

TRACE ELEMENT LABORATORY TEST REPERTOIRE 2022/2023

Department of Medical Biochemistry and Immunology
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Laboratory Open Monday – Friday 08:45 to 17:15

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| Assay | Sample Requirement (ml) | Sample Handling / Transport | Methodology | Reference Range | Turnaround Time (working days) | EQA | Clinical Utility | NHS Charge ¹ (£) |
|--------------------------|--|-----------------------------|-------------|--|--------------------------------|-----------------------|--|-----------------------------|
| Aluminium (Serum/Plasma) | Trace Element Free Vacutainer (2ml)# | Overnight (Room Temp) | ICPMS | <0.37 umol/L | 7 | UKNEQAS | Monitor exposure in dialysis patients | £9.94 |
| Aluminium (urine) | Urine (random - 20ml)* | Overnight (Room Temp) | ICPMS | <0.56 umol/L | 7 | No EQA or alternative | Assess exposure/ Industrial monitoring | £19.98 |
| Antimony (Creat.Ratio) | Urine (random - 20ml)* | Overnight (Room Temp) | ICPMS | <0.4 nmol/mmol creat | 7 | No EQA | Assess exposure/ Industrial monitoring | £19.98 |
| Arsenic (blood) | Blood (Trace Element Free Vacutainer) (2ml)# | Overnight (Room Temp) | ICPMS | <0.13 umol/L | 7 | UKNEQAS | Assess exposure | £17.41 |
| Arsenic (24hr urine) | Urine (24hr - 20ml aliquot)* | Overnight (Room Temp) | ICPMS | <0.13 umol/24hr | 7 | UKNEQAS | Assess exposure | £18.64 |
| Arsenic (Creat.Ratio) | Urine (random - 20ml)* | Overnight (Room Temp) | ICPMS | <13 nmol/mmol creat <i>Note change of units</i> | 7 | UKNEQAS | Assess exposure | £19.98 |
| Cadmium (blood) | Blood (Trace Element Free Vacutainer) (2ml)# | Overnight (Room Temp) | ICPMS | <27 nmol/L | 7 | UKNEQAS | Assess exposure/ Industrial monitoring | £9.94 |
| Cadmium (Creat.Ratio) | Urine (random - 20ml)* | Overnight (Room Temp) | ICPMS | <1.3 nmol/mmol creat | 7 | UKNEQAS | Assess exposure/ Industrial monitoring | £19.98 |

| Assay | Sample Requirement (ml) | Sample Handling / Transport | Methodology | Reference Range | Turnaround Time (working days) | EQA | Clinical Utility | NHS Charge ¹ (£) |
|-------------------------|--|---|-------------------------------|--|--------------------------------|-----------------------|---|-----------------------------|
| Caeruloplasmin | Serum (SST) (1ml)# | Overnight (Room Temp) | Abbott Alinity c Turbidimetry | g/L: 0- <2m: 0.07–0.24 2 - <6 m: 0.14–0.33 6 m - <1 y: 0.14–0.39 1 - < 8 y: 0.22–0.43 8 - <14 y: 0.21–0.40 14 - <19 y F: 0.21–0.43 14 - <19 y M 0.17–0.35 ≥19 y: 0.15–0.47 | 7 | UKNEQAS | Investigation of Wilson's disease | £8.95 |
| Chromium (blood) | Blood (Trace Element Free Vacutainer) (2ml)# | Overnight (Room Temp) | ICPMS | <40nmol/L-environmental For MOM refer to MHRA | 7 | UKNEQAS | Assess patients with MOM hip replacements | £17.41 |
| Chromium (Serum/Plasma) | Trace Element Free Vacutainer (2ml)# | Overnight (Room Temp) separate within 4hr | ICPMS | <10nmol/L-environmental For MOM refer to MHRA | 7 | UKNEQAS | Assess exposure | £17.41 |
| Chromium (24hr urine) | Urine (24hr - 20ml aliquot)* | Overnight (Room Temp) | ICPMS | <20 nmol/24hr | 7 | UKNEQAS | Assess exposure | £18.64 |
| Chromium (Creat.Ratio) | Urine (random - 20ml)* | Overnight (Room Temp) | ICPMS | <2.2 nmol/mmol creat | 7 | UKNEQAS | Assess exposure/Industrial monitoring | £19.98 |
| Chromium (fluid) | Fluid (Universal Container) (2ml)# | Overnight (Room Temp) | ICPMS | NA | 7 | No EQA or alternative | Assess exposure | £18.64 |
| Cobalt (blood) | Blood (Trace Element Free Vacutainer) (2ml)# | Overnight (Room Temp) | ICPMS | <10nmol/L-environmental For MOM refer to MHRA | 7 | UKNEQAS | Assess patients with MOM hip replacements | £17.41 |
| Cobalt (Serum/Plasma) | Trace Element Free Vacutainer (2ml)# | Overnight (Room Temp) separate within 4hr | ICPMS | 1.7-6.8 nmol/L For MOM refer to MHRA | 7 | UKNEQAS | Assess exposure | £17.41 |

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|-----------------------|--|-----------------------------|-------------|---------------------------------------|--------------------------------|-----------------------|---|-----------------------------|
| Cobalt (24h urine) | Urine (24hr - 20ml aliquot)* | Overnight (Room Temp) | ICPMS | <22 nmol/24Hr | 7 | UKNEQAS | Assess exposure | £18.64 |
| Cobalt (Creat.Ratio) | Urine (random - 20ml)* | Overnight (Room Temp) | ICPMS | <1.6 nmol/mmol creat | 7 | UKNEQAS | Assess exposure/ Industrial monitoring | £19.98 |
| Cobalt (fluid) | Fluid (Universal Container) (2ml)# | Overnight (Room Temp) | ICPMS | NA | 7 | No EQA or alternative | Assess exposure | £18.64 |
| Copper (Serum/Plasma) | SST or Trace Element Free Vacutainer (2ml)# | Overnight (Room Temp) | ICPMS | <6m: 4-11 umol/L >6m: 11-22 umol/L | 7 | UKNEQAS | Assess nutritional status and investigation of Wilson's disease | £9.94 |
| Copper (24hr urine) | Urine (24hr - 20ml aliquot)* | Overnight (Room Temp) | ICPMS | 0.1-1.0 umol/24hr | 7 | UKNEQAS | Investigation of Wilson's disease | £12.42 |
| Copper (Creat.Ratio) | Urine (random - 20ml)* | Overnight (Room Temp) | ICPMS | 0.01-0.1 umol/mmol creat | 7 | UKNEQAS | Investigation of Wilson's disease | £12.42 |
| Copper (liver tissue) | Biopsy (Universal Container, no preservative). | Overnight (Room Temp) | ICPMS | <50 ug/g (dry weight) | 20 | UKNEQAS | Investigation of Wilson's disease | £55.90 |
| Iodine (Creat.Ratio) | Urine (random – 20mL) | Overnight (Room Temp) | ICPMS | 50-360 nmol/mmol creat | 7 | EQUIP | Assess nutritional status | £20.16 |
| Iodine (24hr urine) | Urine (24hr - 20ml aliquot)* | Overnight (Room Temp) | ICPMS | 0.6-4.3 umol/24h | 7 | EQUIP | Assess nutritional status | £18.63 |
| Iron (24hr urine) | Urine (24hr - 20ml aliquot)* | Overnight (Room Temp) | ICPMS | <1 umol/24Hr | 7 | UKNEQAS | Assessment of Fe excretion post desferrioxamine | £18.64 |

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|-------------------------|--|-----------------------------|-------------|---|--------------------------------|---------|---|-----------------------------|
| Iron (random urine) | Urine (random - 20ml)* | Overnight (Room Temp) | ICPMS | <1 umol/L | 7 | UKNEQAS | Assessment of Fe excretion post desferrioxamine | £18.64 |
| Iron (liver tissue) | Biopsy (Universal Container, no preservative). | Overnight (Room Temp) | ICPMS | <30 umol/g (dry weight) | 20 | UKNEQAS | Investigation of Haemochromatosis | £55.90 |
| Lead (blood) | Blood (Trace Element Free Vacutainer) (2ml)# | Overnight (Room Temp) | ICPMS | <0.24umol/l <18 years <0.48 umol/L ≥18 years | 7 | UKNEQAS | Assess exposure to inorganic lead | £9.94 |
| Lead (24hr urine) | Urine (24hr - 20ml aliquot)* | Overnight (Room Temp) | ICPMS | <100 nmol/24hr | 7 | UKNEQAS | Assess exposure to organic lead | £18.64 |
| Lead (Creat.Ratio) | Urine (random - 20ml)* | Overnight (Room Temp) | ICPMS | <0.01 umol/mmol creat | 7 | UKNEQAS | Assess exposure to organic lead | £19.98 |
| Manganese (blood) | Blood (Trace Element Free Vacutainer) (2ml)# | Overnight (Room Temp) | ICPMS | 80-260 nmol/L (all ages) | 7 | UKNEQAS | Monitoring parenteral nutrition | £9.94 |
| Manganese (24hr urine) | Urine (24hr - 20ml aliquot)* | Overnight (Room Temp) | ICPMS | <41 nmol/24Hr | 7 | UKNEQAS | Assess exposure | £18.64 |
| Manganese (Creat.Ratio) | Urine (random - 20ml)* | Overnight (Room Temp) | ICPMS | <4 nmol/mmol creat | 7 | UKNEQAS | Assess exposure/ Industrial monitoring | £19.98 |
| Mercury (blood) | Blood (Trace Element Free Vacutainer) (2ml)# | Overnight (Room Temp) | ICPMS | <25 nmol/L | 7 | UKNEQAS | Assess exposure to organic mercury | £9.94 |
| Mercury (24hr urine) | Urine (24hr - 20ml aliquot)* | Overnight (Room Temp) | ICPMS | <50 nmol/L | 7 | UKNEQAS | Assess exposure to inorganic mercury (please also send blood) | £18.64 |

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|--|--|---|-------------|--|--------------------------------|---------|--|-----------------------------|
| Mercury (Creat.Ratio) | Urine (random - 20ml)* | Overnight (Room Temp) | ICPMS | <5 nmol/mmol creat | 7 | UKNEQAS | Assess exposure/ Industrial monitoring | £19.98 |
| Nickel (24hr urine) | Urine (24hr - 20ml aliquot)* | Overnight (Room Temp) | ICPMS | 10-100 nmol/24hr | 7 | UKNEQAS | Assess exposure | £18.64 |
| Nickel (Creat.Ratio) | Urine (random - 20ml)* | Overnight (Room Temp) | ICPMS | 1.0-10 nmol/mmol creat | 7 | UKNEQAS | Assess exposure/ Industrial monitoring | £19.98 |
| Selenium (Serum/Plasma) | SST or Trace Element Free Vacutainer (2ml)# | Overnight (Room Temp) | ICPMS | 0.8-1.4 umol/L (adult) | 7 | UKNEQAS | Assess nutritional status | £9.94 |
| Selenium (24hr urine) | Urine (24hr - 20ml aliquot)* | Overnight (Room Temp) | ICPMS | <0.4 umol/24hr | 7 | UKNEQAS | Assess exposure | £18.64 |
| Selenium (Creat.Ratio) | Urine (random - 20ml)* | Overnight (Room Temp) | ICPMS | <54 nmol/mmol creat <i>Note change of units</i> | 7 | UKNEQAS | Assess exposure/ Industrial monitoring | £19.98 |
| Thallium (whole blood) | Blood (Trace Element Free Vacutainer) (2ml)# | Overnight (Room Temp) | ICPMS | <5 nmol/L | 7 | UKNEQAS | Assess exposure | £17.41 |
| Thallium (Creat.Ratio) | Urine (random - 20ml)* | Overnight (Room Temp) | ICPMS | <5 nmol/L | 7 | UKNEQAS | Assess exposure | £19.98 |
| Thallium (liver tissue) N.B. not included within scope of accreditation | Biopsy (Universal Container, no preservative). | Overnight (Room Temp) | ICPMS | NA | 20 | No EQA | Assess exposure | £55.88 |
| Zinc (Serum/Plasma) | Trace Element Free Vacutainer (2ml)# | Overnight (Room Temp) Separate ASAP within 2hr | ICPMS | 8-17 umol/L | 7 | UKNEQAS | Assess nutritional status | £9.94 |

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| Zinc (24h urine) | Urine (24hr - 20ml aliquot)* | Overnight (Room Temp) | ICPMS | 3-19 umol/24hr | 7 | UKNEQAS | Assess exposure | £18.64 |
| Zinc (Creat.Ratio) | Urine (random - 20ml)* | Overnight (Room Temp) | ICPMS | <1.1 umol/mmol creat | 7 | UKNEQAS | Assess nutritional status | £19.98 |
| Zinc Protoporphyrin (blood) | Blood (Trace Element Free Vacutainer) or EDTA (2ml)# | Overnight (Room Temp) | Fluorimetry | | 7 | Sample Exchange | Occupational lead exposure | £8.69 |

*Urine stated ideal volume. Smaller volumes can be analysed – please call to discuss

Minimum volume quoted for plasma, serum and whole blood assays – please call to discuss if less than available.

If you do not see the element listed that you require, please contact us to discuss your requirements.

¹Please note that there is a surcharge for non-NHS patient as follows:

An additional charge of £5 for tests less than £20

An additional charge of 25% for those tests greater than £20

Please note that the ICPMS offers the capacity for multi-element analysis. We will be utilising this facility, the implication being that we will measure elements that may not have been requested. Our policy will be that none of these results will be routinely reported. If an abnormality is found, the requesting clinician will be contacted, the result discussed, then reported. If they wish to investigate it further, a repeat sample should be sent for analysis for that element.