

**Reference Number:** FOIAH2324/616  
**From:** Other  
**Date:** 05 February 2024  
**Subject:** Liver enzymes data

**Q1** The normal range (adults and children) for the following liver enzymes: alanine transaminase (ALT), aspartate transaminase (AST), alkaline phosphatase and gamma GT.

**A1** ALT 0-1 month 9-44 IU/L  
ALT >1month-6 years 9-36 IU/L  
ALT 6-14 years 8-36 IU/L  
ALT >14 years <40 IU/L

AST 0-1 month 23-73 IU/L  
AST 1 month- 6 years 15-58 IU/L  
AST 6-14 years 12-41 IU/L  
AST >14 years <37 IU/L

ALP 0-7 days 70-345 IU/L  
ALP 8 days-3 months 93-680 IU/L  
ALP >3 months-6 months 92-758 IU/L  
ALP >6 months-1 year 98-562 IU/L  
ALP >1 year-18 months 97-360 IU/L

ALP >18 months- 9 years Female 87-323 IU/L  
ALP >18 months- 10 years Male 87-323 IU/L  
ALP >9-11 years Female 93-367 IU/L  
ALP >10-12 years Male 70-360 IU/L  
ALP >11-12 years Female 89-408 IU/L  
ALP >12-13 years Female 77-362 IU/L Male 91-405 IU/L  
ALP >13-14 years Female 67-293 IU/L Male 82-442 IU/L  
ALP >14-15 years Female 55-185 IU/L Male 77-410 IU/L  
ALP >15-16 years Female 46-144 IU/L Male 63-316 IU/L  
ALP >16 years Female 38-123 IU/L  
ALP >16-18 years Male 55-236 IU/L  
ALP >18 years 38-123 IU/L

GGT 0-1 month 0-271 IU/L  
GGT 1-2 months 0-155 IU/L  
GGT 2-4 months 0-93 IU/L  
GGT 4 months- 15 years 0-50 IU/L  
GGT >16 years 11-50 IU/L

- Q2 The method and machine used with reference so it can be identified.
- A2 ALT measured on Abbott Alinity c via enzymatic NADH (without P-5'-P) method  
AST measured on Abbott Alinity c via NADH (without P-5'-P) method  
ALP measured on Abbott Alinity c via Para-nitrophenyl phosphate (p-NPP) method  
GGT measured on Abbott Alinity c via L-gamma-glutamyl-3-carboxy-4-nitroanilide substrate method
- Q3 How was your local normal range determined?  
A. From the reference range specified by the manufacturer  
b. By the lab of a large group of normal volunteers  
c. From historical data  
d. Other – please describe.
- A3 ALT - Sitzman et al, Klin Paed 186 (1974), 346; Sitzman, Arch Kinderheizkunder 183 (1971), 1.  
AST - Historical data.  
ALP - In house review of population data and comparison with reference ranges from Manchester Children's Hospital 2015.  
GGT - historical data.
- Q4 Do your liver function tests automatically include measurement of AST?
- A4 Yes
- Q5 How many sets of liver function tests (LFT's), which include measurement of ALT and alkaline phosphatase, does your hospital or laboratory complete each year? How many patients does this represent?
- A5 46797 LFT's
- Q6 How many requests for measurement of AST does your hospital or laboratory complete each year? How many patients does this represent?
- A6 46788 AST requests
- Q7 How many values exceed the upper limit of normal for each liver function test?
- A7 Information not held - Not available due to the complexity of the reference range and IT limitations.
- Q8 If you do not hold this information because you consider the analyses to be done externally by an outside laboratory, please provide the name of the laboratory and email address for their FOI officer.
- A8 Not applicable as per A7.