

## Cobalt

**Pseudonyms** – Co (blood)

*Principally for the investigation and monitoring of patients with MoM hip replacement joints*

Cobalt is an essential trace element found principally in vitamin B<sub>12</sub> (cyanocobalamin). However analysis of cobalt concentration is of little use in the determination of vitamin B<sub>12</sub> deficiency. Exposure to cobalt and its compounds can occur in numerous industrial processes (e.g., specialist alloy manufacture, paint industry, hard metal industry, cobalt refineries, magnet manufacturing). In cases of occupational exposure or suspected toxicity the measurement of whole blood cobalt is not indicated and measurement of urinary cobalt concentration is the best test.

The main indication for measurement of cobalt (together with chromium) is in the monitoring of patients implanted with metal-on-metal (MoM) hip replacements to assist in the early detection of soft tissue reactions which may arise from the release of particulate metal ions during articulation. In 2010 the Medical and Healthcare Products Regulation Agency (MHRA) issued a Medical Device Alert recommending measurement of cobalt and chromium for all patients implanted with MoM hip replacements. The latest guidance (June 2017) advises the frequency of monitoring required, dependent on the presence or absence of symptoms and on the type of replacement fitted, and indicates the need for closer follow-up of concentrations above the MHRA thresholds, i.e., a repeat measurement at 3 months, followed by imaging if remains elevated.

### General information

**Collection container:**

Adults: 3.4 mL EDTA Whole Blood (Sarstedt red top)

Paediatrics: 1.2 mL EDTA Whole Blood (Sarstedt red top)

**Type and volume of sample:**

Whole Blood. Minimum 0.5 mL

**Specimen transport/special precautions:**

Internal: No special precautions

External: No special precautions

## Division of Laboratory Medicine

Biochemistry

### Laboratory Information

**Method principle:**

Inductively Coupled Plasma Mass Spectrometry (ICP-MS)

**Biological reference range or cut off:**

Whole blood

MHRA threshold for patients with MOM implants: 120 nmol/L (7ppb)

**Turnaround times:**

4 weeks

### Clinical information

**Factors known to significantly affect the results:**

None

**Clinical decision points:**

Refer to reference range information above.

Where a result is elevated above the threshold MHRA a repeat measurement at 3 months should be obtained.

**References:**

MDA/2017/018 - all metal-on-metal (MoM) hip replacements: updated advice for follow-up of patients (Issued by MHRA 29 June 2017)

**(Last updated November 2019)**