Rachel P. Winograd · Kenneth J. Sher

Binge Drinking and Alcohol Misuse

Among College Students and Young Adults

Advances in Psychotherapy

Evidence-Based Practice

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1

Description of Young-Adult Alcohol Misuse

Alcohol misuse is common in North America and throughout much of the industrialized and developing world. In most Western countries, alcohol problems are especially pronounced in late adolescence and early adulthood – particularly during the college years – and represent a significant public health problem. In this book, we describe the nature of alcohol misuse, its epidemiology, its causes, and methods for treatment. Fundamental to this discussion is a consideration of the basic terminology of relevant alcohol-related concepts because there are many facets of alcohol misuse, and, despite some commonalities, not all of these facets can be viewed as interchangeable from a clinical or public health perspective.

1.1 Terminology and Definitions

We use the terms *alcohol misuse* and *alcohol problems* to refer to a range of phenotypic behaviors and conditions. These terms are used by clinicians, public health workers, and researchers to describe different types of consumptive behaviors and consequences.

1.1.1 Consumption

Perhaps the most basic concept in characterizing alcohol involvement is alcohol consumption. At a fundamental level, though people can be classified as drinkers or abstainers, the classification of drinkers represents a large and highly diverse group that includes those who drink in moderation and those whose drinking patterns put them at risk for a range of consequences. It is important to note that current diagnostic criteria for alcohol-related disorders – alcohol use disorders (AUDs), according to the *Diagnostic and Statistical Manual of Mental Disorders,* 5th Edition (DSM-5; American Psychiatric Association, 2013), and alcohol dependence and hazardous use, according to the *International Statistical Classification of Diseases and Related Health Problems,* 10th Edition (ICD-10; World Health Organization (WHO), 2008) – both described below – fail to include direct measures of alcohol consumption despite the health-relevance of excessive alcohol consumption. Although not presenting formal diagnostic criteria, the US government has published safe-drinking guidelines as part of their 2010 *Dietary Guidelines for Americans*

AUD diagnostic criteria do not include measures of consumption, such as how much or how often someone drinks

Healthy drinking limits according to the National Institutes of Health: Men: No more than 14 drinks per week or four drinks per occasion Women: No more than seven drinks per week or three drinks per occasion

(US Departments of Agriculture and of Health and Human Services, 2010). Moderate consumption of alcohol is defined as ≤ 2 drinks a day for men and ≤ 1 drink a day for women. Drinking ≥ 15 drinks a week for men and ≥ 8 drinks a week for women, or ≥ 5 drinks in a given day for men or ≥ 3 drinks in a given day for women is considered *high-risk* drinking, based on epidemiological data documenting increased health-related risks that occur at those consumption levels. One study found that almost one half of men and one third of women drinkers in the United States exceed these safe-drinking levels (Dawson, Grant, & Li, 2005).

In addition, there has been increasing concern in recent years over drinking patterns associated with high levels of consumption on drinking days (i.e., *binge* drinking). The US National Institute of Alcohol Abuse and Alcoholism (NIAAA) defines binge drinking as "a pattern of drinking alcohol that brings blood alcohol concentration (BAC) to 0.08 g/dL or above. For the typical adult, this pattern corresponds to consuming 5 or more drinks (male), or 4 or more drinks (female), in about 2 hours" (NIAAA, 2011). Such patterns represent significant risk for the drinker and for society. It is important to note that the five/four binge drinking definition can be a problem, as not everyone in this 2-hr time period will exceed a 0.08 g/dL BAC. Conversely, some drinkers who drink less than the five/four binge drinking threshold might achieve a BAC greater than 0.08 g/dL. The reason for such variability is related to the wide variation among men and among women in their body masses, stomach contents at the time of drinking, individual differences in alcohol metabolism rates (pharmacokinetics), and other individual factors that can vary substantially from one person to another (e.g., Cederbaum, 2012). In addition, it is possible that a different threshold might be better for identifying individuals likely to have alcohol-related difficulties. Despite any problems with a five/four threshold definition, it represents a useful metric to convey to the public what is considered a risky level of consumption and for amassing statistics on rates of heavy alcohol consumption. Note that use of the term *binge drinking* to describe this phenomenon is controversial (see Wechsler & Nelson, 2001), with some researchers arguing against its use because the term has historically been used to denote a more extreme drinking phenomenon sometimes observed in individuals with severe alcohol dependence (i.e., a "bender," a period of continuous intoxication lasting a day or more). Consequently, sometimes in the research literature the term *heavy episodic drinking* is used to describe binge drinking, with those who binge more than once a week being classified as *frequent heavy drinkers*.

NIAAA definition of binge drinking: five or more drinks (for men) or four or more drinks (for women) within a 2-hr period

Extreme Consumption and Heavy Drinking Events

Drinking patterns among heavy drinking college students and young adults tend to be highly patterned as a function of day of the week, major holidays, academic breaks, and personal milestones. Studies of daily drinking over the course of the calendar year indicate that college students often engage in weekend-like drinking during the week (e.g., "Thirsty Thursdays"; Wood, Sher, & Rutledge, 2007) and that some holidays and events are strongly associated with particularly high spikes in alcohol consumption (Neighbors et al., 2011). These include traditional holidays (e.g., New Year's Day, Fourth of July), regional holidays with strong drinking traditions, sporting events (e.g., Super

Bowl), and traditional drinking rites of passage (e.g., 21st birthday, Spring Break). Moreover, college students and young adults are known for their methods of drinking that facilitate extremely heavy consumption, such as drinking heavily before leaving for a party ("prepartying") and playing drinking games.

Day of the Week

One aspect of college-age drinking that sets it apart from the typical drinking patterns of older adults is the frequent heavy drinking that occurs on Thursday nights, in addition to the usual Friday and Saturday night drinking. Often called "Thirsty Thursday" (Wood, Sher, & Rutledge, 2007), Thursday night drinking can be just as heavy as weekend drinking, and does not have the same repercussions as Monday, Tuesday, or Wednesday night drinking, because many college campuses offer fewer classes on Fridays, essentially separating it from the typical academic week. In fact, researchers have found that students who did not take Friday classes drank twice as much as students with Friday early morning classes (Wood, Sher, & Rutledge, 2007), and a NIAAA committee has suggested that administrators consider increasing the number of Friday morning classes to curtail excessive Thursday night drinking (Malloy, Goldman, & Kington, 2002).

Twenty-First Birthday Celebrations

Perhaps epitomizing the extremes that characterize some drinking during this stage of life is the phenomenon of 21st birthday drinking, when many young adults attempt to drink "21 for 21" (i.e., a drink for each year of the person's life). Although not all young drinkers attempt to accomplish this particular drinking milestone, for almost half of those drinking to celebrate their 21st birthday, this one occasion will represent the heaviest drinking event of their life to date (Rutledge, Park, & Sher, 2008). Although many young adults intend to consume large quantities of alcohol on that occasion, on average, celebrants drink more than intended, especially if they drink quickly, drink shots, and engage in various 21st birthday rituals. Given the high levels of consumption, it is not surprising that these celebrations are associated with a range of negative acute risks from drinking, including high rates of vomiting, blackouts, hangovers, physical impairment, and engaging in sexually provocative behavior. Recently, Neighbors et al. (2011) estimated the mean blood alcohol concentration (BAC) experienced by a sample of college undergraduates in the year they turned 21 years of age, across a range of different drinking events. Twenty-first birthday celebrations led the list, with estimated BACs of 0.19 g/dL (more than twice the legal limit for driving while intoxicated). Several other events are also associated with mean BACs over 0.08 g/dL (e.g., New Year's Eve and Day, Super Bowl, Mardi Gras, St. Patrick's Day, Spring Break, Cinco de Mayo, graduation, and Fourth of July). Not surprisingly, these events have been targeted for event-specific, preventive interventions (e.g., Neighbors et al., 2012).

Spring Break

Though 21st birthday celebrations may represent the extreme of heavy drinking events, there are a number of events that have been associated with very heavy drinking during the college years, such as Spring Break for students. Spring Break drinking resembles weekend drinking, and each day of vaca-

tion is like a weekend day. In addition to considering how specific events are superimposed upon what is, for many, already a heavy drinking stage of life, there are a number of other activities that are common in early adulthood that are further associated with heavy drinking, such as involvement with drinking games and drinking prior to attending certain events which are themselves associated with further drinking (e.g., prepartying, pregaming, and preloading).

Drinking Games

Drinking games refer to a diverse range of activities that are structured as games or competitions, involve the consumption of alcohol, and are associated with extreme drinking. One recent typology (LaBrie, Ehret, & Hummer, 2013) classified 100 drinking games into five different categories: (1) *targeted and skill games* (i.e., games that have a single loser who has to drink or a winner who gets to choose who drinks), (2) *communal games* (i.e., games in which everyone participates simultaneously following an agreed-upon set of rules as to when and how much is to be consumed – such as when certain events occur in a movie or TV show), (3) *chance games* (e.g., where how much someone drinks is determined by a random process such as drawing cards or rolling dice), (4) *extreme consumption games* (e.g., games involving downing one or more standard drinks quickly, like using a "beer bong" or doing a "keg stand"), and (5) *even competition games* (e.g., various individual or team games where the losers are obligated to drink). Participation in these drinking games has been associated with heavy consumption, although, not surprisingly, extreme consumption games were associated with the highest drinking levels. Though drinking games are typically associated with collegiate life and a large proportion of college students participate in them, many students come to college already having substantial experience with these games. In fact, one study (Borsari, Bergen-Cico, & Cary, 2003) found that a majority of incoming freshmen reported involvement in drinking games in high school, and their involvement in college represented more of a continuation of this behavior than an initiation. The motivations behind drinking game involvement have been explored in a number of studies, and, as summarized by Borsari et al. (2003), drinking games provide a form of structured interaction, a quick way to get drunk and readily induce a sense of camaraderie among participants. Though there is little empirical research on drinking game involvement following college, it seems likely that as the social structure of drinking changes, the frequency of engaging in drinking games does as well, and drinking games do not appear to be as prominent a feature of drinking further into adulthood.

Events and drinking methods commonly associated with young-adult binge drinking include Thursday night drinking, 21st birthday celebrations, Spring Breaks, Drinking Games, pregaming/ prepartying/ preloading

Pregaming, Prepartying, and Preloading

In recent years, there has been increased attention to the phenomenon referred to as pregaming, prepartying, or preloading, where people drink *prior* to going out to a drinking event (e.g., bar or party) where they continue to drink. In a recent study where the BACs of a large sample of student and nonstudent adult bar patrons in a college town were directly assessed (Barry, Stellefson, Piazza-Gardner, Chaney, & Dodd, 2013), those who had pregamed had significantly higher BACs, and pregaming explained 11% of the variation in BAC. Pregaming appears to be highly prevalent in college students. One recent multicampus study of freshmen and sophomores showed that 75% of drinkers

engaged in pregaming, and it accounted for almost one third of all drinking occasions examined (Barnett, Orchowski, Read, & Kahler, 2013). Importantly, pregaming was associated with about a two-drink difference in total consumption and a 0.04 g/dL BAC increase over non-pregaming-drinking BACs. Moreover, involvement in pregaming may be associated with drinking problems over and above that predicted by total number of drinks consumed, suggesting that some contextual variables might further increase risk.

Examining the nature of young adults' drinking can provide clinicians with useful information about ways to reduce the frequency and intensity of their clients' drinking that is either already risky or heading in the direction of being risky. It is important to note that some of the drinking events and methods highlighted in this section are associated with strong environmental goads toward drinking, something that both clinicians and clients need to understand and explore. Though the heaviest drinkers are those most likely to engage in activities that lead to binge and extreme drinking, in each of these drinking situations (e.g., Spring Break, drinking games, and pregaming), it is often those less experienced who are at greatest risk for negative consequences (e.g., Lee, Lewis, & Neighbors, 2009).

1.1.2 Alcohol Problems

Although excessive consumption can be a problem in its own right, for many years, social epidemiologists have studied the overall prevalence and distribution of individual problems that are associated with alcohol. Simply stated, alcohol problems are consequences of alcohol consumption, that are associated with harm or are undesired (see Table 1).

We can think of consequences as resulting from acute effects of alcohol (i.e., effects attributable to a discrete drinking episode) such as alcohol blackouts (i.e., total loss of memory for part of a drinking episode) or a hangover, or from chronic effects of alcohol use (e.g., alcoholic cirrhosis). Moreover, alcohol can cause problems in a number of domains including health (e.g., gastrointestinal diseases, cardiac diseases, neurological impairment, sexual dysfunction, unintentional injuries), occupation, and schooling (e.g., job loss,

Table 1
Alcohol Problems

Type of effect	Example
Acute	Blackout (memory loss), vomiting, headache/hangover
Chronic physical	Cirrhosis, gastrointestinal problems
Occupational	Academic failure, job loss
Legal	Driving while intoxicated (DWI), public intoxication, minor in possession (MIP)
Social	Physical fights, verbal arguments, relationship difficulties

academic failure), legal repercussions (e.g., arrests for driving while intoxicated, public intoxication, minor in possession), and social problems (e.g., physical fights, arguments, relationship difficulties). Though in some cases, one can be confident in attributing alcohol as a sole cause of certain consequences (e.g., memory loss or a staggering gait during an episode of heavy intoxication in an otherwise healthy person), in other cases, the attribution of alcohol as a cause of consequences (e.g., erratic driving while mildly intoxicated, getting into fights after drinking) is less clear. This is because both drinking itself and drinking to intoxication are associated with individual characteristics that could be related to the consequences. That is, individuals who are more aggressive are more likely both to drink and to display aggression when intoxicated (Giancola, 2000). Similarly, individuals who drink and drive are likely to be risky drivers when not drinking (Donovan, 1993). It thus seems reasonable to assume that the extent to which a consequence is directly related to one's drinking is variable, and, depending upon the nature of the problem, one must be careful in definitively ascribing a problem as alcohol-related. Medical epidemiologists routinely employ the concept of alcohol attributable fraction (AAF) to statistically describe the presumed proportion of variance that alcohol accounts for in various conditions and disease states (e.g., Rehm et al., 2009), in recognition of the multiple causes of most medical diseases. Similarly, many purported consequences of alcohol consumption are likely determined by multiple factors, and thus it is important to remember that there is a large contribution of the drinker as well as the drink and of the context in which drinking occurs, to the occurrence and severity of an alcohol-related consequence. This may be especially true when alcohol is used strategically in a social situation to provide an "excuse" for anticipated failure and potentially in situations where alcohol is consumed to overcome one's inhibitions (i.e., "liquid courage").

The types of problems most frequently reported by young-adult drinkers are those associated with excessive consumption such as blackouts, hangovers, throwing up, interpersonal conflicts, illegal behaviors, regretted sexual behaviors, academic or vocational impairment, and engaging in hazardous behaviors (e.g., unprotected sex, driving while intoxicated). Several alcohol problem scales described later provide inventories of these and other events that are particularly relevant for young adulthood and can be of value in assessing and developing feedback for clients. It is important to note that many young adults can endorse a litany of problems encountered from drinking but not report "having an alcohol problem," and some consequences that are seen as "problems" to clinicians or society in general might not be so viewed by younger problem drinkers. Consequently, a clinician cannot assume that a problem *experienced* is a problem *perceived.* Clinicians can use a motivational approach and the type of language described later in this book (e.g., reflect what the drinker says; have drinkers give voice to what kinds of problems their continued risky drinking might cause them) when talking with such drinkers, to avoid resistance.

1.1.3 Alcohol Dependence and Alcohol-Related Disorders

Almost 40 years ago, Griffith Edwards and Milton Gross were careful to distinguish alcohol dependence from alcohol-related consequences (or disabilities)

(Edwards & Gross, 1976). These scholars used the term alcohol-related consequences to refer to a variety of negative life events that appeared to result from the acute and/or chronic effects of alcohol consumption. This was in contrast to the concept of alcohol dependence syndrome (ADS) or alcohol dependence, in which physiological signs and symptoms of dependence were indicators but not necessary criteria for the diagnosis of dependence. More specifically, the notion of alcohol dependence referred to a syndrome comprising a variety of signs and symptoms that signified the importance that alcohol consumption has come to play in the drinker's life. These signs and symptoms included what Edwards and Gross described as "a narrowing of the drinking repertoire," centrality of drinking in the person's life relative to other life tasks and responsibilities, tolerance and withdrawal, "awareness of the compulsion to drink," and rapid reinstatement of dependence symptoms after a period of abstinence (Edwards & Gross, 1976). Both substance-related consequences and the dependence syndrome can be viewed as correlated, dimensional constructs that are graded in intensity from absent to severe and do not explicitly reference the *amount* of substance consumed as a criterion (see Edwards, 1986).

1.1.4 Diagnosis

Currently, alcohol-related disorders can be diagnosed according to two major diagnostic systems: that of the *Diagnostic and Statistical Manual of Mental Disorders*, 5th Edition (DSM-5), published by the American Psychiatric Association (2013), and that of the *International Statistical Classification of Diseases and Related Health Problems*, 10th Edition (ICD-10), published by the World Health Organization (WHO, 2008). Though the DSM has previously been relied upon by American clinicians, researchers, health insurance companies, and others to make and study psychiatric diagnosis, it is scheduled to be replaced in October of 2015 by the ICD for most clinical purposes (APA Practice Organization – Practice Central, 2014; see also in Section 3.2) Specifically, clinicians will be required to bill insurance companies using ICD code sets instead of DSM codes. Because the majority of those in psychology-related fields have been trained on earlier versions of the DSM, but will soon need to adopt the language of the ICD, we provide a brief discussion of the terminology, criteria, and issues relevant to alcohol-related disorders presented in the *Diagnostic and Statistical Manual of Mental Disorders*, 4th Edition (DSM-IV), the DSM-5, and the ICD-10 diagnostic systems in the sections that follow.

Alcohol Use Disorder in the DSM

In the DSM-IV (American Psychiatric Association, 1994), AUDs used to be represented by two diagnoses: alcohol abuse and alcohol dependence. Alcohol abuse was a residual category for a pathological pattern of drinking characterized by consequences but without evidence of physiological dependence. Specifically, it was defined as

> a maladaptive pattern of substance use 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, (2) recurrent substance use in situations in which it is physically hazardous, (3) recurrent substance-related legal problems, and (4) continued substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance. (American Psychiatric Association, 1994, p. 198)

In contrast, a diagnosis of alcohol dependence was intended to be consistent with the Edwards and Gross notion of the ADS (Edwards & Gross, 1976). Specifically, it was defined as a maladaptive pattern of use, leading to clinically significant impairment or distress, as manifested by three (or more) of the following symptoms occurring at any time in the same 12-month period: (1) tolerance; (2) withdrawal; (3) the substance is often taken in larger amounts or over a longer period than intended; (4) 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, use the substance, or recover from its effects; (6) important social, occupational, or recreational activities are given up or reduced because of substance use; and (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 (American Psychiatric Association, 1994). According to the DSM-IV's diagnostic hierarchy, individuals who met criteria for alcohol dependence did not receive diagnoses for alcohol abuse, implying that dependence was the more severe of the two AUDs.

However, in the recently published DSM-5 (American Psychiatric Association, 2013), the abuse/dependence distinction is abandoned in favor of a single AUD diagnosis that includes in its criteria set symptoms of both abuse and dependence (for a total of 11 symptoms). To obtain a diagnosis, clients must endorse at least two symptoms as occurring within a 12-month period (2–3 symptoms produces a diagnosis of "mild," 4–5 of "moderate," and ≥ 6 of "severe"). In addition to the added severity specifiers, other major changes to the DSM-5 AUD diagnosis include the inclusion of craving (long considered a hallmark symptom of dependence, which was included in the ICD-10 and not included in DSM-IV) and the dropping of legal problems (a DSM-IV abuse symptom that has proven to be problematic on psychometric grounds). Although DSM-5 AUD is ostensibly more severe at threshold than DSM-IV AUD, in requiring a minimum of two symptoms (instead of one for DSM-IV abuse), there is still concern that the new criteria remain too liberal and will yield artificially high prevalence rates (Martin, Steinley, Vergés, & Sher, 2011) with most diagnosed cases manifesting low levels of pathology. In addition, critics (e.g., Martin, Sher, & Chung 2011) do not believe that one of the most prevalent symptoms of substance use disorder (SUD), hazardous use, should be included as a diagnostic criterion, since it is not clearly anchored in substance-related pathology. That is, repeated heedless use may reflect little more than incautious behavior that is simply being manifested by use of the substance but is not specific to it. Why should there be a "hazardous use" symptom of AUD when other hazardous behaviors (e.g., reckless driving or texting while driving, both particularly common in young adulthood) are not similarly pathologized? Despite these concerns on conceptual and clini-

cal grounds, the new criteria were designed, in part, to yield prevalence rates roughly comparable to DSM-IV and, thus, may show little practical difference in epidemiology. Indeed, one recent analysis of adults aged 21 and over in the United States showed that the past-year prevalence of AUD increases from 9.7% to 10.8% when moving from using DSM-IV criteria to DSM-5 (Dawson, Goldstein, & Grant, 2013), although a large minority of individuals with DSM-IV alcohol abuse failed to be diagnosed with DSM-5 AUD, and some mildly affected individuals were diagnosed as having an AUD under DSM-5 who did not meet DSM-IV criteria; in contrast, those individuals who met criteria for DSM-IV dependence were typically diagnosed under DSM-5 AUD criteria (and tended to have endorsed four or more of the 11 symptoms). As noted by Dawson et al. (2013), the change from DSM-IV to DSM-5 may have minimal practical consequences for the clinician because those who met criteria for DSM-IV dependence are likely to endorse four or more symptoms under DSM-5. However, it can be argued that the abandonment of the concept of dependence is premature, especially since the concept of AUD no longer has a conceptual core and because many of those individuals who will be diagnosed at threshold (i.e., endorse two of 11 AUD symptoms) under DSM-5 will have minimal symptomatology. The concept of dependence remains clinically and etiologically meaningful because it connotes that the nature of the problem is internal and associated with drinking motivation related to neuroadaptation and the development of compulsive alcohol seeking. This is quite different from someone who misuses alcohol as part of a more general risk-taking and heedless lifestyle, where alcohol is often a manifestation of a broader externalizing problem.

Alcohol-Related Disorders in the ICD

The 10th edition of the *International Classification of Diseases* (ICD-10; WHO, 2008) contains two alcohol-related diagnoses that are most relevant to young-adult alcohol misuse and problems: (1) harmful use and (2) dependence syndrome (the ICD-10 also includes diagnoses of acute intoxication and withdrawal state, but these are less pertinent for clinical practice with young adults and therefore will not be discussed further here). The harmful use category is defined by "a pattern of psychoactive substance use that is causing damage to health. The damage may be physical (as in cases of hepatitis from the self-administration of injected drugs) or mental (e.g., episodes of depressive disorder secondary to heavy consumption of alcohol)" (p. 69). Though this classification sounds superficially similar to the "hazardous use" criterion in DSM-5, note that the ICD-10 harmful use diagnosis extends only to changes in health status (physical or mental) that are associated with alcohol consumption and does not cover the area of "risky" behavior, which is the primary thrust of the DSM-5 hazardous use criteria. Among the reasons to include the hazardous use diagnosis in the ICD-10 is that it is well-defined and responds to medical and/or psychological treatment, as is evidenced by an empirical basis of the disorder remitting in response to therapy (e.g., Bertholet et al., 2005). In contrast, a dependence syndrome diagnosis – considered the central alcohol-related diagnosis in the ICD-10 (WHO, 2008, p. 69) – is partially defined by "a cluster of physiological, behavioral, and cognitive phenomena in which the use of a substance or a class of substances takes on a much higher priority for

a given individual than other behaviors that once had greater value," which is much like Edwards and Gross's "narrowing of the drinking repertoire" concept described earlier. Additionally, at least three of the following six symptoms need to be endorsed to meet criteria for a dependence syndrome diagnosis: (1) a strong desire or sense of compulsion to take the substance; (2) difficulties in controlling substance-taking behavior in terms of its onset, termination, or levels of use; (3) a physiological withdrawal state when substance use has ceased or been reduced, as evidenced by the characteristic withdrawal syndrome for the substance, or use of the same (or a closely related) substance with the intention of relieving or avoiding withdrawal symptoms; (4) evidence of tolerance, such that increased doses of the psychoactive substances are required to achieve effects originally produced by lower doses; (5) progressive neglect of alternative pleasures or interests because of psychoactive substance use, increased amount of time necessary to obtain or take the substance or to recover from its effects; (6) persisting with substance use despite clear evidence of overtly harmful consequences, such as harm to the liver through excessive drinking, depressive mood states consequent to periods of heavy substance use, or drug-related impairment of cognitive functioning (WHO, 2008, p. 70). Efforts should be made to determine that the user was actually, or could be expected to be, aware of the nature and extent of the harm (all ICD-10 diagnostic and criteria information is publically available at http://www.who.int/substance_abuse/terminology/ICD10ClinicalDiagnosis.pdf). Because a diagnosis of ADS is considered more severe, it supersedes the harmful use diagnosis. Though draft ICD-11 criteria (ICD-11 Beta Draft) suggest that the ICD distinction between the dependence syndrome and harmful use will remain and will not be combined as in the DSM-5, this will not be finalized until sometime in 2015 (WHO, 2014).

Diagnostic "Issues"

In terms of conceptualizing and diagnosing clinical cases, the information presented here on both the DSM-5 and the ICD-10 is immediately relevant to clinicians, as the American Psychological Association (APA) encourages clinicians to still use the DSM-5 to arrive at diagnostic conclusions, even though the ICD-10 codes will be used for billing purposes (APA Practice Organization – Practice Central, 2014). Specifically, the DSM-5 contains ICD-10 code sets next to each diagnosis, allowing clinicians to make a diagnosis according to DSM-5 criteria while still being able to use ICD-10 code sets for billing purposes without needing to switch between two different documents to do so. However, it may be useful for clinicians to note that there are only two ICD-10 codes for the three different severity levels of AUD in the DSM-5. (The code for "mild" AUD corresponds to harmful use/alcohol abuse, and the codes for "moderate" and "severe" are the same and correspond to ADS.)

1.2 Epidemiology and Course

Though ICD-10 terminology and coding sets will become increasingly used in clinical settings, the vast majority of existing and recent alcohol-related

research has been conducted based on the criteria and diagnoses presented in the DSM-IV. As such, most of the material in this section discussing the causes, courses, and comorbidities of alcohol-related disorders is from research conducted on AUDs, in the language of the DSM-IV (specifically, alcohol abuse and dependence are discussed as distinct constructs even though in the current DSM-5 they are merged).

Population-based, epidemiological surveys indicate that the AUD prevalence rates are high, especially among young adults. Over the past 30 years, there have been five large-scale, population-based epidemiological surveys. These studies indicate very high past-year and lifetime prevalence rates of AUDs in the general population of US adults 18 years and older. For example, in the National Epidemiological Survey on Alcohol and Related Condition (NESARC; Grant et al., 2004), 30.3% of US adults met lifetime and 8.46% met past-year DSM-IV AUD criteria. Generally, men are more likely to be diagnosed with AUDs than women. There are clear ethnic differences in the prevalence of AUDs, with Whites, Hispanics, and Native Americans having higher rates than African Americans and Asian Americans.

The prevalence of AUDs in the United States and much of the rest of the world is strongly age-graded. Figure 1 illustrates the dramatic age gradient with peak prevalence for both abuse and dependence occurring early in the third decade of life, with large decreases in prevalence clearly evident by age 30 (see Figure 1). These prevalence rate changes for AUDs over the life course

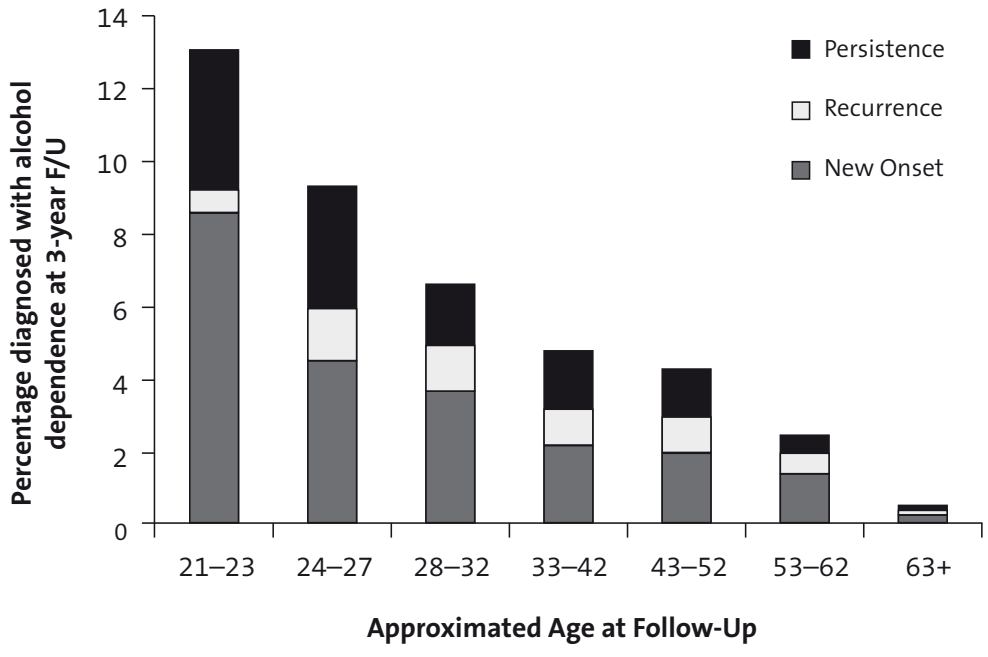

Figure 1
Relative contribution of the three alcohol dependence groups to the overall alcohol dependence prevalance across age groups. The *y*-axis represents the percentage of participants diagnosed with past 12-month alcohol dependence at Wave 2. Age groups were created on the basis of age reported at Wave 1, so that the *x*-axis shows the approxiated age at Wave 2. F/U = follow-up; *n* = total number of participants within each age group.
Adapted from Vergés et al. (2012).

Highest risk for AUD is between the ages of 18 and 25, a period often referred to as emerging adulthood

suggest that we should consider AUDs, at least in part, to be a developmental disorder of young adulthood. In the United States, the period between adolescence and adulthood reflects when individuals are at the highest risk for manifesting an AUD, with the peak onset for both alcohol abuse and dependence occurring around 20 years of age. The age prevalence curve for binge drinking is similar to that for AUDs. Across four national surveys from 1993 to 2001, the highest rates of binge drinking were observed in the age strata associated with late adolescence (18–20 years of age, 19.6%–26.1%) and young adulthood (21–25 years of age, 26.5%–32.2%); these rates fall off considerably later in adulthood (26–34 years of age, 19.5%–21.3%; 35–54 years of age, 11.7%–13.6%; and > 55 years of age, 3.8%–4.3%) – see Table 2.

Table 2
Rates of Binge Drinking Across Age Groups

Age range	Percentage who binge drink
18–20	19.6%–26.1%
21–25	26.5%–32.2%
26–34	19.5%–21.3%
35–54	11.7%–13.6%
> 55	3.8%–4.3%

It is important to note that this age gradient reflects both the *prevalence* of binge drinking as well as the *intensity* of binge drinking. Similar to what occurs with AUDs, men engage in binge drinking more frequently than women, and Whites and Hispanics binge more frequently than African Americans. In addition, though the young-adult age stratum is most strongly associated with the highest rates of binge drinking, it is paradoxically associated with the lowest *perceived* risk from this type of drinking problem. Likewise, this period of life is also associated with the largest gap between "need for treatment of alcohol use" and receiving specialized services for this problem. This heightened risk for alcohol misuse and binge drinking is thought to reflect a life stage when individuals are relatively free of adult responsibilities but unrestrained by parental influence. However, as individuals progress into adulthood, and assume adult responsibilities (e.g., marriage, parenthood, jobs), rates of AUDs typically decrease, a phenomenon that is known as "maturing out" (e.g., O'Malley, 2004). Though maturing out has traditionally been attributed to the assumption of adults roles creating incompatibility between these roles and a heavy drinking lifestyle, other developmental changes occurring within the person, especially changes in personality traits associated with normative adult development, also appear to be related to a reduction in alcohol problems during the third decade of life (Littlefield, Sher, & Wood, 2009). That is, reductions in alcohol misuse reflect more than vocational and family constraints and are likely influenced by more general aspects of psychosocial maturity.