

Copeptin Assay to replace ADH assay at RPA Hospital



On August 1st 2019 Royal Prince Alfred Hospital (RPAH) changed from the ADH Buhlmann Laboratories Vasopressin Radioimmunoassay to the B.R.A.H.M.S Copeptin pro arginine vasopressin proAVP assay Immuno-luminometric assay.

Background

Antidiuretic Hormone (ADH) is a hormone that is elevated in response to high serum osmolarity, low effective circulating volume and physiological stress. Copeptin (aka C- Terminus Pro-Arginine Vasopressin, CT-proAVP), is the C-terminal glycoprotein moiety of pre-provasopressin and is released in the same amount as AVP.

Copeptin can therefore be used as a surrogate for ADH concentration. It has the advantage of having a much longer plasma half-life than ADH, greater stability at room temperature and therefore is less prone to preanalytical errors. As a result, RPAH has replaced its ADH assay with the Copeptin assay.

However, until the end of October 2019, ADH requests will be co-analysed with a Copeptin level.

Sample collection

Morning samples after 8 hour fast (without water restriction) are recommended unless otherwise stated by clinician. Plasma (heparin) or serum samples are suitable and are stable at room temperature for 7 days.

This is a Non-Medicare refundable test with a cost to the LHD of \$50.00. Please note, if the referral is from a private pathology lab, the patient will incur the cost.

Reference Values

Non-water deprived, non-fasting adults	< 16.3 pmol/L
Non-water deprived, fasting (>8hrs) adults	< 15.2 pmol/L
Non-water deprived, non- fasting paediatric subjects	< 14.5 pmol/L

For the investigation of diabetes insipidus (DI) and primary polydipsia (PP) in patients with confirmed polyuria (>40 mL/kg/d)*:

- A baseline Copeptin level >21.4 pmol/L is 100% sensitive and specific for nephrogenic diabetes insipidus
- A baseline Copeptin level < 2.6 pmol/L with prior fluid deprivation (> 8hrs) will indicate complete central DI likely
- A stimulated Copeptin** > 4.9 pmol/L PP likely and < 4.9 pmol/L partial central DI likely (94.0% specificity and a 94.4% sensitivity)

[Notes: * Without concurrent diabetes mellitus, hypercalcemia, pregnancy, uncorrected thyroid or adrenal insufficiency, and heart failure; ** at sodium levels >147 mmol/L following water deprivation]

Test frequency and turnaround times

Batched every Mon, Wed and Fri with a turnaround time of 1-2 days

For further information

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References

- (1) The Reference Interval for Non water Deprived and Non Fasting Adults was determined from an in-house RPAH Endocrinology Laboratory Study.
- (2) Keller T, Tzikas S, Zeller T, et al: Copeptin improves early diagnosis of acute myocardial infarction. J A, Col Cardiol 2010 , 1;55(19): 2096-2106.
- (3) Reference Interval for fasting and water deprived adults (> 8hours) was adopted from the Mayo Clinic in house study, www.mayocliniclabs.com
- (4) Du JM, Sang G, Jiang CM, et al, Relationship between plasma Copeptin levels and complications of community acquired pneumonia in preschool children. Peptides 2013Jul, 45: 61-65.
- (5) Fenske W, Quinkler M, Lorenz D, et al. Copeptin in the differential diagnosis of the polydipsia-polyuria syndrome - revisiting the direct and indirect water deprivation tests. J Clin Endocrinol Metab. 2011; 96(5): 1506-1515).