Memo from Blood Sciences

To: Biochemistry Departments, all referral hospitals.
From: Chris Boot, Consultant Clinical Scientist
Date: 21st September 2015
Re: Replacement of AVP service with copeptin (CT-proAVP).

Dear Colleagues,

For a number of years a service for the measurement of plasma arginine vasopressin (AVP) has been provided by Newcastle upon Tyne Hospitals. We are now replacing the measurement of AVP with a service for the measurement of copeptin (also known as CT-proAVP). Copeptin is the C-terminal peptide of proAVP and is co-secreted on an equimolar basis with AVP from the posterior pituitary.

Background

Measurement of copeptin offers a number of advantages over AVP. AVP suffers from a number of pre-analytical difficulties including *in-vitro* instability, which means that blood samples must be taken into chilled plasma tubes, immediately centrifuged, with a requirement for frozen transport of plasma samples prior to analysis. Copeptin on the other hand is a much more stable analyte and can be measured in serum or LiHep/EDTA plasma, where it is stable for up to 7 days at room temperature allowing transport of samples at ambient temperatures. Measurement of copeptin is also less technically challenging than the measurement of AVP. Our in-house AVP radioimmunoassay takes 3 days to perform, whereas the Brahms Kryptor Copeptin (CT-proAVP) assay is an automated sandwich assay allowing a more efficient service. Precision of the Kryptor Copeptin assay is significantly improved compared to the AVP RIA.

The main indication for measurement of copeptin (or AVP) is in the investigation of polyuria/polydipsia. Measurement of copeptin is most likely to be useful when samples are taken under osmotic stimulation (serum osmolality >300 mOsm/kg), which can be achieved during a hypertonic saline infusion test. Where there is insufficient osmolar stimulus, copeptin measurement may not provide useful diagnostic information. As is currently the case with our AVP service, we will provide a graphical report for serial copeptin measurements taken during saline infusion tests, plotted against published reference data from healthy individuals. A recently published study demonstrated that measurement of copeptin under osmotic stimulation provides high diagnostic specificity and sensitivity for the diagnosis of diabetes insipidus (Timper et al. JCEM 2015;100:2268-74). We have also performed

in-house comparisons of AVP and copeptin response to hypertonic saline infusion and found that in every patient investigated (n=16), AVP and copeptin responses were equivalent. In addition, there is a strong correlation between our AVP assay and Kryptor copeptin concentrations (with copeptin concentrations being roughly twice those of AVP in molar units).

Details of service

Our routine service for copeptin will commence from 5th October 2015, when AVP will no longer be routinely available. From this date copeptin will be reported instead of AVP for all AVP or copeptin requests. Copeptin is reported in pmol/L. There is no applicable reference range as copeptin concentrations are dependent upon osmolar status. An interpretive comment will be included with all reports.

Specimen requirements are as follows:

Specimen type:	Serum or LiHep plasma (200 µL required)
Stability:	Separated serum/plasma is stable at room temperature for 7 days
Transport:	Ambient, first-class post (avoiding weekends)
Deliver to:	Dept. of Blood Sciences
	Royal Victoria Infirmary
	Newcastle upon Tyne
	NE1 4LP
Test Price:	£32.08 per test

Please get in touch if you have any questions about this new service.

Yours Sincerely,

Dr Chris Boot
Consultant Clinical Scientist
Blood Sciences
Royal Victoria Infirmary
Newcastle upon Tyne, NE1 4LP

Tel: 0191 2824153
Christopher.Boot@nuth.nhs.uk