Results: 542 specimens were processed. There were 16 *Campylobacter*, 7 *Salmonella* and 2 non-dysenteriae *Shigella* spp. positive by culture and 23 *Campylobacter*, 9 *Salmonella* and 3 non-dysenteriae *Shigella* spp. positive by PCR. All culture positive specimens were PCR positive. Sensitivity of PCR was 100% and specificity 99%, with an NPV of 100% for *Campylobacter*, *Salmonella* and non-dysenteriae *Shigella* spp. PPV was 78% for *Salmonella* spp., 70% for *Campylobacter* spp. and 67% for non-dysenteriae *Shigella* spp.

Discussion: The PCR allows considerably faster turn-around time with high sensitivity and specificity. Published data, discrepancy resolution and clinical correlation suggests this low PPV reflects a proportion of PCR-positive but culture negative true disease.

FIRST STEPS IN THE HARMONISATION OF ADULT PLASMA AMINO ACID REFERENCE INTERVALS IN AUSTRALASIA

Mark de Hora¹, James Pitt², Avantika Mishra², Beena Devanapalli³, Brett McWhinney⁴, Avis McWhinney⁵, Lawrence Greed⁶, Kevin Carpenter³

¹Chemical Pathology, LabPlus, Auckland, New Zealand;

²Victoria Biochemical Genetics, ³NSW Biochemical Genetics,

⁴Queensland Pathology, ⁵Mater Health Service, and ⁶WA Biochemical Genetics, Australia

Six laboratories in Australasia use the same technology to measure plasma amino acids (PLAA) to aid in the investigation of associated inborn errors of metabolism (IEM). There is considerable variation in reference intervals (RI) for PLAA and harmonisation across the laboratory group was suggested.

Aim: To determine adult PLAA RIs using combined data from the six Australasian laboratories.

Method: Inter-laboratory variation was determined for PLAA by analysing External Quality Assurance (EQA) ($n=8$) returns from each laboratory.

Results of 22 PLAA on 2107 patients over 16 years of age from 6 centres were statistically analysed after removal of known IEM patients and outliers. Gender specific data and population distributions were analysed.

Results: The between laboratory coefficient of variation (CV) for 17 amino acids was 4–10% and 4 amino acids had CVs >15%. There was no significant bias from the ERNDIM group. There were gender specific interval differences for 11 amino acids; 2 were normally distributed; 14 required log-transformation and 6 were calculated non-parametrically.

Conclusions: There is acceptable agreement for most amino acids but significant differences for some amino acids possibly due to variation in standardisation and specimen handling.

Harmonisation is feasible after agreed changes to standard procedures in laboratories.

WHAT'S THE EMERGENCY? IDENTIFICATION OF IRON DEFICIENCY ANAEMIA TO EVALUATE TRANSFUSION APPROPRIATENESS

Nora Lee, Terri Dunstan, Rebecca Davidson, Christine Michael, Erica Wood, Richard King

Monash Health, Vic, Australia

Aim: We evaluated anaemia management and transfusion practice in the emergency department (ED) as part of a comprehensive audit program in place for compliance with NSQHS Standard 7 and NHMRC Patient Blood Management guidelines.

Methods: A pilot audit of anaemia presentations was conducted over one month. Patients were selected from blood bank records indicating transfusion of red cells. Iron status was categorised as 'deficient', 'probable', 'unlikely' or 'uncertain' using FBE, blood film and iron studies, where performed. Red cell transfusion was 'appropriate', 'appropriate indication (not quantity)' or 'possibly not required' using clinical and laboratory findings.

Results: Of 31 cases (17 acute bleeders, 11 no acute bleeding, 3 with transfusion decisions made beyond ED), only 55% had iron studies, of which 25% were iron-deficient and replaced with iron. 23% had probable iron deficiency. In subacute anaemia, 82% had iron studies, of which 78% were both iron-deficient and treated with iron. 11% of transfusions were possibly not required, 31% appropriate and 58% overtransfused.

Conclusion: Identification, investigation and management of iron deficiency can be improved in ED presentations with anaemia and could avoid transfusion in some patients. This audit establishes new baseline indicators upon which we can better align our PBM practice with guidelines.

UNUSUAL CAUSE OF PSEUDOHYPERKALAEMIA IN PRIMARY CARE CLINIC

Vanessa Man Har Lo

Clinical Pathology Laboratory, Department of Pathology, Hong Kong Sanatorium and Hospital, Hong Kong Special Administrative Region

Backgrounds: Our hospital has three primary care clinics (PCC1, 2 and 3) outside the main campus. Blood sampled in PCC were sent to the hospital laboratory for analysis with transportation time 2–6 hours. PCC1 accounted for the highest rate of pseudohyperkalaemia, 21%, while the rest were below 5%. Root cause identification followed by constructive solution is urgently required to avoid unnecessary and potentially detrimental therapy due to pseudohyperkalaemia.

Method: From 3 October to 28 November 2013 systematic root cause analysis was conducted by simulation study focussing on preanalytical procedures including: (1) blood sampling technique, (2) sample preparation procedure while sitting in PCC waiting for courier to pick up, (3) transportation conditions including temperature and turbulence effect leading to red cell sediments remixed with plasma during speedy driving, and (4) potassium stability in gel separated plasma up to 9 hours. Statistical analysis tools Deming regression and Bland and Altman plot were adopted.

Results: Excessive fist clenching was identified to be the culprit. Pseudohyperkalaemia was recorded in 10 out of 16 study cases. Upon elimination of the inappropriate procedure, up to 22 September 2015 the occurrence rate of pseudohyperkalaemia in PCC1 dropped dramatically to 7%, comparable with those in PCC2 and PCC3.