

“A Primer on Alcoholism”

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Opening Comment

The scientific study of addiction is advancing with new discoveries and new understandings revealing themselves every day.

You are encouraged to visit the National Institute of Drug Abuse website where you can search for current findings, reports and other information on alcoholism and drug addiction (www.nida.nih.gov).

What is alcoholism?

This is not an easy question to answer. No one definition satisfies everyone. Even within the medical profession there is disagreement. Here are three definitions representing mainstream thinking on alcoholism.

The first definition was developed in the late 1930's by Dr. William D. Silkworth, a physician who treated and carefully observed the symptoms of hundreds of alcoholics. Alcoholics Anonymous incorporated his observations and findings into their new-born program of recovery.

The second definition comes from the National Council on Alcoholism and Drug Dependence, Inc. ("NCADD"), a leader in research and education.

The third definition is one used by the American Psychiatric Association.

Alcoholics Anonymous

Let's look at the first (and many would say only) group of people to consistently help large numbers of alcoholics to recover - Alcoholics Anonymous. Their book, "Alcoholics Anonymous", first published in 1939, describes how certain people are physically "allergic" to alcohol; that is, their bodies react differently to alcohol than most people. At some point in their drinking history, they lose control over how much alcohol they consume on any given (but necessarily every) occasion that they take a drink. These individuals are "drinking to overcome a craving beyond their mental control".

Combined with this physical allergy is a subtle mental obsession. It tells the alcoholic that "somehow, someday he will control and enjoy his drinking". This delusional thinking convinces the alcoholic that a drink will always help. A history of drinking related arrests, accidents, injuries, divorce, lost jobs and health problems is ignored or forgotten. This is the state of "denial". It can last for years.

National Council on Alcoholism and Drug Dependence, Inc.

"Alcoholism—A primary, chronic, progressive disease with genetic, psychosocial, and environmental factors influencing its development and manifestations. The disease is often fatal if untreated. It is characterized by continuous or periodic: impaired control over drinking, preoccupation with the drug alcohol, use of alcohol despite adverse consequences, and distortions in thinking, most notably denial." *(from the NCADD website)*

American Psychiatric Association DSM-IV

Finally, we have the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders [Fourth Edition, Fourth Printing, January 1995] (DSM-IV) description of alcoholism, a form of "substance dependence":

"A maladaptive pattern of substance use, leading to clinically significant impairment or distress, as manifested by three (or more) of the following occurring at any time in the same 12-month period:

- (1) tolerance, as defined by either of the following:
 - (a) a need for markedly increased amounts of the substance to achieve intoxication or desired effect
 - (b) markedly diminished effect with continued use of the same amount of the substance
- (2) withdrawal, as manifested by either of the following:
 - (a) the characteristic withdrawal syndrome for the substance (refer to Criteria A and B of the criteria sets for Withdrawal from the specific substances)
 - (b) the same (or a closely related) substance is taken to relieve or avoid withdrawal symptoms
- (3) the substance is often taken in larger amounts or over a longer period than was intended
- (4) there is a persistent desire or unsuccessful efforts to cut down or control substance use
- (5) a great deal of time is spent in activities necessary to obtain the substance (e.g., visiting multiple doctors or driving long distances), use the substance (e.g., chain-smoking), or recover from its effects
- (6) important social, occupational, or recreational activities are given up or reduced because of substance use
- (7) the substance use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance (e.g., current cocaine use despite recognition of cocaine-induced depression, or continued drinking despite recognition that an ulcer was made worse by alcohol consumption)."

Can you find the common theme running through all three descriptions?

It is “impaired control”. Upon taking the first drink, alcoholics cannot guarantee how much they will drink. The reason for taking the first drink is irrelevant. It is the effect that alcohol has on their body and mind that is important. They may not drink every day and they may not get drunk every time they drink but once they start drinking they are not in control of what is going to happen next. “Alcoholism is not a too much, too often disease; rather, it is a ‘I can’t stop’ disease.” (Carlton Erickson, Ph.D., Parke-Davis Centennial Professor of Pharmacology and Director of the Addiction Science and Research Center, College of Pharmacy, University of Texas at Austin)

Alcohol Abuse Is Not Alcoholism

Most people are not alcoholics. In fact, it is estimated that only 10% of those who drink are alcoholic. We are a society made up of non-drinkers, occasional drinkers, social drinkers and heavy drinkers. Heavy drinkers abuse alcohol but when faced with a crisis or problems with their job, health or marriage they can cut back on their drinking or stop altogether. They realize that their drinking is causing problems and they do something about it.

The DSM-IV sets forth the following criteria for substance abuse:

- A. A maladaptive pattern of substance abuse leading to clinically significant impairment or distress, as manifested by one (or more) of the following, occurring within a 12-month period:
 - (1) recurrent substance use resulting in a failure to fulfill major role obligations at work, school, or home (e.g., repeated absences or poor work performance related to substance use; substance-related absences, suspensions, or expulsion from school; neglect of children or household)
 - (2) recurrent substance use in situations in which it is physically hazardous (e.g., driving an automobile or operating a machine when impaired by substance use)
 - (3) recurrent substance-related legal problems (e.g., arrests for substance-related disorderly conduct)
 - (4) continued substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance (e.g., arguments with spouse about consequences of intoxication, physical fights)

- B. The symptoms have never met the criteria for Substance Dependence for this class of substance. [*emphasis added*]

Is It Abuse or Addiction?

Now that we have distinguished alcoholism from alcohol abuse, let's try to identify the alcoholic in the following story.

You and your spouse are celebrating you having made partner in the firm. All of your years of hard work have paid off and tonight you can kick back and relax because you have tomorrow off. You spot two lawyers in the bar who over the course of the evening have many drinks - you would be drunk if you tried to keep up with them. Nevertheless, at closing time they both get up go home. When they get home, they both get yelled at by their wives for coming home drunk, missing dinner and being out late. The wives threaten divorce and they mean it. Both husbands swear that they will cut back on their drinking and will be home in time for dinner from now on. The next evening you are back at the bar with your spouse to meet some friends for a more subdued celebration of your good fortune. You see the same two lawyers at the bar and you overhear them say to the bartender that they can have only a couple of drinks because they have to be home in time for dinner. At 6 P.M., one gets up and goes home. The other stays. He is still drinking when you leave at 10:00 P.M.

Who is the alcoholic? It must be the lawyer who stated he would have only a couple of drinks but kept drinking. Isn't this an indicator of "impaired control"? He knew he had to be home to avoid trouble but he kept drinking anyway. Isn't this a sign of denial?

Who is the alcohol abuser? Isn't it the lawyer who kept to his two drink limit and then went home? Isn't it clear that he recognized that his drinking was causing problems with his marriage, so he did something about his drinking?

Or have we misjudged? Could the two drink lawyer be controlling his drinking just long enough to get home and finish getting drunk there? How about the lawyer who stayed late again? He sure looks like an alcoholic. But perhaps he is an unhappily married man who wants a divorce but doesn't want to be the one to bring it. So he drinks to escape and in the process aggravates his wife to the point she files for divorce. He can then hold himself out as the hard working and misunderstood lawyer-husband. Once the legal papers are filed and he is on his own, he finds new friends and new activities that do not involve the old bar scene.

Amateur diagnosis of alcoholism is dangerous. So don't do it. We rarely have enough information to determine who is an alcoholic or whether they are suffering from some other illness such as depression. If you are concerned about yourself, a family member or a colleague, take advantage of LCL's free, confidential referrals to a qualified professional who can make a proper diagnosis. By qualified, we mean someone who has training and experience in the field of addictions and not just your family physician or other well-meaning medical professional who is not working with alcoholics on a day to day basis. All too often, they can be "conned" by

the alcoholic whereas an addiction's professional can often cut through the alcoholic's defense mechanism and denial to get to the truth.

Why doesn't everyone who drinks alcohol become alcoholic?

Because alcohol doesn't have the same effect on everyone. Science is proving that in about 10% of those people who drink alcohol, the alcohol triggers a different reaction in the brain and body than the other 90%. The cause of this different reaction to alcohol exists in the alcoholic's body and brain before the first drink was taken. Knowing this makes it possible to:

- ✓ reduce the shame and fear that prevents people from getting help;
- ✓ improve treatment and possibly find a cure; and
- ✓ help us as individuals and as a society to find more effective solutions to the myriad of problems caused by addiction.

Understanding that the mis-use of alcohol does not cause alcoholism is the key to recovery. When we see alcoholism as a self-induced problem caused by lack of will power, weak character, low morals or deliberate bad intent, we try to stop an alcoholic's drinking through threats and punishment. The alcoholic may respond to such behavior modification techniques for a short period of time but sooner or he or she will resume drinking. If, however, we accept that alcoholics suffer from a complex brain dysfunction that subconsciously deceives them into feeling that it is ok to drink, we can hold him or her accountable for his or her misbehavior but at the same time provide treatment for their alcoholism.

If we are to help alcoholics, we must distinguish between "responsibility" and "accountability". They are not "responsible" for developing alcoholism. They took their first drink for the same reasons as anyone else but, for them, the alcohol triggered a hidden brain based illness. Nevertheless, at some point they must come to understand that they are to be held "accountable" for harms done, make appropriate restitution and take "responsibility" for their recovery program. Sometimes it takes years for an alcoholic to accept help and start down the road of recovery. During the interim, we all struggle and suffer with the frustration of trying to help someone who cannot quit drinking. Don't "enable" them but, on the other hand, don't close the door on getting them into treatment. Never give up hope.

Let's clear up two other misconceptions about what causes alcoholism: stress and an unhappy childhood. They may contribute to why a person picks up a drink; i.e., seeking relief or to escape from their problems at work or home. However, stress and unhappy childhoods are not the causal agents of alcoholism. New research shows that early childhood trauma may play a

role in the development of the brain that can lead to chronic over activation of the stress response which produces symptoms of depression. Perhaps they will find a similar link to a predisposition to addiction. But there is no proof that an unhappy childhood causes alcoholism. Alcoholics come from all walks of life with all kinds of different family histories. The only thing they all have in common is that once they took the first drink they triggered an illness that over time has left them with no defenses over their use of alcohol; i.e., impaired control.

A new definition of alcoholism is emerging.

Most researchers agree that the initial site of action for alcohol is the medial forebrain bundle. The medial forebrain bundle lies deep within the brain's mesolimbic system, which plays a major role in the subconscious formulation of our emotions and feelings. Alcohol's effect on the medial forebrain bundle is transmitted to the frontal cortex, the area of conscious thinking. This is strong evidence that addictions are not under conscious control. Alcoholism "hijacks" the brain.

A new model of addiction based upon this emerging research is taking form. We now understand why most alcoholics cannot stop drinking on their own and need specialized treatment. One causal factor lies with a deficiency of neurotransmitters in the medial forebrain bundle of the brain may exist in the alcoholic - even before his or her first drink. Alcohol mimics these missing neurotransmitters generating feelings of well-being so intense that the brain remembers these feelings which override the person's awareness of how much harm drinking is causing them. Continuous abstinence coupled with a 12 Step program (or other support program) and therapy is the best approach to place the disease in remission.

Is alcoholism linked to neurotransmitter deficiencies?

Most addiction researchers agree that common putative neurochemical mechanisms underlie addiction to both alcohol and other drugs, namely, in the mesolimbic pathway and the locus ceruleus in the brain. Animal studies suggest that when people who are predisposed to dependency become dependent, it is because they are deficient in one or more of the following neurotransmitters: dopamine, serotonin, endorphins and GABA. Kenneth Blum, Ph.D., (Professor of Pharmacology and Chief, Division of Addictive Diseases; Director, Laboratory of Pharmacogenetics, University of Texas Health Science Center) has developed a theory of alcoholism involving a "deficiency or imbalance" of various neurotransmitters that distort or interrupt the normal cascade effect of neural-chemical interaction resulting in a net deficiency of dopamine which displaces feelings of well-being with anxiety or anger. It is plausible that the use of alcohol may be an attempt to make up for one or more transmitter deficiencies because

alcohol mimics the missing neurotransmitters creating feelings of euphoria in place of the anxiety or anger.

There is also a lot of research focused on dopamine and its interaction with learning and memory as related to making survival-enhancing choices. P. Read Montague of the Center for Theoretical Neuroscience at Houston's Baylor College of Medicine and his colleagues at the Salk Institute (in San Diego) and M.I.T. have proposed a model that suggests that each time the outcome of an action is better than expected, dopamine-releasing neurons should increase the rate at which they fire creating a rewarding effect. Conversely, when the outcome is less than anticipated, the output of dopamine remains stable (and, hence, no rewarding effect).

An individual with low neurotransmitter levels may first use alcohol in a normal, social setting but the resulting euphoric effect in the pleasure pathway or the locus ceruleus caused by a sudden flood of dopamine in key reward areas ensures that the person will drink alcohol again. They drink again to raise their neurotransmitter levels in an attempt to recapture that sense of well-being they received after taking their first drink. They drink to feel "normal".

Why can't alcoholics control their drinking or use of other drugs?

T.E Robinson and K.C. Berridge have proposed that in the medial forebrain bundle there are at least two major neural circuits: the "like" pathway and the "want" pathway. [See [Brain Research Reviews](#), 18:246-291 (1993).]

The "like" pathway carries the characteristics of euphoria and when stimulated the pathway produces a feeling of well-being. This pathway "tolerates out" with chronic drug use; that is, the euphoric effects resulting from drug use declines when you continue to take the drug over and over again.

The "want" pathway gives us the experience of craving. This pathway becomes "sensitized" with chronic drug use. The craving gets worse and worse as the individual continues to use. Chronic alcohol or drug use simultaneously results in a decrease in the euphoric effect and an increase in the feeling of craving.

Carlton K. Erickson, Ph.D., thinks there may be a third pathway that explains why most alcoholics can't stop drinking on their own. Interviews with alcoholics have yielded a common message: "I know alcohol has ruined my marriage, my career and I will die if I don't stop drinking. Even though I don't get high any more on drinking, no matter how much I drink, I can't stop drinking any more than I can stop breathing. I need the alcohol in a way that I need to eat, drink water or have sex."

Dr. Carlton recognized this possible “need” tie-in to the functions of the hypothalamus. It contains the control centers that regulate our eating, water intake and reproduction. From this he speculates that there may be a disorder in the hypothalamus, perhaps in previously mentioned medial forebrain bundle that runs through the hypothalamus, that causes an irrational neural-chemical message to be sent up to the frontal cortex that says to the addict that he or she must use to stay alive. These messages would come across not as words; rather, the addict would experience the instinctual drive to seek out and use alcohol or other drugs - in order to survive. This is strong proof that alcoholism is not a matter of conscious choice.

General symptoms of alcoholism:

Alcoholism is a disease in which people are preoccupied with drinking coupled with a loss of control over their consumption of alcohol. Symptoms include:

- inability to guarantee one’s actions after starting to drink
- deteriorating health accompanying a pattern of heavy drinking
- impaired ability to work and concentrate
- disrupted personal relationships
- denial that drinking is a problem when it is obvious to others
- defiance, impatience, intolerance or impulsiveness associated with heavy drinking

Our society has a universal preoccupation with the amount and frequency of drinking but in reality there is no one “alcoholic profile”. Some alcoholics are daily drinkers, others are periodic drinkers and still others are binge drinkers.

It is not how much or how often a person drinks that determines if they are an alcoholic. Rather, it is the abnormal neurophysiological effect that alcohol has on the person which ultimately leads to the outer symptoms of loss of control, behavioral changes, health problems, broken marriages, arrests, etc.

Alcoholism often emerges very slowly. Symptoms appear and disappear, only to return later. The earlier the stages, the more difficult it is to distinguish alcoholism from alcohol abuse. But alcoholism is a chronic and progressive disease; left untreated, it always gets worse, never better, and eventually ends in permanent organ damage and premature death.

**Alcoholism is not a too much,
too often disease.**

It is a “I can’t stop” disease.

Self-Identification Quizzes:

Could you have a problem with alcohol (or prescription or illicit drugs)?

Alcoholism appears to run in families. It may skip a generation and it may be selective as to who gets it and who doesn't, but if your family tree includes an alcoholic (perhaps that favorite aunt or uncle who just drank too much), you may want to take the following test. By the way, this test works best when you answer the questions honestly.

- ✓ The box () for each "yes" answer.

Are your colleagues, clients, secretary or family saying that your drinking is interfering with your work or home life?

Have you ever failed to show up at the office or court because of a hangover?

Are you drinking during the work day?

Have you commingled, borrowed or otherwise misused clients' trust or escrow funds?

Are you missing deadlines, neglecting to process mail or failing to keep appointments or return phone calls?

Do you ever want a drink to "steady your nerves"?

Have you ever lied to cover up your drinking?

Have you consumed alcohol before a meeting or court appearance to calm your nerves, gain courage or improve performance?

Have you experienced loss of memory (blackout) after drinking?

Do you wish people would mind their own business and get off your back about your drinking?

If you answered "yes" to even one question, you may find it helpful to talk to someone who is trained and has experience in treating alcoholics. You may not be an alcoholic but you are experiencing alcohol problems that should be addressed before they cause serious harm to your health, family life, employment or career.

Could your colleague have a problem with alcohol (or prescription or illicit drugs)?

We are not asking you to diagnose your friend or colleague. We are asking you to take an honest look at whether or not alcohol is causing him or her any problems. If it is, your friend or colleague needs help. But not the kind of help that allows him or her to keep drinking without any consequences. That isn't help, it is "enabling" and it only lead to more harm .

Take the following test and see if someone you care about needs help.

- ✓ The box () for each "yes" answer.

Are you find "covering" for a colleague's repeated unavailability to clients?

Are you "covering" for a colleague with the court?

Is your colleague's scheduling meetings or appointments only at his or her "good" time of the day?

Are you doing additional work because a colleague fails to perform his or her assignment?

Are you fielding clients' complaints about your colleague's failure to return telephone calls or lack of attention to clients' cases?

Does your colleague smell of drinking beer, wine or other alcoholic beverages?

Do their hands shake or do they have glassy or bloodshot eyes?

Have you overlooked drunken behavior in the office or in court?

Do they ever gulp drinks or hide how much they are drinking?

Has your colleague become more moody or irritable?

Do you suspect a colleague of padding billable hours to cover up for time spent either out of the office or mindlessly in the office?

Are you resentful about these "favors" you've been doing for your colleague?

If you answered "yes" to 3 or more of these questions, your colleague is in distress and in need of help. Please do not wait to call LCL and discuss your concerns.

More on the signs and symptoms of alcoholism:

Alcoholism disrupts every aspect of a person's life. Nothing and no one in the life of the alcoholic is left unscathed. The marriage is in trouble. The non-drinking spouse can't figure out why their husband or wife won't quit drinking and wonder what they are doing wrong. Neither pleading nor threats of divorce work. Physical and emotional abuse take their toll - arguments and fights disrupt and disturb the home. Family members withdraw from social activities and don't have friends over to the house in order to avoid being embarrassed by the alcoholic. Bills collectors call, credit card balances increase, second mortgages are taken out and taxes go unpaid. Separation and divorce soon follow bringing the expense of legal fees, alimony and child support, and the expenses of two households. There isn't enough money to go around.

The alcoholic's physical health worsens as gastrointestinal ailments develop; diet and nutrition declines; accidents and injuries occur more frequently; and other illnesses such as hypertension, gout, liver disease and heart disease may develop. Smokers find themselves smoking more than ever. Fatigue sets in and even simple colds just don't seem to go away.

The mental and emotional health of the alcoholic fares no better as depression and anxiety set in. Therapy and antidepressants don't help. The drinking continues.

By now, the alcoholic's work problems at the breaking point. Clients complain; office staff is tired of "covering" for the attorney's failure to return calls, keep appointments or meet deadlines; and firm partners are expressing concern and getting angry over declining revenues, declining performance and productivity, client complaints and talk going around the legal community. The alcoholic lawyer finds it more and more difficult to "bounce back" after a night of hard drinking, to concentrate, make decisions and even attend to the simplest details. A pattern appears of late arrivals, failure to come back from lunch and unexplained absences (especially on Mondays and Fridays). All of this increases the already high level of anxiety and prompts the attorney to seek escape in the bottle. Of course, tonight, he'll have just one or two drinks because there is that hearing or deposition in the morning. We know, however, that if he is an alcoholic he may not be able to stop drinking after one or two and tomorrow he will appear at the proceeding with a hangover - unless, of course, he calls in sick and the firm has to once again send someone else or request a continuance.

If he or she is a sole practitioner, then there is no one to cover for them and after awhile even the most accommodating opposing counsel or judge can no longer consent to continuances. Other non-litigation matters may languish and the attorney keeps making excuses to the client for non-action. Sooner or later, this translates into decreasing revenues and the risk that the attorney will "borrow" from the trust account to meet staff payroll, overhead, etc.

The concerned family physician who is unaware of the seriousness of the drinking problem or that the lawyer has two other doctors prescribing tranquilizers refills the prescription so his friend can get to sleep at night or is able to cope with daytime anxiety attacks. Mixing pills and alcohol worsens the situation and increases the risk of accidental overdosing. Soon the lawyer has a “dual addiction” to both alcohol and tranquilizers. Despair and hopelessness sets in and may lead to thoughts of death and suicide. With any luck, someone will call LCL and ask how their colleague can be helped before there is a car wreck, a fall down the stairs, overdose or suicide attempt.

Do you wait for them to “bottom out” or do you intervene?

It is well known that an alcoholic who has not “reached bottom” cannot accept the help offered. In the early days of Alcoholics Anonymous, only the most desperate “last gaspers” could accept AA’s 12 Step program. They had lost everything - family and home, careers, finances and health. They were going to die an alcoholic death or be shut up in an asylum for the remainder of their lives if they did not quit drinking. They were “low bottom” drunks. More last gaspers died than recovered. But many did recover and they freely shared their drinking histories with others. These recovered alcoholics hoped that the listener might identify with their story, realizing that they, too, were alcoholic and that the AA program could help them to quit drinking. Over the next 60 years, more and more people recognized their alcoholism and quit drinking before they lost their marriage, careers, health or freedom. By listening to the stories of other alcoholics, they began to understand the progressive nature of the disease and they sought help in the early or middle stages of the illness. These recovering alcoholics are known as “high bottom” drunks. But they had one thing in common with the low bottom drunks - a realization that they could not go on drinking and a willingness to accept help. They were beaten and they knew it. Either they had already experienced loss of control over their drinking or they recognized it was just a matter of time if they continued to drink.

It is a well-documented truth that you cannot help an alcoholic until they want help; i.e., until they have “surrendered”. Many people, however, misinterpret this to mean that you cannot help an alcoholic until they ask for help. The AA preamble used to say that the only requirement for AA membership is a “sincere” desire to quit drinking. It didn’t take long to drop the “sincere”. Few, if any, alcoholics “want to quit drinking”. What they really want is for everyone to get off their case about their drinking and if that means going to a treatment center or to AA so be it. In time, they may become sincerely committed to their recovery and have an honest desire not to drink.

The point of all this is simple - many times we must leverage the alcoholic into getting help through some form of “intervention”. There are many ways to accomplish this but they all have one thing in common - the alcoholic would not have gone for an evaluation and entered into

treatment on their own. They were going to escape some penalty that they didn't want to pay for their drinking; e.g., divorce, jail, being fired, etc. Once in treatment, they may then embrace their recovery program. But they were initially pushed into recovery.

Don't wait. If you know of someone who appears to be in trouble because of their drinking or drug use, don't wait for them to ask for help. They usually can't ask for help - that is the nature of this disease and of denial. You need to pick up the phone and call LCL. We can provide guidance and, if appropriate, connect you with an experienced, professional interventionist.

Things to remember:

1. Alcohol affects people differently. There may be a genetic pre-disposition to drink alcoholically. Alcohol triggers the disease and does not cause it.
2. Alcoholics may have been born with neurotransmitter deficiencies. Alcohol and other drugs mimic neurotransmitters and trigger a person's survival/reward system and hijacks the conscious brain leading to impaired control over drinking or drug use.
3. The initial site of action in the brain for alcohol is the medial forebrain bundle and not the frontal cortex. This is strong evidence that addiction is not under conscious control. Substance abuse, on the other hand, reflects conscious misuse of alcohol or other drugs.
4. Alcoholics and addicts require specialized treatment.
5. Substance abusers respond to education, jail, coercion, nagging, divorce or other critical life situations which motivates their desire to reduce or stop their use of alcohol/drugs.
6. Non-pharmacological or psychosocial treatments of chemical dependency (AA, therapy, in-patient treatment, etc.) result in the gradual shutting down of old neural pathways, the building of new pathways, and alterations in brain chemistry. Their success is contingent upon eventual abstinence. For some, this is a "Catch-22" because they can't stop drinking or using drugs long enough to allow neurological changes to occur.
7. Alcoholics and addicts who can't stop using may be suffering from multiple neurotransmitter deficiencies. Available medications, used as an adjunct to psychosocial treatment, can reduce craving or withdrawal symptoms in hopes of reducing relapse.
8. Advances in neuroscience research provide hope that someday, medications will be developed that restore normal neural transmitter functions; i.e., there will be a "cure" for chemical dependency.