cannot use what drugs and under what circumstances are another set of contextual-level influences on substance use behavior. Ostensibly, the alcohol and other drug-related laws to which white, black, and Hispanic Americans are exposed are identical. And although this expectation may be true in theory, there is evidence that the ways in which the laws are applied vary depending on the racial/ethnic group to which one belongs. For example, there is evidence that retailers are significantly more likely to sell licit drugs to minors in black communities and to sell them to black minors, irrespective of community racial composition.³³

Policies that seek to minimize illicit drug use and drug-related harm also are often differentially applied across racial/ethnic groups. For example, despite laws mandating reporting of all women testing positive for drug use during pregnancy, doctors in Florida reported pregnant drug-using black women to authorities at 10 times the rate that they reported white women, although the women had similar levels of drug use.³⁴ Another example is provided by findings that highway police in Maryland used race as a primary characteristic by which to determine persons who should be stopped and searched. Between January 1995 and September 1996, 73% of I-95 motorists detained and searched by Maryland state police were black (20% were white) although black motorists made up only 18% of the motorists violating traffic laws and despite the fact that, statewide, equal proportions of black (28.4%) and white (28.8%) motorists were found with drugs.³⁵ Still another example of the ways in which the application of substance-related laws vary across race is the finding that black and white men were equally likely to have been arrested for driving under the influence of alcohol, although 27% of white men compared with only 10% of black men reported that they had driven a car when they were drunk enough to be in trouble if stopped by the police.³⁶ This disparity suggests that the communities in which black people live may be policed more heavily than the are communities in which white people live.

RACIAL/ETHNIC IDENTITY AND RESILIENCE AGAINST ALCOHOL AND OTHER DRUG USE

Although many of the factors that protect people from substance use and its related problems are probably the same regardless of racial/ethnic group membership, ethnic identity may be a particularly salient protective mechanism against the various contextual risk factors for alcohol and other drug use to which black and Hispanic Americans are disproportionately exposed. Key components of ethnic identity include common ancestral origin, common language, common religion, the use of ethnic media, membership in ethnic voluntary organizations, participation in ethnic social networks, and an attachment or affinity to the ethnic group to which an individual belongs.^{37,38}

According to Herd and Grube's³⁷ conceptual framework, social characteristics such as age, gender, immigration status, region of residence, and place of birth are hypothesized to influence ethnic identity; ethnic identity is hypothesized to influence cultural norms and values; and cultural norms and values are hypothesized to influence substance use behaviors. Consistent with their conceptual framework, Herd and Grube³⁷ found that the effects of the ethnic identity measures on blacks' drinking were primarily mediated through drinking norms and religiosity. More specifically, greater involvement in black social networks and higher levels of black awareness predicted more conservative drinking norms and higher levels of religiosity, both of which related to lower levels of alcohol use. Interestingly, exposure to black media tended to increase drinking, including heavy drinking. In consideration of the earlier discussion of the hyperavailability of alcohol in black-oriented media, this finding highlights the potential impact that advertising has on black Americans' alcohol use.

Recent research on the relationship between ethnic identity and substance use among Hispanics has focused heavily on the issue of acculturation,³⁷ which in this context generally refers to taking on the attitudes, beliefs, norms, preferences, and ultimately behavioral characteristics of the larger United States (ie, white) society. Although the specific impacts of acculturation vary by sex, age, and birthplace, the general effect of acculturation on Hispanics has been to liberalize their drinking.³⁷ Specifically, highly acculturated Hispanics have more liberal attitudes and norms toward alcohol use than do those who are less acculturated, and on average they are more likely to drink and to drink more heavily than their less acculturated counterparts.³⁷

In short, research on the relationship between racial/ethnic identity and substance use suggest that black and Hispanic Americans who hold more tightly to their traditional cultural norms, values, beliefs, and behaviors are less likely than their more acculturated peers to use substances and, as a result, might be less likely to experience substance-related problems. The role of racial/ethnic identity as a protective factor against alcohol and other drug use is clearly an important topic for future research, with potentially significant implications for the design of culturally specific preventive interventions.

CONCLUSION

Research on the use of alcohol and other drugs suggests that although racial/ethnic differences in the epidemiology of alcohol and other drug use are not large, there are significant racial and ethnic differences in the experience of negative mental, physical, and social health consequences associated with the use and abuse of drugs. Because substance-related problems impact black and Hispanic adults disproportionately, black and Hispanic young people, particularly those who are children of substance abusers, are at elevated risk for myriad problems. Although researchers typically focus on differences in individual and interpersonal factors as explanations for racial/ethnic disparities in substance use

outcomes, recent research suggests that socioeconomic and contextual factors may be as important, if not more important, explanatory variables.

Although this article generally has taken racial/ethnic differences in SES and exposure to contextual risk factors for substance use as givens, persons concerned with racial/ethnic disparities in health and well-being must question why these differences exist. Undoubtedly, racial/ethnic differences in poverty and community-level living conditions are rooted in the historical and contemporary racialized nature of American society. The racialized nature of American society is demonstrated by the fact that it has in the past, and continues to in the present, categorize, stereotype, prejudice, and differentially treat people based on their physiognomy—ie, physical features such as skin color, hair texture, and so forth.³⁹ The racialized nature of American society has systematically created and maintained significant differences in the social conditions and contexts of the various people of African, Latin, and European descent categorized as “black” and “Hispanic” and “white.”⁴⁰

Historical and contemporary racialized practices and ideologies inherent in American society influence racial/ethnic differences in substance use outcomes both directly and indirectly through their influence on the communities in which people of different racial/ethnic groups are placed, their influence on structure and process of people’s interpersonal relationships, and through the impact that they have on individuals’ psychology and behavior.⁴¹ And thus, although the emphasis of pediatricians’ and many other helping professionals’ work focuses on individuals and individual-level behaviors, these behaviors can be only properly examined, diagnosed, and treated when they are understood in view of the community and societal contexts in which they occur.

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Outcome Measures of Interventions in the Study of Children of Substance-abusing Parents

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ABSTRACT. Children of substance-abusing parents, including children of alcoholics (COAs), are one of the highest risk groups of youth for substance-abuse problems. For both genetic and family environmental reasons, COAs and children of drug abusers are very vulnerable to becoming alcohol or other drug abusers.^{1,2} With drug use rates increasing in the past 7 years,³ prevention practitioners must work harder to identify and evaluate effective ways to prevent future substance abuse in these at-risk children. Most prevention programs designed specifically for COAs or children of drug abusers have struggled with identifying, attracting, maintaining, and measuring outcomes.

This article focuses on general and unique measurement methods and instrument problems in prevention interventions for children of substance-abusing parents. Part I covers the need for improved measurement in research and practice with children of substance-abusing parents and recommended measures for different hypothesized outcome variables. Part II covers considerations in selecting measures, and Part III covers how to select measures. This article concludes with recommendations to improve measurement in research and practice. *Pediatrics* 1999;103:1128–1144; *children of alcoholics, children of abusers, tests and measures, diagnosis, risk factors.*

ABBREVIATIONS. COSAs, children of substance abusers; COAs, children of alcoholics; MTMM, multitrait-multimethod; SEM, structural equation model; NIDA, National Institute on Drug Abuse; FES, Family Environment Scale; SFP, Strengthening Families Program; BASC, Behavioral Assessment Scale for Children; CBCL, Child Behavior Checklist; MIS, management information system.

OVERVIEW OF NEED AND TYPES OF MEASUREMENT

Need for Intervention Outcome Research With Children of Substance Abusers

Importance of Valid Measurement of Interventions With Children of Substance Abusers

Children of substance abusers are the highest risk group of children for becoming alcohol and drug abusers for both genetic and family environment reasons.¹ With drug use increasing worldwide and in this nation in the past 8 years,³ we must improve our research knowledge and prevention services for COSAs. Scientific progress in improving our understanding of precursors of problem behaviors or health problems in children of sub-

stance abusers (COSAs), as well as designing and testing more effective prevention interventions for COSAs, is closely tied to our ability to identify and use valid measurement strategies. According to Johnson and associates, "Your answers to clinical, applied, or basic scientific questions about COAs depend on the quality of the data obtained from our assessments."⁴ Creation of a common language to communicate results of COSA research would help researchers and practitioners to be able to "compare findings and discuss, with confidence, reasons for commonalities and differences."⁴ Unfortunately, there has been little agreement about common measurement instruments to use in COSA research.

Within the Institute of Medicine⁵ system of classification of prevention approaches into universal, selective, and indicated approaches, prevention approaches for COSAs generally can be classified as selective prevention approaches because they are designed specifically for a known, at-risk group. If youth are recruited to the program only because they are identified or self-identify as children of alcohol or drug abusers, the type of prevention programs designed specifically for them is classified as a selective prevention program. However, if the program is designed for COSAs, who are known to be hyperactive, depressed, aggressive, or thrill-seekers, then the prevention program is classified as an indicated prevention program. Most prevention programs for COSAs are family-focused or school-based programs.

According to Adger, "The first step in intervention and treatment is identification."⁶ Identification of these children, however, is difficult for prevention programs in schools and communities. If the parents are in alcohol or drug treatment programs or self-help groups, it is easier to locate and recruit these children. However, only a small percentage of drug-abusing parents are in treatment programs. Because of the stigma of being a substance abuser, the parents and the children are less likely to allow themselves to be identified. Sometime the health, behavioral, or academic problems of COSAs bring them to the attention of professionals before the parental substance abuse is diagnosed.⁶

Goals and Objectives of the Article

1. To improve research and measurement in interventions for the prevention and treatment of substance abuse with COSAs.
2. To increase the sophistication in the development of the measurement model to match hypothesized precursors and ultimate alcohol and drug use.
3. To increase awareness of barriers to measurement that are unique to COSAs (lack of trust, denial, fear of reprisals) and propose possible solutions.

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4. To increase sensitivity to developmental, cultural, and gender issues in measurements, and to increase the use of more valid and reliable measures with ethnic populations of COSAs.
5. To increase sharing of knowledge of the best measures by domains and by the most common outcome change variables.
6. To encourage the use of some common measures to increase the generalizability of results across studies and to make meta-analyses more feasible.

History and Current General Practice of Intervention Outcome Measurement

Reviews of measurements currently being used in interventions with COSAs^{4,7} reveal little standardization and great variation in quality. Interventions that have been implemented recently in National Institutes of Health clinical trials are using multiinformant, multivariable measurement models, sometime called a multitrait-multimethod (MTMM) measurement strategy.⁸ Self-report measures are collected from multiple sources—the child, parents, teachers, program facilitators, and other adults—to improve triangulation of the data. Other objective data sources, such as archival school and police records, are sought, and videotaped and coded observations of family interactions are conducted. Dishion and associates⁸ have found considerable variance in data collected from these different data sources (parent, child, staff report), suggesting the need for caution in studies relying on single-source reports. By combining data from different sources on the same construct or variable, measurement error and monomethod bias can be reduced.^{9,10} Confirmatory factor analysis and structural equation modeling are used to validate constructs. Direct observations correlated with self-report data can be used to measure criterion validity, and objective school and police records can be used to measure predictive validity. The construct validation process is important and will demonstrate that not all sources are equally valid for different measures. For instance, a child's self-report of parental support and caring may be more predictive of later substance-abuse problems than objective coded observational data or the parent's perceptions or a teacher's observations. According to Fiske,¹¹ this construct validation process cannot be dealt with by a quick pilot study of only internal consistency, but requires careful MTMM analysis using correlational matrices.

In contrast to these high-quality research measurement protocols, evaluations of COSA programs that are practitioner/clinician-developed are using much less effective measurement methods including single-measure, self-developed tests. The worst possible example is when self-report, client-satisfaction measures are used as the only outcome effectiveness measures. It should be stressed that although client satisfaction is important, this is not an outcome measure. The ultimate outcome measures are drug-use measures or risk precursors, such as behavioral and emotional changes in the child. More distal outcomes (derived from locally derived, etiologic models) such as changes in family dynamics, parent drug use,

parenting, and peer and community environment also are acceptable change variables that should be measured. Direct observations of parent/child interactions are underutilized and could be used more frequently by researchers and clinicians to study microsocial transactional processes and for diagnostic purposes.

Even when a wide variety of precursor risk or protective factors are measured, there has been little use of common measures. In an extensive cataloging of measurement instruments used in 36 COA research studies using COAs behavioral assessment since the early 1960s, Johnson and associates⁴ identified over 70 different instruments used to assess COA risk and protective factors. Unfortunately, 80% of these instruments were used only once and only in one study, which hinders comparison or meta-analysis of results. The tests used most frequently include those presented in Table 1.⁴

Unfortunately, most of these measures are of internal COA behavioral, academic, and psychological variables, rather than external family, school, or community environmental variables, that precede symptoms of negative developmental trajectories in children. Johnson and associates conclude that most behavioral assessment strategies currently being used are not sufficient to “explore the predictive aspects of the developmental process in COAs.”⁴ They advocate for a developmental framework for assessing COAs' risk and protective precursors that would include multivariable assessment capable of determining subtle, yet important, divergences in normal developmental trajectories.

Dependent Measures for Intervention Research

Hence, it appears that COSA intervention research is deficient in measures of environmental context. In developing effective measurement models for COSA prevention programs, evaluators must measure valid precursors of alcohol and drug use. According to Dishion and associates,⁸ the field would profit from the development of a measurement model delineating developmental processes leading to adolescent problem behavior and serving as an intervention target. The selection of precursor variables to measure should be based on empirically tested models, not just theoretic assumptions. If prevention programs target the wrong precursors or the least salient precursors, the intervention will fail. Etiologic models suggesting the pathways to drug use^{12,13} help COSA prevention program designers to target and

TABLE 1. Most Frequent COAs Assessment Measures

School records or problems—5
COAs Screening Test—4
Peabody Individual Achievement Test (PIAT)—4
Hopkins Symptom Checklist—4
Wide Range Achievement Test—4
WISC-R or WAIS-R—4
CBCL—3
Connors Teacher Rating Scale—3
Family Environment Scale—3
Rosenberg Self-Esteem Scale—3
Nowicki-Strickland Locus of Control—3

measure the most important risk and protective factors.

Reviews of risk factors for alcohol and drug abuse can be found in reports by Hawkins and colleagues^{14,15}, and by Wright and Wright.¹⁶ Specific risk factors for COSAs can be found in Kumpfer,¹ Johnson and Leff,¹⁷ and Tarter and Mezzich.²

Because currently we can do little to change genetic risk for alcoholism or drug abuse in COSAs, changing the family or peer social environmental risk is the most feasible approach to reducing overall risk. If this is so, what are the primary environmental

risks to target and measure in a COA or COSA prevention program?

Measurement of Parent and Family Precursor Variables

The Social Ecology Model of Adolescent Substance Use structural equation model (SEM) data suggest that parents have an early influence on the developmental pathways toward alcohol and other drug use.¹⁸ Hence, living with an alcohol- or drug-abusing parent puts these children at great risk. However, what is it about families with an alcohol-abusing parent that puts these children at in-

TABLE 2. Measures by Source and Domain

Child	Therapist/Teacher	Parent
Child		
Child alcohol/drug use American A&D Survey (39 items) (Oetting et al, 1988)	Child alcohol/drug use	Child alcohol/drug use NIDA 30-day quantity and frequency
Expected negative consequences (3 items)		
Expectations to use (3 items) (Kumpfer)		
Positive expectancies (Dunn & Goldman, 1996)		
Child or parent depression, self-esteem or self-concept YSR	Child or parent depression, self-esteem or self-concept YSR, therapist version	Child or parent depression, self-esteem or self-concept YSR, parent version (Achenbach & Edelbrock, 1988)
Social skills SSRS (Gresham & Elliott, 1990)	Social skills SSRS, teacher version	Social skills SSRS, parent version
Conduct disorders and self-regulation Delinquency, self-report National Youth Survey (Elliott)	Conduct disorders and self-regulation BASC Teacher Rating Scale—hyperactivity/aggression	Conduct disorders and self-regulation BASC parent rating scale—hyperactivity/ aggression
CBCL—YSR, (Achenbach & Edelbrock, 1988)	YSR, teacher report—aggression/conduct disorder	YSR, parent report—aggression/conduct disorder
Peers		
Peer influence SPP SSNU (8 items) (Pentz/Barrera, 1986)	Peer influence SPP (Dielman) SSNU (Barrera)	Peer influence SPP (Dielman, et al, 1992, 7 items) SSNU (Barrera)
Peer tobacco use (Jessor & Jessor, 1997)		
School		
Academic competency School report cards (grades)	Academic competency	Academic competency Parent homework involvement (FASTTRACK)
School bonding Effective schools battery (Gottfredson, 1990)	School bonding	School bonding
Report cards: attendance, tardy		
School climate Effective school battery, climate scale on child version (Gottfredson, 1990)	School climate	School climate Report on School Climate (FASTTRACK, COIE)
Family		
Parenting skills Family management (8 items) (RHC, Catalano, 1993)	Parenting skills	Parenting skills Family management (RHC, Catalano, 1993)
Alabama Parenting—Child Version (22 item version) (Frick, Tolan, 1996)		Alabama Parenting Questionnaire (Sheldon, Frick & Wooten, 1996)
Family environment Moos Family Environment (FES)—Child Version (30 items) (Moos, 1994)	Family environment FES (conflict, communication, organization scales)	Family environment FES, parent version (Moos, 1994)
		Family Assessment Measurement (47 items) DUSI-R-FS (15 items) (Tarter)

YSR indicates Youth Self-Report; SPP, Susceptibility to Peer Pressure; SSNU, Social Support for Non-drug Use; SSRS, Social Skills Rating System; DUSI, Drug Use Student Inventory.

creased risk? Listed below and in Table 2 are some of the major family variables that could be measured and how they can be measured, and the etiologic findings suggesting their link with later alcohol and drug use.

Family Norms About Use

Although many empirically tested etiologic models^{13,19,20} find that peer cluster influence is the final precursor of initiation of alcohol and other drug use, parental disapproval of alcohol use is a major reason not to use.²¹ Because of parental role modeling and family norms, which show that drug use is useful socially and to reduce stress, COSAs frequently are missing this critical protective factor in their homes.

Recent research suggests that beliefs about drinking or alcohol schemas are impacted significantly by exposure to alcoholic parents even as early as preschool.²² Gaines²³ reports that parents pass on to their children meta-cognitions about drinking goals, beliefs, expectancies, and rule-bound social competencies. Additionally, the less mature reasoning of COAs appears to be related to increased television watching including more modeling of drinking on TV and less parental interpretation of why people drink. Increasing parental supervision of TV, and parental communication of the negative consequences of alcohol use through family-focused interventions, should help reduce these cognitive risk factors in COAs.

All the researchers noted have developed research measures that can be used to measure these constructs. Dunn and Goldman have developed a positive expectancies measure that could be a way to monitor the changes in the impact of family and peer norms on the COSA. The Monitoring the Future test³ also includes a 3-item Expected Negative Consequences scale. The Oetting and associates²⁴ American Alcohol and Drug Use instrument is a well-used measure for the youth's actual substance use, perceived harm, peer encouragement, and actual consequences. It also contains an optional insert that includes psychosocial and cultural correlates of substance use.

Parental Alcoholism or Drug Dependency

A number of researchers² have reported a relationship between recent parental alcoholism and increased COA psychopathology and alcohol use. Although current parental alcoholism and alcohol or drug use should be measured, a number of researchers believe that parental alcohol and drug use status or diagnosis of alcohol dependency does not elucidate sufficiently family dynamics leading to drug use or positive targets for interventions in prevention programs. Measures for parental alcohol and drug use include the 30-item Children of Alcoholics Screening Test (Jones), which includes the self-report of the child. The parent also could be asked to complete National Institute on Drug Abuse (NIDA) 30-day quantity and frequency measure or a Short Michigan Alcohol Screening Test.²⁶

Disturbed Family Relationships

Johnson and associates²⁷ suggest the relationship between the parent's alcoholism and the COSA's later use patterns may be more a function of disturbed family relations than of the parent's alcohol status. A Resiliency Model of Family Stress, Adjustment and Adaptation, proposed by McCubbin and associates²⁸ also stresses the importance of family functioning and categorizes families into topologies based on their family functioning. McCubbin and associates have developed measures for each of these family variables using FACES, Family Coping Strategies, and Family Inventory of Life Events and Changes instruments.

Parent/Child Relationship or Affective Quality

The quality of the parent/child relationship has been cited frequently as a critical variable in the intergenerational transmission of alcohol and drug use.²⁹⁻³¹ Parental influence on children is frequently dichotomized into relationship quality or discipline/monitoring.⁸ Reanalysis of the Cambridge-Somerville data found these two dimensions of parenting most predictive of delinquency.³² The etiologic research of Gerrard³³ partially supports this, because she reports that parent/child relationship has a greater SEM β weight with alcohol peer group influence than the parental drinking status ($\beta = .33$ vs $.28$). Family relationships also can be measured using a 15-item family scale on Tarter's Drug Use Student Inventory.² Relationship affective quality is also measured by structured coding of videotapes by raters of the family's behaviors in structured family tasks and the overall impressions of these raters of the family's mutual acceptance and lack rejection. The Family Activities Checklist³⁴ containing 28 activities that parents and children enjoy doing together also can be used.⁸

Family Conflict and Cohesion

Although Hughes and Gutkin³⁵ have questioned their passive consent methodology, the Havey and Dodd's³⁶ study also supports this conclusion by finding that family conflict, lack of family cohesion, and stressful life events, but not COA status per se, were the best predictors of early experimentation with alcohol, drugs, and tobacco. Hops³⁷ reported that low family cohesion, low playground reciprocity, and number of surrounding adults using alcohol in elementary school children lead to increased alcohol use at age 14. The Moos Family Environment Scale (FES) is one of the most frequently used self-report measures of family environment. The FES includes 10-item scales for family conflict, family cohesion, family communication, and family organization, which the author finds sensitive to positive change in COSA family interventions.⁷ Tolan and associates³⁸ use their Family Assessment Measure, which reduced the FES to 47-items.

Parental Support

Parental support has been found to be one of the most powerful predictors of reduced alcohol and other drug use in minority youth.³⁹

Family Communication Style

In a very large sample ($N = 4100$) of Hispanic and white adolescent school youth, Baer⁴⁰ reported significant relationships between maternal communication style; other family variables (family stress, family conflict, family status, and maternal monitoring); and proximal variables of alcohol use and peer use. Although these distal family environmental variables mediated significantly whether a COA would choose to associate with alcohol-using peers, there was also a small ($\beta = .13$) direct pathway from mother's alcohol use status to adolescent's alcohol use. Earlier, the author found this result in a Hispanic youth sample, but not in a white youth sample, in which all family variables were indirect paths mediated by self-esteem, school bonding, and peer use.⁴¹ The FES or direct codings or videotapes or observations of structured family situations or problem-solving situations have been used primarily to measure this variable.⁴²

Parental Monitoring and Supervision

Recently, there has been increasing evidence that a major mechanism mediating between family variables and peer use (the final pathway to drug use) is parental supervision.⁴⁰ Chassin and associates⁴³ report significant SEM pathways from parental alcoholism to increased stress, depression, and decreased parental monitoring leading to increased substance use in adolescent COAs. Also, Dishion⁴⁴ and Hansen and associates⁴⁵ have found decreased parental supervision to be a major mediator of increased negative peer influence. Using path analysis (SEM), Ary and colleagues⁴⁶ found direct paths not just from the frequently found "peer deviance" latent variable cluster to problem behaviors (ie, alcohol and other drug abuse, antisocial behavior, high risk sex, and academic failure), but also directly from "parental supervision" to problem behaviors including alcohol and drug use.

Measures of parental supervision and monitoring are discussed by Dishion and associates⁸ including self-report and observational coding measures, including the Family Process Code⁴⁷ and the Pencil and Paper Code⁴⁸ used at the Oregon Social Learning Center. Personal interviews and telephone self-report interviews ask parents and teens about parental monitoring. Staff members using the Family Process Code and Pencil and Paper Code are asked to rate how well the parent seems to monitor the child or to know the child's whereabouts.

Parenting Skills

A number of COSA interventions, such as my Strengthening Families Program (SFP),⁴⁹ target improved parenting skills as a way of improving parental supervision and effective discipline. Useful measures of parenting skills include the SFP Parent Interview Questionnaire,⁵⁰ the 8-item Family Management Scale,⁵¹ and the Alabama Parenting Questionnaire (child, parent, and teacher versions) as modified by Frick and Tolan. The Alabama includes scales for parent involvement, positive parenting,

monitoring and supervision, inconsistent discipline, and corporal punishment.

Differential Family Acculturation

In immigrant families, another major risk factor is differential family acculturation.⁵² If the children become more westernized and reject the traditional ways of their parents, family conflict increases, leading to increased drug use in the children. Szapocznik and associates have developed a measure for differential family acculturation.

These results suggest that not all alcohol and drug misuse family risk processes are mediated by deviant peer involvement, because some family risk process variables have a direct impact. Hops³⁷ concludes based on existing etiologic research that to have impact on high-risk youth, we must focus on distal variables (like family dynamics) because proximal variables affect only low risk youth.

Summary of Family Risk and Protective Factors to Measure

The primary family risk factors include parent and sibling alcohol and other drug use, poor socialization, ineffective supervision and discipline, negative parent/child relationships, family conflict, family stress, poor parental mental health and differential family acculturation, and poverty.⁵²

Family protective factors^{53,54} include one caring adult,^{29,55} emotional support, appropriate developmental expectations, opportunities for meaningful family involvement, support for dreams and goals, setting rules and norms, maintaining strong extended family support networks, and other protective processes.

Social Environment (Community, School, Media, Peer Group)

Other critical variables that preceded drug use according to the Social Ecology Model of Adolescent Substance Use¹⁸ include school climate, school bonding or attachment, and association with alcohol- or drug-using friends.

Peer Influence

Most etiologic models^{13,18-20,56} find peer influence is the final pathway to initiation of drug use. Because many drug prevention programs seek to modify youth's susceptibility to peer influence, measures should be taken of changes in peer influence, such as the 7-item Susceptibility to Peer Pressure scale used by Dielman and associates in their school intervention research. Because peer support for nondrug use also is important, the 8-item Social Support for Nondrug Use⁵⁷ is recommended. Peer use of drugs or alcohol also should be measured using self-report of the COSA, because perceptions of friends' drug use appears to be more critical than the actual drug use.

School Bonding or Attachment and School Climate (BASC)

Bonding to school has been found to be an important protective factor in preventing drug use.^{15,18} This is an even more important variable to measure in COSAs because of their increased need for positive socialization. The Effective Schools Battery⁵⁸ mea-

tures not only attachment to school, but also educational expectations, school effort, school involvement, positive peer associations, and clarity and fairness of school rules. The Behavioral Assessment Scale for Children (BASC) (Reynolds and Kamphaus) also has been used as a self-report measure for school bonding, using its "Attitude Toward Teachers" and "Attitude Toward School" scales. Other direct indicators of school attachment could include attendance, times tardy, and negative incident reports. However, with COSAs, the first three measures might not reflect the child's attachment and liking of school because the child may miss school or be late because of the parent's drinking or drug use.

Academic Competency

Another indicator of school involvement and liking school would be grades; however, these can be biased because of reduced verbal or overall academic competency because of fetal alcohol or drug syndrome or milder developmental effects. According to Johnson and associates, a number of studies with COSAs measure achievement using the Peabody Individual Achievement Test and Wide Range Achievement Test. The Wechsler Intelligence Scale for Children-Revised or WAIS-R has been used in some studies to measure intellectual capacity.

Negative Developmental Trajectories

Youth who begin using and abusing substances generally have earlier behavioral and emotional signs of negative developmental trajectories. For this reason, interventions for COSAs should monitor:

1. *Youth Social Skills Development* using the Social Skills Rating System⁵⁹ or BASC-Self-report (Reynolds and Kamphaus).
2. *Youth Depression, Self-esteem, or Self-concept* using the Achenbach and Edelbrock⁶⁰ Child Behavior Checklist60 (CBCL) or Youth Self Report depression scale and Piers-Harris Children's Self-concept Inventory or Coopersmith Self-esteem Inventory for older youth.
3. *Conduct Disorder/Self Regulation* addresses problems in self-regulation and conduct disorders, which appear in children prone to substance abuse. The CBCL scales on conduct disorder and aggression are useful to measure these constructs.

Research suggests the probability of a child's developing problems increases rapidly as the number of risk factors increase^{61,62} compared with the number of protective factors.^{62,63} When children and youth are continually bombarded by family problems, their probability of becoming substance users increases.⁶⁴⁻⁶⁶

These etiologic models support the need for COSA prevention programs targeting improvements in distal environments that have a pervasive and long-term influence on COSAs, such as family and social environments (peer, community, cultural, media, and school). Intervention models are needed that can demonstrate improvements in many of these precursors for later drug use. Research is needed that will

determine the risk or protective factors that are most amenable to change and that can produce the largest reductions in later drug use.

Importance of Improved Intervention Research on COSA Parents

Both NIAAA and NIDA are desirous of funding more intervention research for the prevention of alcohol and drug abuse in COSAs. They want to move beyond preintervention research to intervention research that will help the profession separate more effectively the influence of genetic and environmental research factors and to prevent future abuse in these high-risk children. Rose⁶⁷ has hypothesized based on his genetic research that, "Genetic effects are more powerful once one begins drinking, but environmental effects are more influential in predicting abstinence. The choice to use and begin use is not genetic, but more influenced by their family and school environment."⁶⁷ A major challenge then is to support high-risk COAs or COSAs to not begin use by changing their family and social environment.

The ability of school-based and community-based selective prevention programs to impact COAs has been equivocal, partially because of problems in screening and identifying COSAs as discussed by Werner and colleagues⁶⁸ and Emshoff and Price.⁶⁹ Unfortunately, problems exist with children of non-substance-abusing parents self-identifying as COSAs so they can join the group, thus increasing the percent of false-positives. Also, the real COSAs do not want to self-identify, thus increasing the percent of false-negatives. One way to avoid this problem is to work with identified substance-abusing parents in treatment programs or self-help groups using family-focused programs that also involve children-only groups. Another solution is to provide universal school-based programs that do not rely on pull-out programs for self-identified COSAs, but include content useful for both COSAs and non-COSAs. Also, with supportive health care professionals or teachers, COSAs can be encouraged to self-identify as COSAs.

Fortunately, there are powerful family interventions that appear capable of changing family dynamics and parenting enough to modify onset risk factors in COAs.^{52,70} According to Robert Zucker, a noted researcher in family interventions, the best place to spend limited research funds is in reducing aggression, out-of-control behavior, and inappropriate parental role modeling through a Patterson-type behavioral parenting program. Zucker and associates^{71,72} have had good success in reducing risks for alcohol use in preschool COAs through a 12- to 16-session behavioral parenting intervention combined with marital problem-solving. Kumpfer and associates have developed a comprehensive family intervention for COSAs, the Strengthening Families Program,⁴⁹ that has proven effective in reducing risk factors; increasing resilience; and decreasing actual alcohol, tobacco, and drug use among elementary school COSAs across many different cultural groups (for review, see Kumpfer et al, 1996). This family intervention combines a 16-week Patterson-type be-

havioral parent training program with a children's social skills training program, and a family relationship-enhancement program. The program is generally conducted at churches, schools, or community centers in weekly sessions that take 2 to 3 hours each.

Measurement of Different Types of Intervention Research

Valid outcome measurement of interventions for COSA parents depends partially on the types of dependent variables measured in the research. There are at least four distinctly different types of outcome research, and despite some overlapping outcome measures, each tends to focus on its own types of dependent measures. These four types of measures in research include 1) measurement in etiologic theory testing research, 2) outcomes of interventions, 3) covariate outcome research, and 4) health services research. Measurement for each of these different types of research is presented below.

In addition to measurement of effectiveness in true randomized clinical trials of prevention or treatment interventions for COSAs, preclinical (NCI phases I and II) and postclinical research (NCI phases IV and V) are needed to bring the most effective interventions to clinical practitioners (Table 2). Measurement is important for both etiologic research on precursors of substance use and outcomes of interventions, because causal research is needed to determine the primary risk and protective factors to target in treatment and prevention-intervention programs. Additionally, considerable internal analysis is needed for health services research of interventions to help interpret the outcomes of randomized clinical trials or demonstration/evaluation research. Hence, quality measures are needed for both etiologic and outcome research analyses.

Etiologic Theory Testing Measurement Issues

Measurement issues in etiologic research include valid measures of primary precursors. Etiologic research involves intake data and longitudinal annual follow-ups to be used for etiologic theory testing of the mediating pathways between major hypothesized domains of risk or protective factors/mechanisms. The Social Ecology Model of Adolescent Substance Abuse organized these major precursor domains by family; community; culture; school climate; internal characteristics of school bonding/achievement; and self-efficacy, peer group, and substance use/abuse in youth.¹⁸ Generally, SEM testing is conducted on the waves of longitudinal data to test competing models of precursors of drug use in COSAs.

Currently, exemplary etiologic research on precursors of substance use is being conducted by NIAAA- and NIDA-funded researchers such as Baer,⁴⁰ Gerard,³³ and Hops and associates.^{37,46} Chassin and associates also are conducting excellent research on precursors of drug use in COAs.⁴³

A major measurement problem in etiologic research is locating valid and reliable measures of constructs hypothesized to be primary precursors of alcohol and drug use in COSAs. Valid measures are

those that accurately measure the variables or constructs they are intended to measure in the specific target population. There are three types of validity: content or face validity, criterion-related or predictive validity, and construct validity. Reliable measures are those that consistently measure these variables or constructs. There are two different types of reliability, ie, stability (true measurement with low measurement errors) and internal consistency of all items in a scale to measure the same construct. Very few standardized measures check the validity of their measures, particularly in ethnic populations. On the other hand, most measures check the internal consistency of their scales using Chronbach's internal consistency α statistic,⁷³ which is easily available in SPSS computer software. Very few test developers go one step further to check for stability over time using test-retest reliability.

Although there are reasonably good measurement instruments for family and individual psychological and emotional characteristics, it is very difficult to find good measures for cultural constructs (cultural pride, cultural competency); social competencies (problem-solving, decision-making, social skills); and community context and bonding. Additional issues in etiologic measurement include age-appropriate measures because the youth are maturing during the study and a measure valid for one age will not be valid for another age. Sometime there are measures that have different versions for different developmental stages.

Because genetic and biologic differences are hypothesized to differentiate many COSA, particularly children of Type 2 alcoholics, valid measures of physiologic and genetic constructs must be located or created. Assessment of family history of prior alcohol and drug abuse or dependency is critical for etiologic research. Physiologic laboratory measures can be used for autonomic nervous system functioning (ie, heart rate, galvanic skin response, respiration) and central nervous system including brain waves and evoked potentials. Other important etiologic measurement constructs are temperament traits,⁷⁴ thought to be closely related to inherited biologic status, such as thrill-seeking, hyperactivity, and rapid tempo. Each of these constructs require measurement and each of these types of measures have their own set of measurement issues, which are too complex to cover here.

COSA Intervention Research Measurement Issues

The primary risk vulnerability mediators frequently measured in studies of outcomes of treatment or prevention interventions should reflect the major deficits found in the etiologic research and subject change variables hypothesized. The goal is to improve these risk precursors and strengthen protective factors and processes. Frequent constructs or variables measured include negative peer involvement; school failure; school bonding and attachment; low self-esteem; conduct problems and lack of behavior control; poor social skills; inconsistent and ineffective parenting (monitoring, supervision, discipline, positive rewards); parental and sibling role

modeling of substance use or abuse; poor parental mental health; family environment (eg, conflict, communication, cohesion, organization, stress, poverty); and community and cultural environment.

Valid and reliable measures generally are available. Kumpfer and associates⁷⁵ provide an inventory of measurement instruments by dependent variable useful in prevention-intervention research in their CSAP monograph, *Measurements in Prevention: A Manual on Selecting and Using Instruments To Evaluate Prevention Programs*. A NIDA research symposium on measurements for family interventions the author organized at Snowbird, UT, in October 1996, identified the most effective parenting measures⁷⁶ and family measures.⁴² A discussion also was held of the cultural issues in measurement, which are substantial and are discussed in more detail below.

Alcohol and drug use constructs can be measured in a number of ways: quantity and frequency of use (lifetime, annual, 30-day, and daily); consequences of use; and dependency for different types of alcohol and drugs. Age of first use and regular use are also a useful indicator of risk status since youth who begin use earlier appear to be at higher risk for later serious abuse problems. In addition, expectations to use, positive meta-cognition,²³ and alcohol schemas or expectancies are becoming popular precursors of substance use to be measured and precursors to modify in intervention research with COSAs.

These basic risk factors should be reduced significantly by completion of a prevention or treatment intervention. The proposed outcomes should last at least a few years, which means measurement in a longitudinal design. Booster sessions are currently becoming popular as effective ways to extend the effectiveness of prevention or treatment interventions as well as to allow for less costly and more efficient ways to collect longitudinal data on the long-term outcomes of interventions for COSAs.

Covariate Intervention Outcome Measures

In addition to addressing the overall effectiveness of programs specifically for COSAs, research should be directed toward better understanding of which types of clients benefit most from different interventions. It is possible that some prevention or treatment interventions will be differentially effective with different types of parents or youth. Therefore, outcome subanalyses should be conducted by participant covariates to determine whether the COSA interventions are more or less effective for different types of participants or families using post hoc, statistical quasiexperimental analyses as recommended by Cook and Campbell.¹⁰ Covariates investigated can include parent and child gender, ethnic status or group, level of parent alcohol or drug use, parental depression, educational status, single versus two-parent families, parent criminal status, the child's baseline level of dysfunction, and program site. Variables found predictive of better preschool COA behavior change because of participation in behavioral parent training include participation by both parents⁷¹ and maternal treatment investment.⁷²

Issues in measuring covariates of outcomes for

interventions with COAs include locating the best measurement instruments for these individual and program characteristics. Because many of these are family and child demographic measures, it generally is not as difficult to locate valid and reliable measures. The major issue in measuring these demographic variables is sensitivity of the respondent to disclosing this personal information. Hence, missing data from nonresponding is common for measures of variables, such as income, criminal status, parental drug use, and sometime religion, on the baseline needs assessment or pretest.

Health Services Research Intervention Outcome Measures

A strong process evaluation should be designed to examine critical intervention implementation processes to help for new knowledge generation concerning the links between intervention implementation variables and outcomes. These analyses can be accomplished by comparisons of process data with outcome data. The objectives of health services research can include examination of 1) differential recruitment and attrition rates for prevention and treatment interventions across treatment agencies and client characteristics (eg, ethnicity, level of alcohol abuse, child dysfunction level, etc); 2) variables leading to increased program involvement; 3) differential consumer satisfaction and participation rates compared with outcomes; 4) factors related to fidelity of the program implementation between treatment agencies; 5) the impact of trainer variables (eg, years of experience, delivery competence, perceived warmth and supportiveness by clients and evaluators) on program process and outcome variables; and 6) other agency and staff variables by means of force field analyses impacting implementation quality.

Measurement issues in health services research of internal program implementation generally revolve around the development of a management information system (MIS) for documenting program services, client involvement, staff involvement, and units and types of services provided. Model MIS systems can be located by contacting other alcohol and drug treatment agencies who are operating computerized systems on research or Center for Substance Abuse Prevention or Center for Substance Abuse Treatment (CSAT) demonstration/evaluation grants.

One major type of health services research is cost-effectiveness or cost-benefit analysis of the intervention. Administrators of funding sources are increasing their interest in knowing whether the benefits of the intervention outweigh the costs. Despite recommendations made early in the field to conduct cost-effectiveness analyses,⁷⁷ few quality cost-benefit analyses have been conducted of treatment or prevention interventions.⁷⁸ According to Kim and associates,⁷⁹ after conducting a retrospective cost-benefit analysis of many substance-abuse prevention programs including those for COSAs using a macrolevel prospective, they concluded that the benefits outweigh the costs of prevention of drug abuse 15:1. However, no prospective, rather than just retrospective, cost-benefit prevention outcome study has yet

been conducted. Hence, the substance-abuse prevention and treatment field currently is lacking in prospective cost-benefit studies. To measure these constructs accurately requires developing an MIS to track costs and potential economic cost savings from the beginning of the outcome research.

Results of Outcome Intervention Studies for COSAs

Outcomes of intervention research with COSAs suggest that by changing the children's early family and school environments, risk factors for use can be significantly reduced. One promising area is changing the parent's ability to monitor, supervise, discipline, and reduce negative role modeling of alcohol and drug use. I have found that parent and family skills training can produce immediate positive impacts on these mediating risk factors for alcohol and drug use in elementary school COSA parents.⁷ Social learning theory⁸⁰ suggests that youth need exposure to positive adult role models, such as parents, teachers, and COA group leaders, who can provide them with opportunities to learn behavior skills, social competencies, and higher levels of moral thinking.⁸¹ Research⁸² suggests that COAs whose fathers have stopped using alcohol or have no continuing alcohol-related consequences manifest the strongest relationships between self-control reasons for abstaining or limiting drinking and substance use. These COAs perceived more negative effects of alcohol and greater risk for future drug problems if they used.

Results of promising interventions for COSAs are reviewed by Emshoff and Price.⁶⁹ To measure outcomes in these promising intervention models, the new intervention outcome research is becoming considerably more complex. One of the reasons for this increasing methodologic sophistication is the need to address more risk and protective factors identified in the etiologic research through comprehensive interventions. In addition to more complex measurement models, new intervention research involves more advanced instruments; data collection from multiple informants (children, parents, teachers, and therapists); more advanced process and fidelity measures; and newly emerging data analysis methodology, such as SEM, latent growth modeling, hierarchical linear modeling, and other newly emerging statistical methods not used in previous research.

To be competitive, new outcome studies must propose to have follow-up data for up to 3 years within their 5-year grant period. If intervention research is targeted to young children between 7 and 11 years of age, by the end of the longitudinal study the children would be 12 to 16 years of age, which is old enough to expect the use of tobacco, alcohol, and other drugs in such high-risk COAs.²⁷ Chassin and Barrera⁸² have found COAs to have the steepest escalation in their drug use in a 3-year longitudinal study of 246 adolescent COAs and 208 control subjects within the same age group proposed in this study (10.5 to 15.5 years of age). Of course, the older COAs showed the steepest escalation in alcohol and other drug use. Such longitudinal studies require measures that are valid and reliable for children spanning a wide age range within a single longitudinal study.

Some etiologic research suggests parenting and family interventions that improve family conflict resolution, family involvement, and parental monitoring should reduce problem behaviors, including alcohol and other drug abuse.⁸³ Parenting skills training programs are effective in reducing coercive family dynamics⁸⁴⁻⁸⁶ and improving parental monitoring.⁸⁷ Dies and Burghardt,⁸⁸ in a review of COA prevention programs, report that the majority of school-based COA programs are too short term to address the core issues that trouble COAs. Therefore, to have lasting impact, parents' behaviors toward their children must be modified. Many researchers⁸⁹ believe improving parenting practices is the most effective strategy for reducing adolescent substance-abuse and associated problem behaviors.

As mentioned above, Zucker⁹⁰ believes there is no better place to invest in prevention than with parent training programs for high-risk children, such as COAs. Hops³⁷ defined parenting skills programs as those that change a parent's behaviors in three critical areas: 1) modeling of negative behaviors, such as alcohol misuse; 2) failure to reinforce or reward positive behaviors in children; and 3) failure to organize children's lives to provide opportunities for them to learn prosocial skills and competencies. SFP supports improvements in all three of these areas.

Need for Culturally Tailored Family Intervention Programs

Research suggests that culturally appropriate prevention interventions are more effective.⁹¹ Moran⁹² reports that we need specific prevention approaches, not just generic approaches that currently dominate the prevention profession. The Strengthening Families Program for COSAs has been culturally modified and evaluated in separate CSAP demonstration/evaluation projects for rural African-American COSAs (Alabama), urban African-American COSAs (Detroit),^{93,94} Hawaiian COSAs,⁹⁵ Hispanic COSAs (Denver),⁹⁶ and rural preteens in Iowa.^{7,70} Results of the comparison of the generic SFP with minor cultural modifications compared with a substantially revised SFP showed that the first version with minor cultural modifications was more effective. The possible reason for this counterintuitive result is that the dosage of the behavioral parenting, family, and children skills training component was reduced from 14 to 10 sessions to add 10 sessions on family values. Possibly, by reducing the behavior change sessions, the revised program becomes less effective in behavioral change. Hence, core content of model programs shown to be effective should not be removed when making cultural revisions.

CONSIDERATIONS IN SELECTING OUTCOME MEASURES

What Should Be Measured?

The variables hypothesized to change because of the intervention (the independent variable) are the most important dependent variables to measure. Those hypotheses should match the evaluation questions to be answered by the program evaluation or intervention research. Hence, to determine the im-

pact of the program on actual tobacco, alcohol, and drug use, these ultimate outcomes should be measured. Whether to measure them extensively or only briefly depends on the age and expected use levels. For example, with young children, it might not be best to request information on a full range of possible drugs that could be used, but only the gateway drugs or drugs primarily used by the parents. Also, lifetime use or annual use rates may be more useful than daily use rates that are likely to be zero.

If the hypothesis is that the program content should change other intermediate risk or protective variables, these should be measured as well. For instance, if the hypothesis is that the content or curriculum of the intervention changes discipline and parent/child relationships, then these also should be measured. Be sure that the program has sufficient dosage (ie, total number of contact hours including practice and required homework) to clinically change these hypothesized variables. In general, hours of child or parent education are less likely to result in measurable behavioral changes than hours spent in behavioral skills training. It is also wise to measure unintended outcomes as well that could occur—both positive and negative effects based on suggestions in the research literature or anecdotal evidence.

Other data to be collected in the testing battery should include demographic data and covariates that could affect who benefits most from the intervention. Some prevention interventions that appear to have no overall effectiveness on COAs are indeed effective for a subset of children, but this is only discovered through analysis by these separate groups. For instance, Dielman and associates⁹⁷ found that their alcohol prevention program was most effective for a subgroup of students who were allowed to drink at home. These youth had the steepest rise in alcohol use rates and benefited the most if they participated in the school-based program.

In an attempt to improve comparability of results in etiologic and intervention studies, Johnson and associates⁴ recommended six areas or causal links of risk for alcoholism in COAs that should be measured. These risk factors were derived from the research of Zucker and Fitzgerald⁹⁸ and include:

1. Antisocial behavior or aggression;
2. Poor school achievement and performance;
3. Lack of family, school, and peer bonding and affiliation;
4. Family and marital conflict;
5. Dysfunctional parent-child interactions (eg, inadequate or lax parental supervision, poor parent-child relations, inadequate contact); and
6. Inadequate role models.

In addition to risk factors, protective factors and resilience should be measured because increasing research suggests that the primary determiners of developmental outcomes are these positive environmental buffering or moderating influences.^{53,99} Important environmental protective factors to measure as recommended by Kumpfer and Bluth⁵³ and Cowen and associates¹⁰⁰ include:

1. One consistent and caring adult^{29,55};
2. Parental love, care, and supportiveness;
3. Extra-familial support (eg, teachers, clergy);
4. Appropriate developmental expectations;
5. Opportunities for meaningful family, school, and community involvement and rewards;
6. Support for dreams and goals; and
7. Setting nonuse rules and norms.

The important factors to measure in resilience can be derived from resilience research with COAs^{29,101} or adult COAs.⁹⁹ Measures for resilience can be found in Wolin and Wolin,¹⁰¹ Dunn,¹⁰² and Walker.¹⁰³

Special Issues in Measurement with COSAs

Measurement of outcomes of interventions for COSAs is much the same as that for other children. Hence, measurement reference books⁴¹ can be used to determine appropriate measures for COSAs. There are a few specific issues that need to be addressed with COAs and COSAs, however.

Lack of Trust in Confidentiality of the Data

The major measurement issues that are specific for COSAs include validity of the data concerning sensitive issues because of fear of disclosure of negative family dynamics or parental drug use. COSAs live with societal shame of their parent's drug use. If they have any mistrust of the confidentiality procedures used in the data collection that is supposed to ensure that the data are protected, they will not disclose fully any negative behaviors or family issues.

Denial of Family Drug Use or Failure to Know

Some COSAs may not self-disclose that they are COSAs, because they genuinely do not know their parents are drug users or abusers of alcohol. Many parents who abuse drugs try to make sure their children do not know they are drug users. If the children are young and the parents are generally functional, there is almost no way for the children to know unless some adult tells them. In older children, they may have some idea that something is wrong, but deny to themselves and others that their parents are drug users. If children do not know or deny they are children of drug users, there is little hope of attracting them into special COSA interventions, unless the parents are recruited to volunteer the children.

Lack of Honesty in Self-reporting

Even if the child is aware of one or both of their parent's drug or alcohol abuse, they still may minimize the extent of the damage on their family environment or own psychological and emotional status because of the stigma involved in self-reporting this information.

Fear of Reprisal

Child abuse, child neglect, and sexual abuse¹⁰⁴ are more common in families in which the parents are alcohol- or drug-involved. Children are not likely to report such information if they fear their parents will be reported to protective services or to the police.

Professional clinicians have a “duty to warn” the parents and the children that self-disclosure of abuse during the measurement battery or the treatment or intervention discussions will result in their being reported to authorities. A “mini-Miranda” warning should suffice in which they are told that clinicians have to report sexual abuse or neglect depending on their professional standards and state standards. Then the children or parents can decide what they want to disclose and choose to do so based on complete information on what the consequences will be. Unethical practice in failure to warn children can result in children reporting their parent’s drug use to DARE police officers, believing that the police will simply help them to get treatment rather than arrest them.

Developmental Issues in Measurement

The selection of measures used in interventions for COSAs also should match the cognitive and emotional stage of development of the child. Children go through stages of cognitive and social development, therefore, evaluation instruments and methods should be tailored to the developmental level of the targeted population. If young children are included in the evaluation, it is often best to conduct individual interviews with them—reading them the questions and the answers. Depending on their age and fear of disclosure it may be best to have them confidentially record their answers rather than tell the interviewer their answer. If the children can circle the correct answer or put their answer on an optical scan sheet, the best method for data collection may be small group interviews with confidential recording of answers to reduce data collection costs. This is a particularly useful method of data collection if the children are participating in a group intervention.

The reading and conceptual levels of the children and the parents also should be considered. If respondents are expected to read the questions or even program homework, a Woodcock Johnson Reading Test can be used to check on their reading level. Even if the children or parents test at a certain reading level, they may not always understand the words they are reading. Some young children are able to read phonetically, but have little idea of the meaning of the words. Check the published reading levels of measures under consideration for use. It also is wise to field-test, in pilot-testing or focus groups, any proposed instruments to determine whether participants really understand the questions.

Also, consider the length of the test and the attention span or activity level of those being tested. Children’s activity levels vary greatly, particularly in COSAs who are at higher risk for hyperactivity or attention deficit disorder. Pilot-test the testing methods and the length of the sessions, and then revise the test accordingly.

It is frequently difficult to get valid and reliable data from children younger than age 9 years. Be sure that selected measures are measures that have reasonable α reliabilities for the youngest children in the intervention study. Always pilot-test the instruments and calculate the Chronbach α reliabilities⁷³ by age

groups after the first large scale testing. If the reliabilities are low for the youngest children, it may indicate that it is best not to use that data in the outcome evaluation. These data may be clinically useful, particularly at intake, to help determine whether the children need referrals for additional services or to help the provider become aware of special issues in the children. And to include the younger children in the testing, even if their data will not be able to be used in the evaluation, shows consideration for their feelings and ideas.

Culturally Appropriate Measurement Issues

If ethnicity of the COSAs participating in the intervention is a factor, there are additional conceptual, language, and data collection measurement issues. Unfortunately, few standardized instruments or research instruments have been created for use specifically with minority populations. Consequently, few of the standardized instruments widely available have been tested for cultural appropriateness and sensitivity. Some of these special measurement issues with different minority groups, summarized and discussed by cultural measurement specialists at an NIDA Symposium on Measurement Issues (October 13–15, 1996, Snowbird, UT), organized by Dr Rebecca Ashery and me, are summarized below.

Measurement Experiences With African-Americans

According to William Turner, because language is not a major issue, the primary measurement issue for African-American youth and parents appears to be conceptual differences in the constructs used. For instance, the concept of the family can be very different for an inner city, African-American living with a mother on welfare. Many of these cultural issues are actually issues that accrue because of differences in income, living standards, and community environment. Hence, many risk factors associated with inner city, poor African-American families occur not because of unique cultural differences, but because of the realities of growing up in poverty.^{105–107} African-American researchers in the field have challenged the notion that African-American youth are high risk for alcohol and drug abuse when the high school senior survey data show they have lower use rates than do white or Hispanic youth.¹⁰⁸ Still, the stereotypes of drug-abusing African-American youth persist. Much of the association is more with poverty and need to earn money as a drug dealer than with racial status. Hence, economic status and community climate should be measured in research with African-American youth.

Measurement Experiences With Asian-Americans

At the same NIDA conference, Davis Ja and Shu Cheng explained that with Asian and Pacific-Islanders there are a number of language, conceptual, and lifestyle issues, as well as responding issues. These cultural groups are very heterogenous and in many Asian and Pacific-Islander intervention programs, youth and families from many different cultural and ethnic groups are clustered together. This can make testing very difficult, because it is difficult to have

native language speakers or different versions of the testing battery for all ethnic or language groups. If possible, have the test translated into the native language with both forward and backward translation and checking by several other native speakers. Read the questionnaires and have other native speakers available to answer questions on concepts or words. Most Asians with a reasonable education level can record answers on optical scan sheets, but we have found this difficult for Pacific-Islanders.

Because of recent negative experiences with repressive governments, some Asian youth and families are even less trustful than are COAs. They are less likely to divulge negative family or personal information until they have been in the intervention and begin to trust the staff and data collection. One possible solution for this problem is to collect a retrospective pretest at the time of the posttest, or earlier, when the staff feel the clients trust confidentiality. This data collection methodology has been used effectively by researchers for sensitive drug use information with students in schools. If this is not done, the subjects will disclose more negative information on the posttest than on the pretest, making the intervention look like it had negative results. Our experience is that Asian youth and parents are willing to disclose high levels of depression and mental health problems related to stress and acculturation difficulties on the pretest, but will not disclose information about drug use and harsh discipline.

Measurement Experiences With Native-Americans

At the same conference, Dan Edwards presented and emphasized that Native-Americans are not homogeneous. There are >1000 tribes, both officially recognized and not officially recognized. There are many major issues in the collection of data with Native-American youth and families. One is even getting tribal approval for data collection. Although they may allow the COA or COSA intervention to occur, they may ban the collection of data fearing misuse of even the aggregated data. Suspicion of social research is warranted, based on years of exploitation of Native-Americans by researchers. In addition, Native-Americans, like other ethnic groups, may not understand why the researcher needs to know personal, private information. Fortunately for prevention program evaluators, most COSAs participating in the interventions do so because they believe the services have value to them. Thus, they generally are more invested in cooperating and do try to provide valid data. Avoiding collecting personally offensive information in the pretest or having excessively long testing batteries will increase cooperation.

Measurement Experiences With Hispanics

The presenters Martin Arocera and Rose Alvarado said that like the other major ethnic groups mentioned, Hispanics are a diverse ethnic group with major differences in culture from European Spanish families to Caribbean and South American Spanish-speaking youth from indigenous tribes. Because of these major cultural differences, it is difficult to

translate testing batteries into a single Spanish language version. Words and concepts differ across different Hispanic cultural groups. Immigrant, migrant, and illegal Spanish-speaking persons also are unlikely to disclose information about parental drug use or family dynamics that could be considered a legal problem.

Like other disenfranchised or traumatized ethnic groups, it is very difficult to get valid and reliable data. The retrospective pretest is one possible solution. Another possible solution is to postpone data collection until the youth or parents are more trusting by holding preintervention get-acquainted sessions.

Another cultural issue in measurement and prevention interventions is the need to get permission for the child to participate from the father and possibly other cultural leaders. It is important to get their approval on the child's participation in the testing even if the father is not participating.

Overall Measurement Issues With Low-income, Low-education Participants

Because of the generally lower income levels of minority families, many measurement issues that derive from low education levels are sometime confused with cultural issues. For instance, it is harder to get high internal consistency of items with low-income children from minority backgrounds. One factor mentioned by Kumpfer and associates⁴¹ is that poor physical health, lack of medical care, and poor nutrition (such as lack of breakfast before the testing) can cause inconsistent performance on tests by affecting attention span, concentration, motivation, and even vision and hearing.

Gender-sensitive Issues in Measurement

There has been very little attention to gender issues in prevention intervention for drug use. Unlike in the drug treatment field, which has been perfecting "woman-centered" or women-only treatment strategies, no prevention programs currently exist based on gender relevance. Several NIDA researchers have been funded to conduct research to develop prevention strategies based on women's issues, such as pressure to use drugs in sexual encounters. Other major women's issues to be addressed in women's prevention programs include child and sexual abuse, which is more common in young girls. Measurement issues include an increased tendency in females to respond in socially desirable ways, possibly because of increased denial. One solution for this issue is to include a social desirability scale within the testing battery. Another recommendation is to consider putting less emphasis on risk factors or deficits and focusing more on protective factors or strengths.⁶³ Females are more likely to respond favorably to instruments that measure family strengths rather than deficits. When it was difficult to get disclosure on risk factors with pregnant women for drug use, I had more success in measuring program intervention outcomes by creating a Family Strengths Assessment.¹⁰⁹

Issues in the Selection of Recommended Measures

There are a number of issues in the selection of the best measures for interventions and the development of effective testing batteries. Thoughtful selection from available measures can be guided by psychometric principles recommended by Achenbach and McConaughy¹¹⁰ to use 1) standardized measures and procedures; 2) multiple, aggregate items or scales for each hypothesized variable; 3) normed instruments; and 4) instruments with demonstrated high reliability and validity with similar populations. Johnson and associates⁴ also recommend: 1) following the principles recommended in the APA Standards for Educational and Psychological Testing; 2) using test construction designed only by specialists in this profession; 3) using trained data collectors; and 4) when interviewing, avoiding leading, prejudice, and bias.

Use of Standardized, Core Instruments

Whenever possible, it is better to use instruments that already have been developed and used in similar program evaluation. It is very difficult to develop original instruments. With off-the-shelf instruments, the findings can be compared more easily with those of other intervention programs, a practice encouraged by researchers in this field and by state and federal funders.^{4,41,111}

Even if major cultural modifications are needed, generally it is better to start with the best known standardized measure or scale and then modify it based on focus groups and pilot-testing to make it more appropriate to the target population. If the decision is made to create an original, working with an experienced instrument development specialist is recommended.

The Development of Testing Batteries

Once the major hypothesized change variables are selected, the next step is to select the shortest and most valid and reliable scale measuring each construct for the target population. Because of the need to measure changes in many different risk and protective factors, intervention researchers are struggling with getting the largest α reliability values with the smallest number of testing questions or items per dependent variable. Unfortunately, the shorter the number of items in a scale, the more difficult it is to get acceptable internal consistency or α values higher than .65. Also, with children younger than age 9, the internal consistencies, or α values, become lower. A low correlation coefficient, which indicates reliability or stability of the measure, indicates greater measurement error or unwanted variation from the true measurement of the respondent. Errors in measurement can be caused by poor instrument design (eg, ambiguity of items, unclear instructions, unclear concepts or wording, confusing formatting, and language or reading difficulties).

To reduce testing burden on the participants, it is important to have them complete only the scales in a multiscale inventory that will be used in the data analysis. Often this means creating testing batteries that include only the specific scales to be used in the

intervention outcome study. In the creation of the testing battery, the ordering of testing items is important. It is better generally to begin with positive questions that children like to respond to, such as questions about their friends, their opinions, and their school. Information on critically needed sensitive items is best placed in the middle of the test. Items that are least important can be put at the end of the test, particularly if the test is long. Because there will be more missing data at the ending of the test, these data can become lost; thus, be sure they are not the major data.

Some tests are very easy for children and parents to follow, whereas others are difficult and confusing. Review potential tests with this in mind and then pilot-test with a subsample of evaluation participants. Respondents should be asked to rate the ease of the questions and answer choices and whether the test instructions are clear. Very difficult formatting for participants are those that require two different types of responses for each question. Using the least amount of words to ask and answer the questions also helps if the formatting is clear.

Data Collection Issues

There are a number of data collection issues that must be considered in the selection of the best instrument, such as:

1. Whether to rely on self-report or to also use direct observation and possibly videotaped behavioral interactions, which then involves selecting the best video coding scheme. Video coding also is very costly but is considered valuable "hard" or objective data in documenting behavioral improvements in children's behaviors and family interactions.
2. Where to collect the data must be determined. Some researchers prefer to collect data in the intervention group, some in homes, and some in their offices. These interact with whether individual interviews will be conducted or small group interviews supplemented with questionnaires. Take-home questionnaires, if the participants have high reading and motivation levels, is also possible, but generally not considered the best method of data collection.
3. How to record the answers involves a choice between optical scan sheets and direct marking for either open-ended or closed-ended questions. The fastest to computerize with the most objectivity are the closed-ended questions put on optical scan sheets confidentially by the participants. In ethnic or low-income participants, recording answers on a different sheet from the questionnaire can be confusing. Hence, it is better for them to circle the appropriate answer and to have staff enter the data manually.
4. Some testing batteries are computerized, with branching programs that allow the respondents to answer only those questions that are applicable to them. However, in program evaluation research, in which the testing battery must be created to match the hypothesized change variables, it is

unlikely that any of these computerized programs will be the best measurement methodology. It is possible that in the future, a standardized, computerized instrument will be created that will contain the best core measures for prevention interventions.

HOW TO SELECT THE BEST MEASURES

Issues to consider when selecting the actual scales for each dependent variable include:

1. Selecting tests for different data sources, or informants, in a multiinformant measurement model. Some tests have different versions with variations in wording depending on the informant—the child, parent, therapist, or teacher.
2. Length of the test and testing session. The shortest test or scale with the highest internal consistency and validity generally is the best test to select for each variable. If the test is too long when all variables and tests/scales are combined, it may be necessary to prioritize and remove some scales or to conduct the testing in two sessions.
3. Popularity and previous/current use of the proposed instruments with similar populations. If an instrument is used in other similar intervention outcome studies, it will be easier to compare results. Having norms for a similar target population on non-COSAs also is helpful in data interpretation.
4. Sensitivity to change. According to Dishion and associates,⁸ “Over-reliance on the personality assessment strategy has had a deleterious impact on measurement strategies that are sensitive to change.” Most clinical diagnostic instruments are not very change-sensitive, as are testing items that measure “lifetime prevalence.” Having a 5- to 7-point Likert scale rather than just a true/false response allows for more gradation in improvement or change. Still, these measures lack temporal specificity that would permit the researcher or clinician to determine when changes had occurred between measurement points.
5. Validity of the construct for the target population. The most important characteristic of a test is validity. A test that does not measure what it is supposed to measure is of little use. Review the published data on validity, and also look at the items to see whether the construct or concepts are understandable and valid for their realities.
6. Language versions. If there are non-English speakers in the intervention research, other language versions will need to be located or created. Even with standardized tests that have versions in other languages, modifications may be needed for the tests because of intraethnic differences in concepts and in wordings or colloquial usage.
7. Cost of the instrument. Another consideration is the cost of the instrument. Many standardized tests are copyrighted and must be purchased from the publisher or author. However, many equally good measures developed for prevention research may be available from researchers directly, at little or no cost.

Resources for Selection of Best Measures

The best measures to use depend on the type of assessment desired: etiologic research, prevention interventions, diagnosis, treatment planning, or outcome measurement.

Etiology and Prevention Intervention Measures

Currently, the best measurement resource guide for the selection of measures for prevention interventions is *Measurements in Prevention: A Manual on Selecting and Using Instruments to Evaluate Prevention Programs*,⁷⁵ which I developed. An updated, computerized CD-ROM version of the manual is planned in conjunction with Dr William Hansen of Tanglewood Research CSAP has convened five task forces to select the best measures for the most critical outcomes in prevention and are developing an Internet-based measures selection system as part of a larger prevention decision support system or expert system.

Chapters by Liddle⁴² and McMahon⁷⁶ summarizing the results from the NIDA Measurement Symposium on family measures unfortunately are not available. In lieu of this information, see Table 2, which contains many of the best research instruments for many of the variables that one would want to measure in prevention-intervention research.

Table 2 covers measures by constructs/outcome variables by source of information or informant (child, teacher/trainer, and parent). Although the Table is not inclusive of all the best measures, it provides a good selection of a large number of measures for the following constructs:

1. *Best Substance Use/Abuse Measures* in areas of incidence and prevalence, expectations to use, family history, parent use, peer use, and more.
2. *Best Child Behavioral Change Measures* in areas of conduct disorders, aggression, social withdrawal, anxiety, social skills, depression, self-esteem, child abuse, neglect, and more.
3. *Best Parent Measures* in areas of knowledge of discipline principles, discipline style, monitoring and supervision, communication, and more.
4. *Best Family Functioning Measures* in areas of family communication, relationships, attachment, conflict, family strengths, organization, and more.
5. *Best Community/Culture Measures* in areas of neighborhood cohesion, cultural pride and identity, community problems (crime, norms toward alcohol and drug use), and more.

Diagnosis and Treatment Assessments

Johnson and associates⁴ also provide a listing of recommended standardized instruments for each of ten areas of functioning included in the Comprehensive Assessment Battery of the NIDA Adolescent Assessment/Referral System (AARS).¹¹² These recommended measures were derived from recommendations from national experts in adolescent assessment and treatment. Hence, it should be remembered that these are measures recommended primarily for clinical assessments, not necessarily for prevention interventions. The AARS manual pro-

vides descriptions of the instruments, along with information on how to obtain them, administration time, and cost.

Human Subjects Measurement Issues

Before gathering data from children, the parent and possibly the children, should sign an informed consent form that includes a complete disclosure of their rights as human subjects. These rights include the right to not answer all questions, to stop at any time, to choose not to participate at all in the intervention or data collection without loss of other services provided normally, and to have their data remain confidential.

If longitudinal data are collected, as is needed for pre- and posttest data collection for outcome research on interventions, it is necessary to include subject codes. Because of the problems with trust in confidentiality in COSAs, confidentiality in coding must be considered seriously. One way to increase confidentiality is to have the children develop their own code based on a formula developed by the research team. These coding schemes can include the day of the mother's birth date, her middle initial or maiden name, the child's middle initial, and other less than obvious or difficult-to-track data. The problem with using this scheme is that one does have more unmatched testing batteries.

Another scheme is to put the investigator-derived codes for each child on the answer sheets, but then to put their names on the envelopes on post-its that can be removed by the child when they are handed the questionnaire and answer sheet. This procedure enhances that data will match and also the likelihood that the child will believe that the data collected will remain confidential.

Other Ethical Issues

One major ethical issue is locating control or comparison groups for the intervention for COSAs. The hallmark of outcome effectiveness research in clinical trials is random assignment of volunteers either to the intervention or to a no-treatment control or comparison group. If the intervention already has proven effectiveness with the target population to be studied, it is unethical to randomly assign the COSAs to a no-treatment group. However, for purposes of most prevention-intervention research, the intervention would not be studied in a randomized clinical trial if it had already been proven to be effective with the target population.

CONCLUSIONS

Recommendations for Practice Guidelines in the Measurement of COSAs

The overall recommendations are that as much attention needs to be paid to the development of valid and reliable measures as to the development of effective prevention interventions. If the measurement model or testing battery and data collection methods are not considered as important as the intervention services, it will not be possible to conduct

solid research on program effectiveness to improve the outcomes in the prevention field.

Unfortunately, measurement has been neglected, particularly the development of geographically and culturally valid and reliable measures for minority children and families. Nothing is more important to prevention research now than a major initiative to invest research funding into the establishment of developmentally, culturally, and gender-appropriate measures. Johnson and associates⁴ aptly summarized recommendations for this area: "What is needed are consensus building workshops with COA researchers, clinicians, and expert advisors to outline the ideal assessment battery for COAs."

A prevention-intervention subcommittee of the Wolin Consensus Forum on Children of Alcoholics also made this recommendation and expressed willingness to use standardized and shared measures to improve comparison of results. However, no such COA or COSA testing battery has yet been developed.

The other major practice recommendation is to take measurement and evaluation seriously and not to consider it as something that draws down funds for direct services. Although clinicians and prevention practitioners frequently are sure that their work is effective, they also are wrong sometime. In some cases, measurement research can help the practitioner learn how to improve the prevention intervention or identify which modules to drop. Better measurement and research will help professionals determine which interventions work best and help weed out ineffective interventions.

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