



## Liver Tests

Liver enzymes are commonly tested upon life insurance application. Although they may be produced by other tissues in the body, an unexplained elevation of one or more of these enzymes is a concern for impaired liver function. The liver tests most commonly encountered by the underwriter include:

- ▶ SGOT (serum glutamic oxaloacetic transaminase), also known as AST (aspartate aminotransferase)
- ▶ SGPT (serum glutamic pyruvic transaminase), also known as ALT (alanine aminotransferase)
- ▶ GGTP or GGT (gamma-glutamyl transferase or transpeptidase)



Elevations of SGOT and SGPT are usually caused by some type of liver damage that allows enzymes to “leak out” of cells.

The degree of elevation roughly parallels the extent of liver cell damage. SGPT is the most specific enzyme, being produced primarily by the liver. SGOT is produced by the liver but commonly rises from simple muscle trauma. GGTP is a very sensitive enzyme for the detection of early liver disease or damage. It is also an inducible enzyme, meaning that it will rise when the liver is actively metabolizing some types of drugs or toxins (like alcohol).

Many impairments may cause elevations in one or more of the liver enzymes:

- ▶ Hepatitis, especially viral hepatitis (See Rx for Success-Hepatitis A,B,C)
- ▶ Cirrhosis
- ▶ Fatty liver, often associated with diabetes, obesity, elevated blood fats, or excess alcohol
- ▶ Liver cancer or metastases
- ▶ Alcohol use
- ▶ Some medications, such as Dilantin, phenobarbital, allopurinol, and many others
- ▶ A variety of infiltrative diseases of the liver
- ▶ Biliary obstruction, including conditions such as gallstones, primary biliary cirrhosis, cancer, and cholangitis

The goal in underwriting abnormal liver tests is to determine the underlying cause and then classify the risk accordingly. Many of the conditions listed above are quite serious.

In summary, when faced with the situation of abnormal liver enzymes, an underwriter will consider the degree of elevation, the clinical history, and the current physical findings. Some follow-up investigation might help clarify the picture.

- ▶ Was the applicant taking a medication that was not initially mentioned?
- ▶ Was there a documented viral illness prior to the blood draw?
- ▶ Has the client been evaluated by his or her own physician for chronic elevations?

The underwriter will also consider the condition of the blood specimen, in particular hemolysis, which could affect the test results. A non-fasting state does not affect any of the liver enzymes.

To get an idea of how a client with abnormal liver tests would be viewed in the underwriting process, see page 2.

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## Ratings for Liver Test

• **Rate for cause or see below.**

If the cause is unknown and there is significant elevation of only one test:	
Bilirubin: • ≤ 6.0 mg/dl	No rating
• > 6.0 mg/dl	Decline
Alkaline phosphatase • Age > 20 years ≤ 3X laboratory reference range • Age < 20 years ≤ 5X laboratory reference range • Others	No rating No rating Individual consideration
AST: • ≤ 5X normal • > 5X normal	No rating Decline
ALT: • ≤ 4X normal • > 4X - 5X normal • > 5X normal	No rating Table B Decline
GGTP: • ≤ 4X normal • > 4X - 5X normal • > 5X normal	No rating Table B Decline

If the cause is unknown and there is elevation of two or more (AST, ALT, GGTP) with no significant elevation of bilirubin or ALP, rate for highest enzyme.	
• ≤ 2X normal	No rating
• > 2X but ≤ 3X normal	Table B
• > 3X but ≤ 4X normal	Table D
• > 4X but ≤ 5X normal	Table F
• > 5X normal	Individual consideration

*For entering the tables, the following values will be considered significant elevations:*

• AST, ALT	50 U/L
• GGTP	> 65 U/L
• Bilirubin	≥ 2 mg/dl
• ALP <ul style="list-style-type: none"> <li>• 20 Years, non-pregnant</li> <li>• ≤ 20 Years</li> <li>• Pregnant</li> </ul>	<ul style="list-style-type: none"> <li>• 1.5X adult laboratory reference range</li> <li>• 5X adult laboratory reference range</li> <li>• 3X adult laboratory reference range</li> </ul>

*To get an idea of how a client with a history of liver tests would be viewed in the underwriting process, feel free to use the Ask "Rx" -pert Underwriter for an informal quote.*

**Liver Tests - Ask "Rx" -pert Underwriter  
(ask our experts)**

Producer \_\_\_\_\_ Phone \_\_\_\_\_ Fax \_\_\_\_\_

Client \_\_\_\_\_ Age/DOB \_\_\_\_\_ Sex \_\_\_\_\_

If your client has elevated liver enzymes, please answer the following:

1. How long has this abnormality been present? \_\_\_\_\_ (years)
2. Please give the date and results of the most recent liver enzyme tests.
  - a) AST/SGOT \_\_\_\_\_
  - b) ALT/SGPT \_\_\_\_\_
  - c) GGTP \_\_\_\_\_
  - d) ALP \_\_\_\_\_
  - e) Bilirubin \_\_\_\_\_
3. Have these results been
  - Increasing     Fluctuating up and down
  - Decreasing     Unknown
  - Stable
4. Does your client drink alcohol? (answer all that apply)
  - Yes, please note amount and frequency \_\_\_\_\_
  - No
  - Drinking pattern changed recently \_\_\_\_\_
5. Is your client on any medications (prescription and/or non-prescription)?
  - Yes, please give details \_\_\_\_\_
  - No
6. Please check if your client has had any further studies for evaluation:
  - a) Hepatitis A, B, or C                       Normal               Abnormal
  - b) Iron studies                                       Normal               Abnormal
  - c) Liver ultrasound, CT scan, or MRI               Normal               Abnormal
  - d) Liver biopsy                                       Normal               Abnormal
  - e) No further evaluations\*
7. Does your client have any other major health problems (ex: heart disease, etc)?
  - Yes, please give details \_\_\_\_\_
  - No

*After reading the Rx for Success on Liver Tests, please feel free to use this Ask "Rx" -pert Underwriter for an informal quote.*

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