

# ALT Case Study

EMPOWER *IVD* ● GLOBE

**Dietmar Stöckl**  
dietmar@stt-consulting.com

**STT**  
Consulting

**Linda Thienpont**  
linda.thienpont@ugent.be



# ALT/AST – Clinical background

*“Mild elevations in levels of the liver enzymes alanine transaminase and aspartate transaminase are commonly discovered in asymptomatic patients in primary care.”*

*Nonalcoholic fatty liver disease is the leading cause of mild transaminase elevations, and is becoming more prevalent as the obesity rate increases.”*

## *Diagnostic Evaluation*

*Because of limited evidence on the most efficient evaluation of asymptomatic patients with mildly elevated liver transaminase levels, published guidelines suggest a stepwise approach based on the prevalence of each potential etiology*

*Step 1: history, physical examination, and repeat testing (2 – 4 weeks)*

**Robert COH, Thomas RH. Causes and evaluation of mildly elevated liver transaminase levels. American Family Physician 2011;48:1003-8.**

# ALT/AST – Clinical background

*“Although the actual values may differ from laboratory to laboratory, **normal serum levels** are usually **less than 40 U/L for AST and less than 50 U/L for ALT**. On the other hand, some experts have suggested lowering the upper limit of normal because of the increasing rate of obesity and associated nonalcoholic fatty liver disease, which may not be detected using the traditional, higher normal values.”*

*Acceptance is growing for using **ALT levels less than 40 U/L in men and less than 31 U/L in women**, and **AST levels less than 37 U/L in men and less than 31 U/L in women**, as normal thresholds.”*

**Aragon G, Younossi ZM. When and how to evaluate mildly elevated liver enzymes in apparently healthy patients. Cleveland Clinic Journal of Medicine 2010; 77:195-204**

## **NORIP medians:**

**ALT: 21 U/L**

**AST: 23 U/L**

# Example Case Study: ALT/AST

**Female, Caucasian, 44 years old, treated for high blood pressure is annually controlled for serum glucose, lipids and transaminases.**

## **Results:**

- **Glucose: 77 mg/dL**
- **Total-cholesterol: 215 mg/dL, HDL-cholesterol: 51 mg/dL, LDL-cholesterol (calc): 120 mg/dL, triglycerides: 107 mg/dL**
- **AST 12 U/L; ALT 17 U/L.**

**These levels remain constant until 2010**

# Example Case Study: ALT/AST

Female, Caucasian, 57 years old, treated for high blood pressure is annually controlled for serum glucose, lipids and transaminases.

## Results in 2010:

- Glucose: **121 mg/dL**
- Total cholesterol: 227 mg/dL, HDL-cholesterol: 50 mg/dL, LDL-cholesterol (calc): 157 mg/dL, triglycerides: 103 mg/dL
- AST: 28 U/L; **ALT: 44 U/L (<31 U/L).**

Diagnosis: metabolic syndrome, non-alcoholic fatty liver syndrome → **ALT elevation was considered of diagnostic relevance!**

# Example Case Study: ALT/AST

Female, Caucasian, 57 years old, treated for high blood pressure is annually controlled for serum glucose, lipids and transaminases.

After 6 months treatment (Metformax, 2x800 mg/day, Simvastatine, 10 mg/day):

- Glucose: 92 mg/dL
- Total cholesterol: 159 mg/dL, HDL-cholesterol: 56 mg/dL, LDL-cholesterol (calc): 87 mg/dL, triglycerides: 82 mg/dL
- **AST: 20 U/L; ALT: 28 U/L (<31 U/L)**

Results in 2014

**AST: 17 U/L; ALT: 18 U/L (<31 U/L)**