concentration was 1.60 g/L (1.00–2.96). Among all abnormal A1AT phenotypes, PiMS had the highest A1AT concentrations [median 1.30 g/L (0.96–2.50)]; PiZZ had the lowest [median 0.20 g/L (0.10–0.40)]. 82 patients had A1AT above 2.5 g/L. Two PiZZ samples had unexpectedly normal A1AT level (1.00 and 1.20 g/L).

Conclusion: An A1AT >2.50 g/L virtually excludes A1AT deficiency and therefore A1AT phenotyping is not indicated. This would save 4% of the phenotyping requests. Genotyping should be used when A1AT level is discordant with the apparent phenotype.

DETERMINATION OF ADULT REFERENCE INTERVALS FOR SERUM ALBUMIN

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Aim: To determine adult reference intervals for serum albumin measured using BCG and BCP methods.

Methods: Thirty-six sera (albumin 15–49 g/L) were analysed using BCG and BCP methods on Siemens Advia and Beckman analysers. Results were assessed using Passing-Bablok regression and Bland-Altman plot. Albumin results for adults 18–60 years were extracted over a one-year period from four laboratory groups. Bhattacharya analysis was performed for Advia-BCG ($n=367,059$), Beckman-BCG ($n=125,808$), Advia-BCP ($n=19,572$) and Beckman-BCP ($n=31,214$). The central value ($\pm 2SD$) was determined for each method.

Results: On patient sample comparison, there was no significant difference between two BCP methods (Beckman=1.00×Advia–0.52) and two BCG methods (Beckman=1.06×Advia–3.76). The two BCP methods produced results significantly lower than the two BCG methods (Beckman-BCP=1.11×Beckman-BCG–7.55; Advia-BCP=1.19×Advia-BCG–11.5); the difference increased with lower results. On Bhattacharya analysis, BCG methods produced similar results on different platforms [Advia: 46 g/L (40–51) and Beckman: 44 g/L (38–50)] and BCP methods produced similar results [Advia: 39 g/L (32–46) and Beckman: 40 g/L (32–48)].

Conclusion: This descriptive study suggests that 38–50 g/L and 32–48 g/L may be suitable common reference intervals for serum albumin for adults 18–60 years using BCG and BCP methods respectively. Confirmation of these finding with other analysers is required along with any data relating albumin concentrations to clinical outcomes.

PREDICTIVE VALUE OF PROSTATE SPECIFIC ANTIGEN KINETICS IN PROSTATE CANCER DIAGNOSIS

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Background and Aim: Current Australian draft clinical practice guidelines for prostate specific antigen (PSA) testing do not recommend PSA kinetics due to a lack of quality evidence. We

investigated the relationship between PSA kinetics and a subsequent diagnosis of prostate cancer.

Method: A retrospective audit was conducted of prostate histopathology results from June 2015 with corresponding PSA test results. The laboratory receives both outpatient and hospital referrals. Inclusion criteria for analysis were the availability of ≥ 3 PSA results each spaced by ≥ 3 months for reliable calculation of PSA kinetic parameters (linear velocity, doubling time). Total PSA was measured on the Abbott Architect.

Results: 512 patient records satisfied the criteria for analysis. PSA linear velocity $>0.75 \mu\text{g/L/year}$ was associated with prostate cancer diagnosis [odds ratio (OR)=1.96, 95% confidence interval (CI)=1.22–3.18], which persisted in the cohort of men with any elevated PSA $>3 \mu\text{g/L}$ (OR=1.80, 95%CI=1.10–2.97). PSA doubling time <3 years was not significantly associated with prostate cancer diagnosis (OR=1.17, 95%CI=0.93–2.17).

Discussion: This retrospective analysis confirms the relationship between PSA velocity and prostate cancer, with potential utility of PSA velocity to stratify risk in men with an elevated PSA result.

THE EFFECT OF ACUTE CHANGES IN GLOMERULAR FILTRATION RATE ON COMMON BIOCHEMICAL TESTS

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Background and Aim: Acute kidney injury (AKI) is common in hospital inpatients. Since many biochemical analytes possess a component of renal excretion or metabolism, we sought to characterise the effect of AKI on the concentration of several biochemical analytes.

Methods: Routine samples submitted to the SydPath laboratory were included where there were two samples from an inpatient demonstrating a change (increase or decrease) in creatinine concentration $>50\%$ within a 72 hour interval. Patients known to be undergoing dialysis or age <18 years were excluded. De-identified samples were measured for 26 biochemical analytes.

Results: 97 samples pairs were identified as meeting criteria for analysis. The relative change in analyte concentration correlated with the relative change in creatinine concentration for urea, urate, phosphate, magnesium, PTH, troponin T and NT-proBNP. The magnitude of these changes in analyte concentration with creatinine varied according to the particular analyte. The following analytes did not demonstrate a discernable association: sodium, potassium, chloride, bicarbonate, calcium, albumin, total protein, bilirubin, ALT, AST, ALP, GGT, CK, lipase, amylase, ferritin, iron, transferrin.

Discussion: The findings of this novel study corroborate with the observations from earlier work utilising data extraction methods and inform the expected changes in analyte concentration in the setting of acute changes in renal function.

ANALYSIS OF HAEMOLYSIS RATES WHEN COMPARING BLOOD FROM INTRAVENOUS CATHETER VS VENEPUNCTURE IN THE EMERGENCY DEPARTMENT SETTING

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