

## The Emergency Room: Abnormal Liver Enzymes

*by Kathy J. Carlson, Vice President & Director of Operations / United Underwriters, Inc.*

The liver is an amazing organ responsible for regulating numerous bodily functions. Impairment of its ability to perform its duties can have serious, life-threatening consequences. Let's look at a few of its important functions.

- Bile production for use in digesting fats and proper absorption of fat-soluble vitamins
- Storage of glycogen and re-conversion to glucose to maintain a steady supply of sugar in the blood
- Filtration and disposal of various waste by-products, bacteria, and worn-out blood cells
- Metabolism of hormones to properly balance estrogen and testosterone levels in the body
- Synthesis of proteins in the blood and production of blood clotting factors
- Metabolism of medications
- Detoxification of environmental poisons, drugs, and alcohol

In the early 1990s, with the arrival of AIDS, insurance carriers no longer requested blood profiles on face amounts of \$1,000,000 or more. Suddenly, blood profiles were ordered routinely on almost everyone. As a result, underwriters discovered that the most common underwriting problem to arise in these blood tests was elevated liver enzymes.

There are numerous liver enzymes in the liver that can be used to measure the health of the liver. Some of them are released into the blood when the liver is damaged or the bile duct obstructed. Some may be chronic – for example, when someone had permanent liver damage, such as cirrhosis, such as hepatitis. Or the elevations may be acute, such as when the liver must detoxify the body of acetaminophen. Anything that damages the liver can cause elevated liver enzymes. Often the cause is unknown, but some commonly identified causes are shown in Table 1.

One of the primary concerns for underwriters when viewing elevated liver enzymes is the hepatitis C virus (HCV). According to a study by Robert L. Stout, PH.D, on the prevalence of HCV in the insurance population, 1.8% of a random sampling of 1,008 insurance applicants were HCV antibody positive. This compared to an elevated liver enzyme rate of 14% in the same population. Stout concluded that "liver enzyme elevations should help identify a sub-group of applicants with a high probability of being HCV antibody positive." Seventy to 85% of HCV antibody positive people will go on to develop chronic hepatitis. Many of these people will have no outward symptoms of the infection for 20 years or more. Elevated liver enzymes may be the only indication of the damage occurring to the liver during this time period.

Injury Obesity Alcohol Infection Heavy Metals Viral Hepatitis Bacterial Toxins Strenuous Exercise Food Contamination Biologic Toxins Herbal Remedies Medications Carcinoma
--

liver indirectly. These elevations or an infection, of excess cause is

possibility of hepatitis C in the antibody concluded that being HCV hepatitis, yet Elevated liver

**TABLE 1**  
**Causes of Elevated Liver Enzymes**

<b>Enzyme</b>	<b>Elevated Levels May Indicate</b>
<b>LDH:</b>	liver disease, hypercholesterolemia other non-liver diseases
<b>SGPT (or ALT):</b>	liver cell injury, liver and muscle disorders or diseases
<b>SGOT (or AST):</b>	liver cell injury, liver and muscle disorders or diseases
<b>GGT (or GGTP):</b>	liver cell injury, liver and muscle disorders or diseases, other non-liver diseases; detects irritants or toxins such as medications or alcohol
<b>Alkaline Phosphase:</b>	liver and gall bladder disease

**TABLE 2**  
**Five most common liver enzymes examined by the underwriters**

Table 2 identifies the five most common liver enzymes examined by the underwriter. An abnormality in any or all of these enzymes can affect your client's insurability. As in so many other areas, your clients rely on you to help them obtain the most optimal test results. As in so many other areas, your clients rely on you to help them obtain the most optimal test results. So, what can you advise them to ensure they prepare properly for the paramed exam? First, suggest they fast for a minimum of four hours, and ideally, for twelve hours. Next, advise them to postpone strenuous exercise for twelve hours prior to the exam. Remind them to tell the examiner about all medications they are currently taking, and any they have recently taken. This should include all prescription and over-the-counter medications as well as herbal and dietary supplements. Do not schedule an exam if your client is ill, has recently been hospitalized, or suffered a significant injury. Any of these situations can cause elevated liver enzymes as the body works to heal itself.

Due to the myriad reasons for elevated liver enzymes, it can be difficult to assign a rating to this situation. Depending on the cause of the elevated liver enzymes, ratings can range from standard to decline.