

Consider the following information when a new analyte (test) is added to the laboratory handbook and at scheduled review.

*\*Text provided for guidance – please delete after completion*

Field	Detail	Essential?
Test Name (Analyte)	Chromium	Yes
Alternative Name(s) and Keywords	BCr, blood chromium, WBCr	Yes
Discipline/Specialty	Biochemistry	Yes
Description	Chromium is a metal element which is not found in quantifiable amounts in human blood.	Yes
Clinical Indication	<p>The MHRA recommends that all patients with metal-on-metal (MoM) prosthetic joints should be monitored for wear of the joint which can lead to soft tissue reactions. Soft tissue necrosis can occur in both asymptomatic and symptomatic patients. Wear of the joint can lead to increased blood chromium and cobalt levels. MHRA recommends that an annual review of patients with MoM prostheses should include blood chromium and cobalt measurement.</p> <p>Chromium toxicity may be caused by exposure during industrial processes such as tanning, metalwork (including electroplating), and paintwork. Cr(VI) salts are carcinogenic and prolonged exposure to Cr containing species may cause dermatitis, ulceration, breathing difficulties, kidney damage, and in pregnant women may cause harm to the foetus.</p>	Yes
Patient Preparation	<p>Blood taken via metal needle causes contamination. If no plastic lined needles are available for blood taking, we advise to discard the first 10ml of blood (or use for other tests required e.g. UE or FBC) before filling the EDTA specimen container for cobalt <b>and</b> chromium analysis.</p>	Yes
Specimen Container	KEDTA (purple top)	Yes
Container Image		Yes
Primary Sample Type	Blood (not clotted)	Yes
Minimum Volume Required	Minimum 500µL, but 1.0 – 2.0mL preferred.	Yes

( $\mu$ L for serum//blood/urine etc. unless otherwise stated)		
Special Precautions / Requirements	<p>Samples cannot be used for analysis of any analytes other than whole blood Cr, Co, Mn and Pb so separate samples must be taken for anything else required (e.g. FBC).</p> <p>Chromium is ubiquitous and as such samples are very easily contaminated prior to analysis which can cause false increases in the measured value.</p>	Yes
Transport and Storage Requirements	No particular requirements.	Yes
Telepath Test Code	BCR	Yes
National Pathology Code (READ/SNOMED CT)		No
Reference Interval(s)	In non orthopaedic patients: <40nmol/L For monitoring of MoM hip replacements as per MHRA Advisory Alerts: MDA/2017/018 target is <135 nmol/L	Yes
Telephone Action Limit(s)	n/a	Yes
Measurement Units	nmol/L	Yes
Clinical Interpretation	The MHRA (2017) threshold for blood chromium in monitoring of MoM protheses is 135 nmol/L (7ppb).	Yes
Useful Links / Guidelines	Medical Device Alert - MHRA Advisory Alerts: MDA/2010/033 and MDA/2017/018	Yes
Common Interferences / Causes of Spurious Results	False increases in chromium measurements may be caused by contamination of the sample at any point in the pre-analytical process.	Yes
Availability of Clinical Advice	Please contact the duty biochemist for advice and interpretation on 0151 706 4755.	Yes
Significant Change Values	n/a	No
Testing Frequency / Minimum Re-testing Interval	Annual monitoring recommended in patients with MoM protheses.	Yes
Related tests	BCo	Yes
Technology & Analytical Principle Used	ICP-MS with collision cell (KED mode)	Yes
EQA Scheme	TEQAS	Yes
Laboratory Performed	RLH	Yes
UKAS Accreditation Status	Pending accreditation.	Yes

Form completed by: Hannah Fearon

Date: 25/04/2023

Change control completed by: Hannah Fearon  
(QMS-EXTD-160, LCL Laboratory Handbook)

Date: 25/04/2023