

# Learning Series - #34



## Alcohol Consumption and Its Impact on Life Underwriting: A Comprehensive Analysis

**Alcohol consumption and its harmful effects** contribute significantly to the global burden of disease and injuries. Despite being among the leading public health problems worldwide, alcohol use disorders and associated morbidities often remain underdiagnosed. Life underwriters are tasked with the challenge of identifying alcohol habits, while assessing the health risks associated with alcohol overuse, which can include liver diseases, cardiovascular issues, mental health disorders, and an increased risk of accidents.

According to the Centers for Disease Control and Prevention (CDC), excessive alcohol use includes:

Type of Excessive Alcohol Use	Definition
<b>Binge Drinking</b>	Consuming on one occasion, within a short period (about 2 hours): 4 or more drinks for a woman 5 or more drinks for a man
<b>Heavy Drinking</b>	Consuming: 8 or more drinks per week for a woman 15 or more drinks per week for a man
<b>Alcohol Use Disorder</b>	Characterized by a pattern of behavior that includes: a) The inability to limit drinking b) Continuing to drink despite personal or professional problems c) Needing to drink more alcohol to get the same effect (tolerance) d) Wanting a drink so badly that one cannot think of anything else
<b>Any Alcohol Use by Pregnant Women</b>	Consumption of any amount of alcohol by pregnant women is considered excessive alcohol use due to risks to the fetus.



Standard drink chart (or alcoholic drink equivalents):

Beverage Type	Container Size		Standard Drinks
Regular Beer (5% alc/vol)	12 fl oz	354ml	1
	16 fl oz	473ml	1 1/3
Malt Liquor (7% alc/vol)	12 fl oz	354ml	1 1/2
	16 fl oz	473ml	2
Table Wine (12% alc/vol)	6-9oz	177ml	1
	25oz bottle	750 ml	5
80-Proof Distilled Spirits (40% alc/vol)	1.5 oz shot	44ml	1



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## Alcohol Consumption and Its Impact on Life Underwriting: A Comprehensive Analysis (cont'd)

In 2013, the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) redefined alcohol-related diagnoses by combining "alcohol abuse" and "alcohol dependence" into a single category called **Alcohol Use Disorder (AUD)**. This change introduced a *spectrum-based approach*, allowing for varying levels of severity. The severity of AUD is determined by the number of symptoms a person displays, enabling more precise diagnosis and treatment planning.



### Symptoms of Alcohol Use Disorder:

1.	Drinking more or for a longer period than intended.
2.	Persistent desire or unsuccessful efforts to cut down or control alcohol use.
3.	Spending a lot of time obtaining, using, or recovering from alcohol.
4.	Craving or a strong desire to use alcohol.
5.	Recurrent alcohol use resulting in a failure to fulfill major role obligations at work, school, or home.
6.	Continued alcohol use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of alcohol.
7.	Giving up or reducing important social, occupational, or recreational activities because of alcohol use.
8.	Recurrent alcohol use in situations where it is physically hazardous.
9.	Continued alcohol use despite knowledge of having a persistent or recurrent physical or psychological problem likely to have been caused or exacerbated by alcohol.
10.	Tolerance, as defined by either a need for markedly increased amounts of alcohol to achieve intoxication or a desired effect or markedly diminished effect with continued use of the same amount of alcohol.
11.	Withdrawal is characterized by the onset of symptoms when alcohol consumption is reduced or stopped, or the use of alcohol (or similar substances – like benzodiazepines) to relieve or avoid these symptoms.

### Category of Alcohol Use Disorder

Category	Criteria	Description	Symptoms
<b>Mild</b>	2-3 symptoms present	Individuals may begin to experience some negative consequences related to their alcohol use. The impact on daily life and responsibilities is relatively limited compared to more severe cases.	<ul style="list-style-type: none"> <li>- Drinking more or for a longer period than intended</li> <li>- Unsuccessful efforts to cut down</li> <li>- Craving</li> <li>- Persistent desire</li> </ul>
<b>Moderate</b>	4-5 symptoms present	Individuals experience more significant problems related to alcohol consumption. They might neglect major roles at work, school, or home, and continue use despite social or interpersonal problems.	<ul style="list-style-type: none"> <li>- Neglecting major roles</li> <li>- Continued use despite social problems</li> <li>- Increasing tolerance</li> <li>- More time spent on alcohol</li> </ul>
<b>Severe</b>	6 or more symptoms	Severe dysfunction and distress related to alcohol use, with alcohol dominating daily routines. Symptoms include withdrawal, spending significant time on alcohol-related activities, giving up important activities, and persistent use despite clear physical or psychological problems.	<ul style="list-style-type: none"> <li>- Withdrawal symptoms</li> <li>- Significant time spent on alcohol</li> <li>- Giving up important activities</li> <li>- Persistent use despite problems</li> </ul>



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Diagnosing alcohol use disorder (AUD) involves a **comprehensive evaluation** conducted by healthcare professionals. This includes **behavioral assessments, physical examinations, and patient interviews** aimed at uncovering signs of alcohol misuse. Since alcohol use can present in various ways, screening tests and survey techniques play a crucial role in identifying individuals at risk or confirming a diagnosis.

Examples of screening tests and survey techniques:

- 1) **AUDIT (Alcohol Use Disorders Identification Test):** developed by the WHO:
  - 10 question or quick 3 question version
  - A standardized way to measure the severity of alcohol use and the potential risk of developing AUD.
- 2) **CAGE Questionnaire (Cut down, Annoyed, Guilty, Eye-opener):**
  - 4 questions
  - A quick and highly effective way for identifying possible alcohol dependence, especially in clinical and emergency settings.
- 3) **MAST (Michigan Alcohol Screening Test):**
  - 25 item questionnaires, using a yes/no format
  - In-depth evaluations in specialized treatment settings.



To compliment the diagnostic process, systematic use of biomarkers can improve detection of alcohol-related health problems. Traditional blood biomarkers are useful for verification rather than the basis of diagnosis.

### Characteristics of traditional blood biomarkers in detecting alcohol overuse:

Alcohol Marker	Description	Sensitivity	Specificity	Half-life / Return to Normal
<b>Mean Cell Volume (MCV)</b>	Increases with heavy drinking, usually co-exists with anemia.  Elevated in folate/B12 deficiency, non-alcoholic liver disease, hypothyroidism, and medications (e.g., phenytoin).	40-50%	80-90%	3 months. Takes 2-4 months of abstinence to return to normal.
<b>Gamma Glutamyl Transferase (GGT)</b>	Relative high alcohol sensitivity. Elevated in non-alcoholic liver disease, diabetes, obesity, and certain medications (e.g., phenytoin). Serum activity increases in 75% of alcohol users consuming >40 g/day.	30-50%	Lower than MCV	2-4 weeks. Returns to normal in 4-5 weeks.
<b>Aminotransferases (AST &amp; ALT)</b>	Less sensitive than GGT.  AST is more specific for muscle damage but increases in severe liver damage and long-term drinking.  ALT is more specific for liver disturbances, fatty liver.  AST/ALT ratio >2 indicates alcoholic liver damage.	Lower than GGT	N/A	N/A
<b>Carbohydrate Deficient Transferrin (CDT)</b>	Highly sensitive and specific for diagnosing alcohol dependence.  Useful for detecting relapse drinking and differentiating alcoholic from non-alcoholic liver injuries.	82%	97%	15 days. Returns to normal within a few weeks of abstinence.



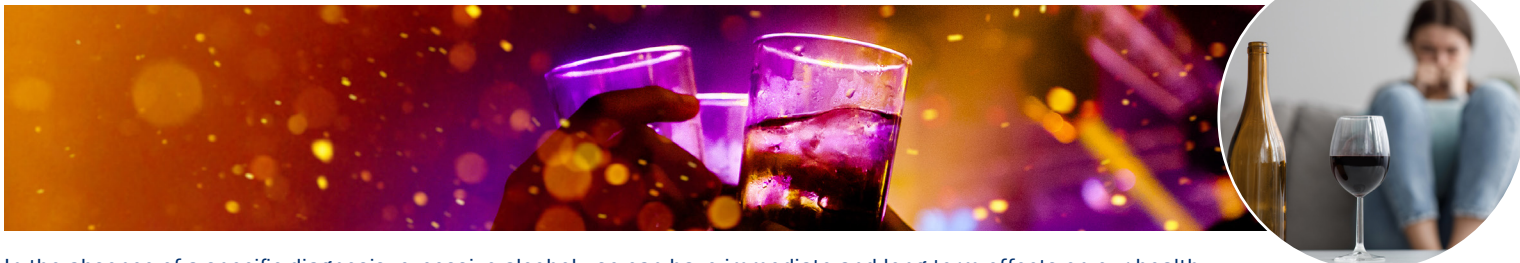
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#### Key Points:

- **MCV** is less sensitive than GGT but has higher specificity and is affected by various conditions and medications. It is not ideal for monitoring abstinence due to its long return-to-normal period. MCH and platelet counts are also frequently altered in alcohol overuse.
- **GGT** is a common marker with moderate sensitivity and is frequently the first clinical sign of excessive alcohol consumption. It returns to normal relatively quickly but can also be elevated due to other conditions.
- **Aminotransferases (AST & ALT)** are more indicative of liver damage than alcohol consumption specifically. The AST/ALT ratio is particularly useful for identifying alcoholic liver damage.
- **CDT** is the most sensitive and specific marker for alcohol dependence; however, it has a poor positive predictive value when used in isolation (only 30% accuracy). Furthermore, a lengthy delay between blood sample collection and centrifugation can lead to elevated serum CDT levels and produce false positive results. When used in conjunction with other elevated markers such as GGT, the predictive value nearly triples. CDT is most valuable in younger ages, decreasing in effectiveness with age.
- High **HDL** cholesterol and **triglyceride** levels should alert clinicians to investigate a patient's recent pattern of alcohol consumption. Those with alcohol-related liver disease had significantly higher HDL and triglyceride levels than those without.



In the absence of a specific diagnosis, excessive alcohol use can have immediate and long-term effects on our health.

#### Short-term Effects:

- **Injuries:** falls, drownings, burns, motor vehicle accidents, DWI.
- **Violence:** assaults, marital/partner abuse, homicide, suicide.
- **Alcohol poisoning:** affects body functions such as heart rate, breathing.
- **Overdose:** alcohol use in combination with other drug use.
- Miscarriage: stillbirth, fetal alcohol spectrum disorder.

#### Long-term Effects:

- **Cancer:** the risk of cancers increases with any amount of alcohol use (esophageal, colorectal, liver, breast, stomach, pancreas).
- **Chronic diseases:** High blood pressure, heart disease, liver disease, stroke, digestive problems, weakened immune system.
- **Social and cognitive:** learning difficulties, nervous and mental disorders, memory issues, relationship and work-related problems.





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Despite being among the leading public health problems worldwide, alcohol use disorders and associated morbidities often remain underdiagnosed. Underwriters are tasked with the challenge of identifying and assessing alcohol habits with very limited and often incomplete information. The underwriter must rely on the accuracy of declarations made on applications, interviews, and questionnaires. Laboratory results may or may not identify an issue. As individuals often downplay or deny their current alcohol use, the information obtained from an attending physician's statement (APS), may also not be quite accurate.

Due to these challenges, the underwriter must rely on using a whole case approach, incorporating all the many pieces of information that together either raise or reduce the suspicion of an alcohol use disorder.

### Underwriting considerations:

**1. Exercise Caution:** Underwriters should be especially cautious when encountering the following high-risk indicators:

- **Substance Use History:** A past diagnosis of alcohol or other substance use disorders suggests a potential relapse risk.
- **Mental Health Disorders:** Co-occurring conditions such as schizophrenia, bipolar disorder, depression, or other mood disorders increase the likelihood of alcohol misuse.
- **Driving Offenses:** DUIs, reckless driving, and repeated speeding violations may indicate impaired judgment due to alcohol use.
- **Employment Instability:** Frequent job changes, poor attendance, or termination may reflect work-related issues linked to alcohol use.
- **Legal Troubles:** A history of violent behavior, criminal records, or legal disputes could point to alcohol-related problems.
- **Recurrent Disabilities:** Multiple disability claims or recurring health issues may suggest chronic alcohol-related medical conditions

**2. Assess Context:** Consider broader situational factors that may suggest a heightened risk for alcohol misuse:

- **Family History:** A genetic predisposition to alcohol abuse may increase the applicant's likelihood of developing AUD.
- **Age:** Younger applicants may be at greater risk of risky drinking behaviours, while older individuals may show cumulative damage.
- **Work Environment:** Jobs involving alcohol access, such as bartending or hospitality, raise exposure risks.
- **Tobacco use:** Co-occurrence of smoking with alcohol consumption is common and raises health concerns.
- **Risk-Taking Behavior:** Participation in high-risk sports or extreme hobbies may reflect a thrill-seeking personality.
- **Accident History:** Frequent falls, injuries, or unexplained accidents could point to impaired motor skills.
- **Stress Factors:** Significant personal or professional stressors may trigger or worsen alcohol use.



### 3. Evaluate Medical Evidence:

Underwriters should closely examine physical and medical indicators linked to long-term alcohol use:

- **High Blood Pressure:** Chronic hypertension is often linked to heavy drinking.
- **Digestive Issues:** Gastrointestinal problems such as ulcers or persistent stomach pain may be alcohol related.
- **Liver Damage:** Signs of an enlarged or fatty liver suggest liver disease caused by excessive alcohol consumption.
- **Pancreatitis History:** Repeated inflammation of the pancreas can be a serious alcohol-related complication.
- **Sleep Disturbances:** Insomnia or other sleep disorders may result from alcohol dependence or withdrawal.
- **Neurological Symptoms:** Tremors, nerve damage (neuropathy), or memory loss can be signs of prolonged alcohol use.

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