

# The Relationship Between Alcoholism, Cirrhosis, and the Progression of Peptic Ulcer Disease

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## Learning Objectives

- Recognize the relationship between alcohol consumption and its potential sequelae on the progression of peptic ulcer disease
- Understand how to best advise patients regarding avoidance of the progression of peptic ulcer disease, particularly when educating with relevance to alcohol consumption

## Key Points

- Cessation of alcohol consumption can help mitigate progression of peptic ulcer disease.
- Cirrhosis results in an increased risk of peptic ulcer disease, peptic ulcer bleeding, peptic ulcer rebleeding, and complications following peptic ulcer perforation.
- Coagulopathies and thrombocytopenia due to liver cirrhosis can result in decreased healing potential, thus worsening prognosis of peptic ulcer disease.
- Patients with cirrhosis are at higher risk of bacterial infection due to weakened defense against foreign organisms.
- Patients with cirrhosis have the strongest likelihood of facing severe complications in the event of peptic ulcer perforation.

## Abstract

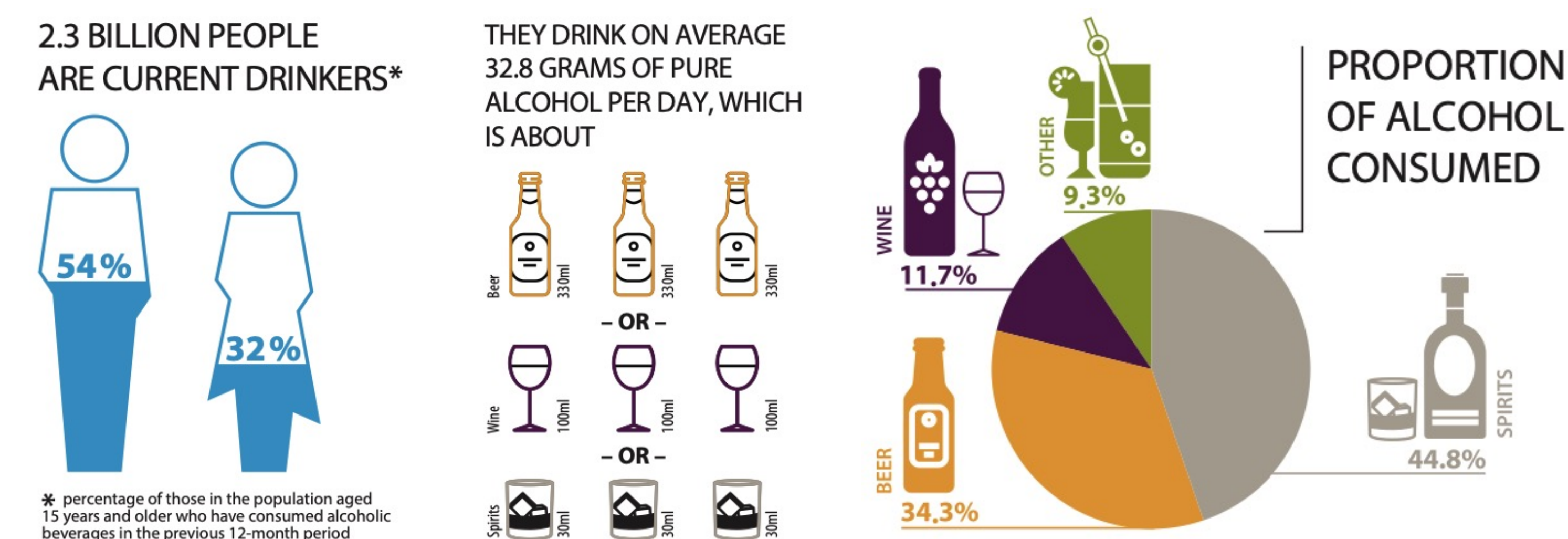
The relationship between alcohol and peptic ulcer disease (PUD) is acknowledged, although not entirely understood. For decades, the understanding of this relationship has primarily pertained to alcohol's ability to serve as an irritant to the gastric mucosa. However, recent research suggests alcohol's potential for impact on PUD is far greater than surface-level erosion. Rather, it has recently become evident that liver cirrhosis secondary to alcohol use can result in increased risk for peptic ulcer bleeding (PUB), long-term recurrence of peptic ulcers, risk of peptic ulcer rebleeding, bleeding due to coagulopathies and thrombocytopenia, increased likelihood of infection, and complications in the repair of perforated ulcers.

## Key Words

Peptic Ulcer Disease, Peptic Ulcer Bleeding, Alcohol, Alcohol Abuse, Liver Disease, Cirrhosis, Portal Hypertension, Mortality

## Alcohol Consumption

- In the WHO Region of the Americas, 54.1% of individuals are current drinkers, 29.0% are former drinkers and 16.9% are lifetime abstainers.<sup>4</sup>
- Alcohol consumption of current drinkers in the AMR equates to 15.1 liters of pure alcohol per year, equating to 32.8g/day.<sup>4</sup>
- The WHO defines a standard drink as containing 10g of pure alcohol, equating the average current drinker in the AMR to consume >3 standard alcoholic beverages per day.<sup>4</sup>



## Cirrhosis + Peptic Ulcer Disease

- Patients with cirrhosis have a 25-fold increase in annual peptic ulcer incidence.<sup>11</sup>
- Cirrhosis-induced portal hypertension could serve a role in PUD, similarly to the etiology of esophageal varices.<sup>12,13</sup>
- *H. pylori* infection and advanced cirrhosis (Child-Pugh Classes B, C) are significant factors in PUD progression.<sup>12,13</sup>
- Patients with liver cirrhosis are at an increased risk of PUD when compared to patients with hepatitis.<sup>14</sup>

## Cirrhosis + Peptic Ulcer Bleeding

- The etiology of peptic ulcer bleeding (PUB) associated with cirrhosis stems from portal hypertension, impaired gastric mucosa secretion and repair, and gastric microvascular abnormalities.<sup>15</sup>
- These abnormalities leave the gastric lining susceptible to further damage by hydrochloric acid and pepsin, and thus a repetitive cycle of decreased ability for repair and increased damage.<sup>15</sup>
- To mitigate risk of peptic ulcer rebleeding and mortality in those with liver cirrhosis, current drinkers should be encouraged to abstain from alcohol consumption, prescribed a long-term proton pump inhibitor (PPI) and followed closely by their provider.<sup>19</sup>

## Coagulopathy & Thrombocytopenia

- In the instance of a peptic ulcer, it is important for the disrupted gastric mucosa to have the opportunity to properly heal, as to prevent further erosion and prolonged PUB.<sup>20,21</sup>
- In the instance of a cirrhotic liver, frequent coagulopathy and thrombocytopenia will result in poor healing and perpetual, irrevocable damage.<sup>20,21</sup>

## Increased Bacterial Infection Risk

- Patients with cirrhosis are at higher risk of bacterial infection due to weakened defense against foreign organisms. This is due to impairment of the liver's ability to serve in its role in the immune system, where it typically identifies, captures, and removes foreign organisms from the body.<sup>16</sup>
- Of relevance regarding PUD is the possibility for patient infection with *Helicobacter pylori*.<sup>1,12,13,16</sup>
- Bacterial infections are also correlated with decreased ability to control bleeding, due to possible change in portal venous pressures.<sup>16</sup>

## Cirrhosis + Peptic Ulcer Perforation

- In cases of peptic ulcer perforation (PPU), a patient with cirrhosis has the strongest likelihood of facing severe complications.<sup>22</sup>
- Cirrhosis is associated with a greater likelihood of leakage or fistula following surgical intervention.<sup>22</sup>
- These patients face an increased risk of death by septic shock, even after possible surgical intervention.<sup>22</sup>
- Recent research has reported cirrhosis is the most important factor in predicting the morbidity and mortality of PPU.<sup>22</sup>

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Additional references available upon request

Image Source:

Global Status Report on Alcohol and Health 2018. Geneva, Switzerland. World Health Organization; 2018.