The Association for
Clinical Biochemistry &
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Better Science, Better Testing, Better Care

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Scientific Affairs Committee

Scientific Scholarship Update Report

Name of Scholar: Jane ARMER..... **Date of Report:** July 2015

Title of Project: The performance of biochemical markers of alcohol use including carbohydrate deficient transferrin, ethyl glucuronide and ethyl sulphate to detect alcohol ingestion in clients in a community alcohol treatment programme.

Summary of work completed to date (400 words max):

Part 1 *(To develop new laboratory methods for Ethyl Glucuronide, Ethyl Sulphate and Carbohydrate Deficient Transferrin using samples from patients who attend Blood Test Clinic and have not consumed any alcohol for at least 2 weeks)*

- An LC-MS/MS method for ethyl glucuronide (EtG) and ethyl sulphate (EtS) has been set up and evaluated.
- All the participants required for this part of the study have been recruited. Serum and urine samples have been collected from 100 participants attending blood test clinic that have not consumed any alcohol for at least 2 weeks.
- EtG, EtS and creatinine has been measured in all urine samples for the Part 1 participants. The results have been analysed and used to define cut-offs for EtG and EtS using our method.
- CDT has been measured in all serum samples.

Part 2 (*To measure 9 markers of alcohol intake in clients attending an alcohol recovery treatment programme. The clients will be asked to complete a diary of alcohol intake. In weeks 1, 4, 8 and 12 of the 12 week treatment programme, blood and urine samples will be collected. A breathalyser test will also be performed. We will look at each result and combinations of results and compare these to the alcohol diary.)*

- All the participants for this phase of the study have been recruited (n=31)from alcohol treatment programmes in Lancashire. All the serum, whole blood and urine samples have been analysed & the results compared to the alcohol intake reported using the alcohol diary.
- The results showed that urine EtG and EtS are superior to all other markers to detect alcohol intake in clients in a community alcohol treatment programme. Due to the excellent diagnostic performance of urine EtG and EtS, a combination of alcohol markers is not required. However, the advantage of a breathalyser test over laboratory analysis of urine for EtG and EtS is the immediate availability of the result which allows an immediate intervention for a client with a positive result. Instead of replacing the breathalyser test, urine EtG and EtS could be a useful additional tool in clients with a negative breathalyser result.

Briefly describe any positive impact for patients:

This preliminary study has indicated that urine EtG and EtS could be useful additional tests in clients in community alcohol treatment programmes. These tests were able to detect all alcohol intake in the previous 48 hours. It is hoped that the routine use of these tests may identify more individuals in alcohol treatment that are continuing to drink that do not declare it and have negative breathalyser tests. Identification of these individuals could lead to earlier interventions and altered treatment strategies which in turn could increase the numbers successfully completing treatment (currently only 38% in the UK in 2013/14).

List any citations for Publications arising out of the work:

This study has been submitted as a dissertation to complete the FRCPath in Clinical Biochemistry.

This work was presented as a poster at Focus 2015:
Armer JM, Allcock RA. The performance of alcohol markers including ethyl glucuronide and ethyl sulphate to detect alcohol use in community alcohol treatment clients. *Ann Clin Biochem* 2015; **52** (S1): 77

A paper for publication is currently being drafted and will be submitted to a peer-reviewed journal.

[Please return to director.scientificaffairs@acb.org.uk]