

**CPAL**Central Pennsylvania Alliance
Laboratory

Technical Bulletin

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New Test - Zinc Protoporphyrin

Starting Date: June 2, 2003**Background:**

Zinc Protoporphyrin (ZPP) is an effective indicator of chronic lead poisoning and/or iron deficiency anemia in children and adults. A high level of ZPP indicates impairment of the heme biosynthetic pathway and warrants a follow-up clinical analysis for lead in the blood. A moderate level may indicate less severe lead poisoning or iron deficiency anemia and warrants a measurement of the hematocrit and a lead analysis to complete the diagnosis. Because ZPP levels take about 2 weeks to increase, ZPP levels may provide an indication of the lead exposure. If exposure to lead has ceased, ZPP values decline slowly over several weeks or months. In an occupational setting, the Occupational Safety and Health Administration currently requires both whole blood lead and ZPP testing to rule out contamination during blood sample collection. Contamination should be suspected in specimens with elevated whole-blood lead levels that do not show concordance with zinc protoporphyrin (ZPP). ZPP is not currently recommended by the CDC for lead screening in children 6 years of age and younger.

Method:

The ZPP Hematofluorometer is calibrated at $\mu\text{g ZPP}/100\text{mL}$ whole blood for a hematocrit of 42%.

Reference Intervals:

Adults: 0-50 $\mu\text{g}/\text{dL}$

Children (< 10 year old): 0-35 $\mu\text{g}/\text{dL}$

Supportive Data:

Forty-nine patient specimens were used to validate the method. The ZPP results correlate well with that from the Quest Diagnostics-Nichols East-Chantilly with a slope of 0.99 and an intercept of 0.85. The reference interval for adults has been established using 55 specimens (26 males and 29 females, age ranges from 23-85). The reference interval for children has been established using 46 specimens (< 10 year old).

Specimen Collection:

Draw blood into EDTA or heparin tube. The tube should be wrapped with aluminum foil to prevent light exposure.

References:

1. AVIV Biomedical ZPP Hematofluorometer Model 206D Instruction Manual 9/99.
2. Erythrocyte Protoporphyrin Testing; Approved Guideline, C42-A NCCLS, 1999

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