

Lead

Synonyms

PB

Clinical Indication

Lead poisoning is a preventable condition that results from environmental exposure to lead. This exposure can result in permanent health damage, especially among children. In the UK the main sources of lead exposure are air-borne lead (from industrial sources and from the use of lead in petrol), water-borne lead (where lead dissolves readily from lead piping or from lead solder in water pipes, sometimes found in pre-1970s buildings), and occupational and hobby exposure (e.g. plumbers and stained glass artists).

Lead poisoning can affect almost all parts of the body, including the central nervous system, kidneys, and reproductive organs. It commonly causes weakness and abdominal discomfort and less often causes abdominal pain, vomiting, constipation, foot and wrist drop and anaemia. In children especially, it impairs cognitive development, which can lead to learning disabilities and behavioural problems. At very high levels, it can even result in hallucinations, coma, seizures, and death.

Screening: Adults who work in industries known for lead exposure, for example plumbers, lead miners, shipbuilders, construction workers, demolition workers and pottery manufacturers should be screened for lead exposure if clinical features indicate. Guidance on the 'Control of Lead at Work' regulations can be obtained online.

Blood lead is the measurement of choice for the assessment of exposure to inorganic lead as 95% of blood lead is bound to erythrocytes.

Part of Profile / See Also

Request Form

Combined Pathology manual Blood form or ICE request

Availability / Frequency of Analysis

Referred test: Analysed by Clinical Biochemistry, Kings Hospital, London (Synnovis 9067), if specific criteria met.

Turnaround Time

2 weeks

Patient Preparation

No specific preparation required

Sample Requirements

Specimen Type

Whole Blood

Volume

4 ml

Container



Pink / purple top (EDTA)



Paediatric EDTA (red top - Sarstedt)



Or

Paediatric EDTA (Pink top – BD Microtainer)

Reference Range & Units

The recommended upper limit of blood lead in **children is <0.24 µmol/L and in adults is <0.50 µmol/L**

Occupational monitoring:

In adults there is a need to reduce occupational exposure if the blood lead exceeds 2.0 µmol/L and suspension from exposure at 3.0 µmol/L or higher.

When employees are significantly exposed to ionic lead compounds, their blood lead levels should be measured every three months. If exposure is uniform, then a consistent blood lead pattern will probably be established, although this may take about a year. Thereafter, except for women of reproductive capacity and young persons, blood lead measurements can be taken at the reduced intervals shown in the table below.

Blood Lead (µg/dL)	Maximum interval between blood lead measurements
under 30	12 months (see note below)
> 30 < 40	6 months
> 40 < 50	3 months
> 50 < 60	3 months
60 and over	at the doctor's discretion but not more than 3 months

To convert from umol/L to ug/dL multiply by 20.7

Interferences

Interpretation & Clinical

Decision Value (if applicable)

See reference range section

References

<https://www.synnovis.co.uk/our-tests/lead-1>

<http://www.hse.gov.uk/pubns/books/l132.htm>

Test code

LEAD

Lab Handling

DO NOT SEPARATE SAMPLE. Store whole blood at 4°C in referrals rack. Sent daily by courier to King's College Hospital, London.

