Alcohol Alert

Number 85

The Link Between Stress and Alcohol

Today, more and more servicemen and women are leaving active duty and returning to civilian life. That transition can be difficult. The stresses associated with military service are not easily shed. But dealing with stress is not limited to recent Veterans. A new job, a death in the family, moving across the country, a breakup, or getting married—all are situations that can result in psychological and physical symptoms collectively known as "stress."

One way that people may choose to cope with stress is by turning to alcohol. Drinking may lead to positive feelings and relaxation, at least in the short term. Problems arise, however, when stress is ongoing and people continue to try and deal with its effects by drinking alcohol. Instead of "calming your nerves," long-term, heavy drinking can actually work against you, leading to a host of medical and psychological problems and increasing the risk for alcohol dependence.

This *Alert* explores the relationship between alcohol and stress, including identifying some common sources of stress, examining how the body responds to stressful situations, and the role that alcohol plays—both in alleviating and perpetuating stress.

Common Types of Stress

Most causes of stress can be grouped into four categories: general-life stress, catastrophic events, childhood stress, and racial/ethnic minority stress (see figure 1).[1,2] Each of these factors vary or are influenced in a number of ways by severity, duration, whether the stress is expected or not, the type of threat (emotional or physical), and the individual's mental health status (For example, does the person suffer from anxiety, co-occurring mental health disorders, or alcoholism?).[3] Examples of some of the most common stressors are provided below and summarized in figure 1.

General-Life Stressors

General-life stressors include getting married or divorced, moving, or starting a new job. Problems at home or work, a death in the family, or an illness also can lead to stress. People with an alcohol use disorder (AUD) may be at particular risk for these types of stresses. For example, drinking may cause problems at work, in personal relationships, or trouble with police.

Catastrophic Events

Studies consistently show that alcohol consumption increases in the first year after a disaster, including both manmade and natural events.[1] As time passes, that relationship is dampened. However, much of this research focuses on drinking only and not on the prevalence of AUDs. In the studies that looked specifically at the development of AUDs, the results are less consistent. In some cases, studies have

found no increases in AUDs among survivors after events such as the Oklahoma City bombing, September 11, Hurricane Andrew, or jet crashes. However, other studies of September 11 survivors have found that AUDs increased. This trend was similar in studies of Hurricane Katrina, the Mount St. Helens volcano eruption, and other events. Most of these studies included only adults. Additional studies are needed to better understand how adolescents and young people respond to disasters and whether there is a link to alcohol use.

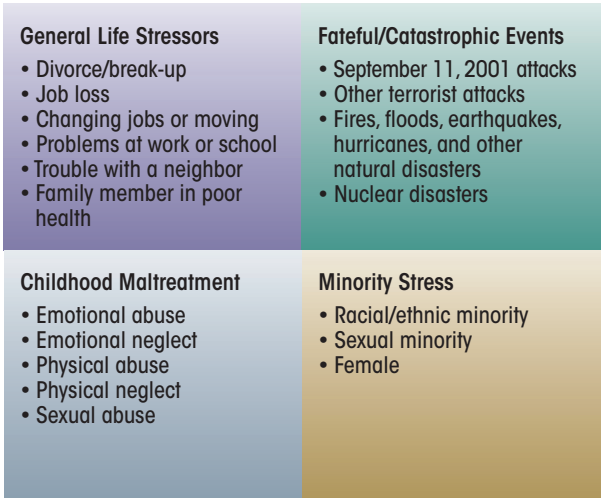

Figure 1 The four categories of stress.

Childhood Stress

Maltreatment in childhood includes exposure to emotional, sexual, and/or physical abuse or neglect during the first 18 years of life. Although they occur during childhood, these stressors have long-lasting effects, accounting for a significant proportion of all adult psychopathology.[4,5] Studies typically show that maltreatment in childhood increases the risk for both adolescent and adult alcohol consumption[1] as well as increased adult AUDs.[6] However, childhood maltreatment is more likely to occur among children of alcoholics, who often use poor parenting practices and who also pass along genes to their offspring that increase the risk of AUDs. Additional research is needed to learn exactly how the stresses of childhood neglect and abuse relate to alcohol use.[1]

Racial and Ethnic Minority Stress

Stress also can arise as a result of a person's minority status, especially as it pertains to prejudice and discrimination. Such stress may range from mild (e.g., hassles such as being followed in a store) to severe (e.g., being the victim of a violent crime). The stress may be emotional (e.g., workplace harassment) or physical (e.g., hate crimes). The relationship of these stress factors to alcohol use is complicated by other risk factors as well, such as drinking patterns and individual differences in how the body breaks down (or metabolizes) alcohol.[1]

Coping With Stress

The ability to cope with stress (known as resilience) reflects how well someone is able to adapt to the psychological and physiological responses involved in the stress response.[7]

When challenged by stressful events, the body responds rapidly, shifting normal metabolic processes into high gear. To make this rapid response possible, the body relies on an intricate system—the hypothalamic–pituitary–adrenal (HPA) axis—that involves the brain and key changes in the levels of hormonal messengers in the body. The system targets specific organs, preparing the body either to fight the stress factor (stressor) or to flee from it (i.e., the fight-or-flight response).[8,9]

The hormone cortisol has a key role in the body's response to stress. One of cortisol's primary effects is to increase available energy by increasing blood sugar (i.e., glucose) levels and mobilizing fat and protein metabolism to increase nutrient supplies to the muscles, preparing the body to respond quickly and efficiently. A healthy stress response is characterized by an initial spike in cortisol levels followed by a rapid fall in those levels as soon as the threat is over.

People are most resilient when they are able to respond quickly to stress, ramping up the HPA axis and then quickly shutting it down once the threat or stress has passed.[7] (See figure 2.)

Personality, heredity, and lifestyle all can dictate how well someone handles stress. People who tend to focus on the positive, remain optimistic, and use problem solving and planning to cope with problems are more resilient to stress and its related disorders, including AUDs.[10,11]

The personality characteristics of resilience are in sharp contrast to the ones associated with an increased risk for substance use disorders (e.g., impulsivity, novelty seeking, negative emotionality, and anxiety).[3,7] A person with a history of alcoholism in his or her family may have more difficulty dealing with the stress factors that can lead to alcohol use problems.[8,12,13] Likewise, having a mother who drank alcohol during pregnancy, experiencing childhood neglect or abuse, and the existence of other mental health issues such as depression can add to that risk.[6,14–16]

What Is Stress?

Stress is a part of everyday life, brought on by less-than-ideal situations or perceived threats that foster feelings of anxiety, anger, fear, excitement, or sadness. Physiologically, stress is considered to be anything that challenges the body's ability to function in its usual fashion. The body has developed remarkably complex and interrelated responses that are designed to ward off harmful or dangerous situations brought on by stress and to keep it in physiological balance.[8] Introducing alcohol into this mix throws off a person's physiological balance (see figure 2), compounding the problem and putting the body at even greater risk for harm.

Ongoing stress, or chronic, heavy alcohol use, may impair the body's ability to return to its initial balance point.[26–28] Instead, the body seeks to achieve a new set point (a process known as allostasis) of physiological functioning.[26] This is important because establishing the new balance point places a cost on the body in terms of wear and tear, and may increase the risk of serious disease, including alcohol use disorders.[8]

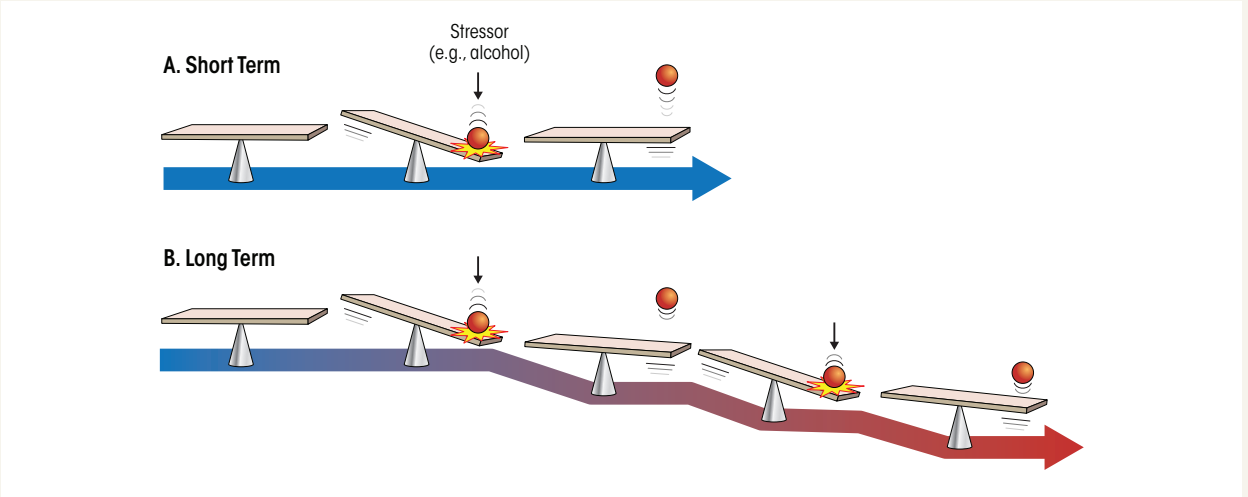

Figure 2 In the short term A), when faced with a stressful situation (such as a night of heavy drinking), the body's normal physiological balance is altered but quickly recovers once the stressor is removed. If the stressor continues over time (such as long-term heavy drinking) B), the demands on the body's systems are increased, making it harder for the body to regain its physiological balance. In response, the body simply "resets" its balance point, to a less optimal level of functioning.

Alcohol's Role In Stress

To better understand how alcohol interacts with stress, researchers looked at the number of stressors occurring in the past year in a group of men and women in the general population and how those stressors related to alcohol use.[1] They found that both men and women who reported higher levels of stress tended to drink more. Moreover, men tended to turn to alcohol as a means for dealing with stress more often than did women. For example, for those who reported at least six stressful incidents, the percentage of men binge drinking was about 1.5 times that of women, and AUDs among men were 2.5 times higher than women.[1]

Veterans who have been in active combat are especially likely to turn to alcohol as a means of relieving stress.[1] Posttraumatic stress disorder (PTSD), which has been found in 14 to 22 percent of Veterans returning from recent wars in Afghanistan and Iraq,[17,18] has been linked to increased risk for alcohol abuse and dependence.[2]

Stress and Alcoholism Recovery

The impact of stress does not cease once a patient stops drinking. Newly sober patients often relapse to drinking to alleviate the symptoms of withdrawal, such as alcohol craving, feelings of anxiety, and difficulty sleeping.[19] Many of these symptoms of withdrawal can be traced to the HPA axis, the system at the core of the stress response.[20]

As shown in figure 2, long-term, heavy drinking can actually alter the brain's chemistry, re-setting what is "normal." It causes the release of higher amounts of cortisol and adrenocorticotropic hormone. When this hormonal balance is shifted, it impacts the way the body perceives stress and how it responds to it.[21,22] For example, a long-term heavy drinker may experience higher levels of anxiety when faced with a stressful situation than someone who never drank or who drank only moderately.

In addition to being associated with negative or unpleasant feelings, cortisol also interacts with the brain's reward or "pleasure" systems. Researchers believe this may contribute to alcohol's reinforcing effects, motivating the drinker to consume higher levels of alcohol in an effort to achieve the same effects.

Cortisol also has a role in cognition, including learning and memory. In particular, it has been found to promote habit-based learning, which fosters the development of habitual drinking and increases the risk of relapse.[23] Cortisol also has been linked to the development of psychiatric disorders (such as depression) and metabolic disorders.

These findings have significant implications for clinical practice. By identifying those patients most at risk of alcohol relapse during early recovery from alcoholism, clinicians can help patients to better address how stress affects their motivation to drink.

Early screening also is vital. For example, Veterans who turn to alcohol to deal with military stress and who have a history of drinking prior to service are especially at risk for developing problems.[24] Screening for a history of alcohol misuse before military personnel are exposed to military trauma may help identify those at risk for developing increasingly severe PTSD symptoms.

Interventions then can be designed to target both the symptoms of PTSD and alcohol dependence.[25] Such interventions include cognitive–behavioral therapies, such as exposure-based therapies, in which the patient confronts the cues that cause feelings of stress but without the risk of danger. Patients then can learn to recognize those cues and to manage the resulting stress. Researchers recommend treating PTSD and alcohol use disorders simultaneously[25] rather than waiting until after patients have been abstinent from alcohol or drugs for a sustained period (e.g., 3 months).

Medications also are currently being investigated for alcoholism that work to stabilize the body's response to stress. Some scientists believe that restoring balance to the stress-response system may

help alleviate the problems associated with withdrawal and, in turn, aid in recovery. More work is needed to determine the effectiveness of these medications.[19]

Conclusion

Although the link between stress and alcohol use has been recognized for some time, it has become particularly relevant in recent years as combat Veterans, many with PTSD, strive to return to civilian lifestyles. In doing so, some turn to alcohol as a way of coping.

Unfortunately, alcohol use itself exacts a psychological and physiological toll on the body and may actually compound the effects of stress. More research is needed to better understand how alcohol alters the brain and the various circuits involved with the HPA axis. Powerful genetic models and brain-imaging techniques, as well as an improved understanding of how to translate research using animals to the treatment of humans, should help researchers to further define the complex relationship between stress and alcohol.[26]

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Resources

Source material for this *Alcohol Alert* originally appeared in *Alcohol Research: Current Reviews,* 2012, Volume 34, Number 4.

Alcohol Research: Current Reviews, 2012, 34(4) summarizes the latest findings on the link between stress and alcohol. Articles examine different sources of stress, such as childhood abuse and trauma, post-traumatic stress disorder, and comorbidity. Other topics explore how stress influences the development of alcohol abuse and dependence, and the impact this has on treatment and recovery. The issue concludes by looking at the role of genetics, epigenetics, and the environment in the stress response.

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