

## Chromium

**Pseudonyms** – Cr (blood)

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

Chromium is an essential trace element being required for glucose control. Rarely deficiency can occur causing glucose intolerance. Chromium concentrations may also be raised in patients on total parental nutrition and renal dialysis because of chromium contamination of the fluids used in these treatments. Exposure to industrial or environmental sources may also cause an increase in blood chromium concentration.

However the main indication for measurement of chromium (together with cobalt) 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 chromium and cobalt 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 purple top)

Paediatrics: 1.2 mL EDTA Whole Blood (Sarstedt purple 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: 135 nmol/L (7ppb)

Normal patients (without MoM implants): <40 nmol/L

#### 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:

- 1) 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)**