

FOI REF: 24/107

5<sup>th</sup> April 2024

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## FREEDOM OF INFORMATION ACT

I am responding to your request for information under the Freedom of Information Act. The answers to your specific questions are as follows:

**I would be grateful if you could provide me with the following:**

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

### Normal ranges

ALT	Males	10 – 50 U/L
	Females	10 – 35 U/L
AST	Males	0 – 40 U/L
	Females	0 – 32 U/L
Alkaline phosphatase	Males and Females	<1m 70 – 380 U/L
		1m – 16Y 60 – 425 U/L
		>16Y 30 - 130 U/L
Gamma GT	Males	0 – 60 U/L
	Females	0 – 40 U/L

- 2) The method and machine used with reference so it can be identified.**

**ALT uses ALTPM kit on Roche c702 analyser.**

**Reference:** Schumann G, Bonora R, Ceriotti F, et al. IFCC primary reference procedures for the measurement of catalytic activity concentrations of enzymes at 37 degrees C. International Federation of Clinical Chemistry and Laboratory Medicine. Part 4. Reference procedure for the measurement of catalytic concentration of alanine aminotransferase. Clin Chem Lab Med 2022 Jul;40(7):718-724. doi: 10.1515/CCLM.2002.124.

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**AST uses ASTL kit on Roche c51 analyser.**

**Reference:** Schumann G, Bonora R, Ceriotti F, et al. IFCC Primary Reference Procedures for the Measurement of Catalytic Activity Concentrations of Enzymes at 37 °C – Part 5. Reference Procedure for the Measurement of Catalytic Activity Concentrations of Aspartate Aminotransferase. Clin Chem Lab Med 2002;40(7):725-733.

**Alkaline phosphatase uses ALP2 kit on Roche c702 analyser.**

**Reference:** Schumann G, Klauke R, Canalias F, et al. IFCC primary reference procedures for the measurement of catalytic activity concentrations of enzymes at 37° C. - Part 9. Reference procedure for the measurement of catalytic concentration of alkaline phosphatase. Clin Chem Lab Med 2011 Sep;49 (9):1439-46.

**Gamma GT uses GGT-2 kit on Roche c702 analyser.**

**Reference:** Schumann G, Bonora R, Ceriotti F et al. IFCC Primary Reference Procedures for the Measurement of Catalytic Activity Concentrations of Enzymes at 37 °C – Part 6. Reference Procedure for the Measurement of Catalytic Activity Concentrations of gamma-glutamyltransferase. Clin Chem Lab Med 2002;40(7):734-738.

**3) 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.**

**4) Do your liver function tests automatically include measurement of AST?**

No.

**5) a) How many sets of liver function tests, which include measurement of ALT and alkaline phosphatase, does your hospital or laboratory complete each year?**

In 2023 our Trust carried out 331,825 liver function tests.

**b) How many patients does this represent?**

This represents 168,887 patients.

- 6) a) **How many requests for measurement of AST does your hospital or laboratory complete each year?**

In 2023 our trust completed 1600 requests for AST.

- b) **How many patients does this represent?**

This represents 1288 patients.

- 7) **How many values exceed the upper limit of normal for each liver function test?**

The number of values that exceeded the upper limit of normal in 2023:

ALT	52988
Alkaline Phosphatase	55103
AST	615
Gamma GT	8151

- 8) **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.**

Not applicable.

If I can be of any further assistance, please do not hesitate to contact me.

Should you be dissatisfied with the Trust's response to your request, you have the right to request an internal review. Please write to the Freedom of Information Department ([esh-tr.foi@nhs.net](mailto:esh-tr.foi@nhs.net)), quoting the above reference, within 40 working days. The Trust is not obliged to accept an internal review after this date.

Should you still be dissatisfied with your FOI request, you have the right of complaint to the Information Commissioner at the following address:

The Information Commissioner's Office  
Wycliffe House  
Water Lane  
Wilmslow  
Cheshire SK9 5AF

Telephone: 0303 123 1113

Yours faithfully

Freedom of Information Department  
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