TEST CHANGE

Heavy Metals Panel 6, Urine with Reflex to Arsenic Fractionated

0025055, HYMET 6

Specimen Requirements:	
Patient Preparation:	Diet, medication, and nutritional supplements may introduce interfering substances. Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals, nonessential~~non-essential~~ over-the-counter medications (upon the advice of their physician), and avoid shellfish and seafood for 48 to 72 hours. Collection from patients receiving iodinated or gadolinium-based contrast media must be avoided for a minimum of 72 hours post-exposure. Collection from patients with impaired kidney function should be avoided for a minimum of 14 days post-contrast media exposure.
Collect:	24 Hour Urine. Refrigerate during collection. Specimen must be collected in a plastic container. Also acceptable: Random Urine.
Specimen Preparation:	Transfer 8 mL aliquot from a well-mixed collection to ARUP Trace Element-Free Transport Tubes (ARUP supply #43116). Available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at ~~(~~800~~-)~~ 522-2787. (Min: 2 mL)
Transport Temperature:	Refrigerated. Also acceptable: Room temperature or frozen.
Unacceptable Conditions:	Specimens collected within 72 hours after administration of iodinated or gadolinium-based contrast media. Acid preserved urine. Specimens transported in containers other than specified. Specimens contaminated with blood or fecal material.
Remarks:	Record total volume and collection time interval on transport tube and on test request form.
Stability:	Ambient: 1 week; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Note:	High concentrations of iodine or gadolinium may interfere with elemental testing. If total arsenic concentration is found to be elevated based on reference intervals, then Arsenic, Fractionated, will be added to determine the proportion of organic, inorganic, and methylated forms. Additional charges apply.
CPT Codes:	82175; 82300; 82525; 83655; 83825; 84630; if reflexed, add 82175
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Urine cadmium concentrations can be used to assess cadmium body burden. In chronic exposures, the kidneys are the primary target organ. Symptoms associated with cadmium

toxicity vary based upon route of exposure and may include tubular proteinuria, fever, headache, dyspnea, chest pain, conjunctivitis, rhinitis, sore throat and cough. Ingestion of cadmium in high concentration may cause vomiting, diarrhea, salivation, cramps, and abdominal pain.

Urinary mercury concentrations predominantly reflect acute or chronic elemental or inorganic mercury exposure. Urine concentrations in unexposed individuals are typically less than 10 µg/L. 24 hour urine concentrations of 30 to 100 µg/L may be associated with subclinical neuropsychiatric symptoms and tremor while concentrations greater than 100 µg/L can be associated with overt neuropsychiatric disturbances and tremors. Urine mercury levels may be useful in monitoring chelation therapy.

The ACGIH Biological Exposure Index (BEI) for arsenic in urine is 35 ug/L measured at the end of the work week. The ACGIH BEI is based on the sum of inorganic and methylated species. For specimens with elevated total arsenic results, fractionation is automatically performed to determine the proportions of inorganic, methylated and organic species.

Individuals with symptomatic Wilson disease usually excrete more than 100 ug copper per day. Other conditions associated with elevated urine copper include cholestatic liver disease, proteinuria, and some medications., and contaminated specimens.

Although random specimens may contain diagnostic information, a 24-hour collection is a more consistent indicator of urine copper.

Zinc is predominantly eliminated in the feces. Elevated urine zinc may suggest excessive zinc supplementation but should be interpreted with a corresponding serum zinc concentration.

Elevated results may be due to skin or collection-related contamination, including the use of collection containers that are not certified to be trace element-free. If an elevated result is suspected to be due to contamination, confirmation with a second specimen collected in a certified trace element-free container is recommended.

Methodology: Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)~~Refer to report~~

Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Reference Interval:

Test Number	Components	Reference Interval
	Arsenic, Urine - per 24h	Less than or equal to ~~0.0~~ 49.9 microg/d
	Arsenic, Urine - per volume	Less than or equal to ~~0.0~~ 34.9 microg/L
	Arsenic, Urine - ratio to CRT	Less than or equal to ~~0.0~~ 29.9 microg/g CRT
	Cadmium, Urine - per 24h	Less than or equal to ~~0.0~~ 3.2 microg/d
	Cadmium, Urine - per volume	Less than or equal to ~~0.0~~ 1.0 microg/L
	Cadmium, Urine - ratio to CRT	Less than or equal to ~~0.0~~ 3.2 microg/g CRT
	Copper, Urine - per 24h	3.0-45.0 microg/d
	Copper, Urine - per volume	Less than or equal to 3.2 microg/dL
	Copper, Urine - ratio to CRT	10.0-45.0 microg/g CRT
	Creatinine, Urine - per 24h	
		Age / Male (mg/d) / Female (mg/d) 3-8 years / 140-700 / 140-700 9-12 years / 300-1300 / 300-1300 13-17 years / 500-2300 / 400-1600 18-50 years / 1000-2500 / 700-1600 51-80 years / 800-2100 / 500-1400 81 years and older / 600-2000 / 400-1300
	Lead, Urine - per 24h	Less than or equal to ~~0.0~~ 8.1 microg/d
	Lead, Urine - per volume	Less than or equal to ~~0.0~~ 5.0 microg/L
	Lead, Urine - ratio to CRT	Less than or equal to ~~0.0~~ 5.0 microg/g CRT
	Mercury, Urine - per 24h	Less than or equal to ~~0.0~~ 20.0 microg/d
	Mercury, Urine - per volume	Less than or equal to ~~0.0~~ 5.0 microg/L
	Mercury, Urine - ratio to CRT	Less than or equal to ~~0.0~~ 20.0 microg/g CRT
	Zinc, Urine - per 24h	150.0-1200.0 microg/d
	Zinc, Urine - per volume	15.0-120.0 microg/dL
	Zinc, Urine - ratio to CRT	110.0-750.0 microg/g CRT