

# Chromium / Cobalt

Available for monitoring as part of MDA alert regarding metal on metal hip replacements

## Synonyms

## Clinical Indication

Cobalt and chromium levels may be measured in patients implanted with MoM hip replacements to assist the early detection of soft tissue reactions. MDA alert (updated) - MDA/2017/018 – All metal-on-metal (MoM) hip replacements: updated advice for follow-up of patients.

- MARS MRI scans or ultrasound scans should carry more weight in decision-making than isolated blood metal levels alone
- Rising blood metal levels may indicate potential for soft tissue reaction
- After revision surgery, whole blood metal levels of chromium and/or cobalt are expected to fall and symptoms to improve. Persistent symptoms should be investigated for potential causes that include: failure of fixation, component loosening, infection and instability. If no cause is found, further blood metal level measurement and cross-sectional imaging should be considered.

Cobalt and chromium may be available for nutritional screening/monitoring or occupational exposure assessment. Deficiency is rare and is generally limited to hospitalised patients with increased catabolism and metabolic demands in the setting of malnutrition. These requests must be discussed with Consultant Biochemist (please note different sample types).

## Part of Profile / See Also

## Request Form

Combined Pathology manual Blood form or ICE request

## Availability / Frequency of Analysis

Analysed by Trace Metals Laboratory, King's College Hospital ([Synnovis 7880](#)) if specific criteria met.

## Turnaround Time

One week

## Patient Preparation

No specific preparation required

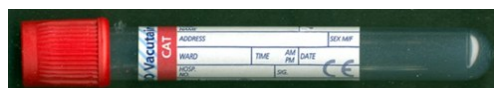
## Sample Requirements

### Specimen Type

Whole blood (MoM THR testing), trace metals tested serum (all other requests).

### Volume

### Container

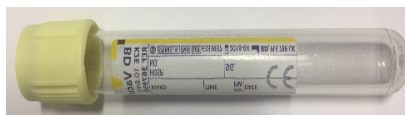


Red top (plain) tube for 1<sup>st</sup> draw

**And then**

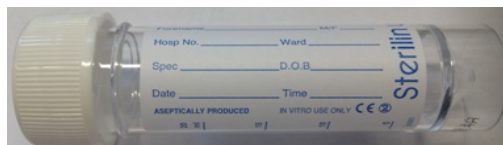


2<sup>nd</sup> drawn blood into Dark Blue top (trace metal) tube for metal on metal hip replacement screening.



Or 2<sup>nd</sup> drawn blood into lemon top (EDTA) tube for metal on metal hip replacement screening

Alternatively for occupational exposure a Urine (white top) can be sent (very rarely requested):



## Reference Range & Units

MHRA guidelines (for MoM hip replacements):

Chromium 134.5 nmol/L (= 7 ug/L (ppb))

Cobalt 119 nmol/L (= 7 ug/L (ppb))

If either Chromium or Cobalt are elevated above these levels then a second test after 3 months is recommended in order to identify patients who require closer surveillance.

Normal ranges (nutrition/occupation exposure)

Serum cobalt 1.7 – 6.8 nmol/L

Blood cobalt <10 nmol/L

Serum chromium <10 nmol/L

Blood chromium <40 nmol/L

Unit Conversion: To convert from nmol/L to ug/L (ppb) multiply by:

Chromium nmol/L x 0.052 = ug/L (ppb)

Cobalt nmol/L x 0.059 = ug/L (ppb)

## Interferences

## Interpretation & Clinical

## Decision Value (if applicable)

## References

MDA Alert MDA/2012/036

MDA Alert MDA/2017/018 (updated)

Up to Date, Overview of dietary trace minerals – Searched Sept 2018

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

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

## Test code

MHIP

## Lab Handling

MHIP requests – whole blood EDTA stored in the referrals rack at 4C. All other requests – aliquot serum (red top or trace metals tube) and store in the referrals rack at 4C. Ensure sample type is written on the aliquot. Sent daily by courier to King's College Hospital, London.

