

Report on a four-week elective undertaken in the Birmingham City Hospital Toxicology Laboratory

Rachel Dale, October 2016

I am a third year STP trainee in the Biochemistry department at Colchester Hospital University NHS Foundation Trust. My MSc project was a pilot study to investigate the incidence of illicit drug use in the local pregnant population. This involved comparing a point of care testing method with mass spectrometry for detecting drugs of abuse in urine samples collected from antenatal clinics in the local area. Since there are no mass spectrometric facilities at Colchester Hospital, I spent four weeks in the Toxicology laboratory at Birmingham City Hospital, which is our referral laboratory for drugs of abuse confirmatory testing. Given that my base laboratory is in a relatively small hospital, the opportunity to spend four weeks in a specialist referral centre was appropriate for completion of my elective placement.

I was trained in the technical aspects of sample preparation for ultra-performance liquid chromatography tandem mass spectrometric analysis (UPLC MS/MS) and in how to integrate and interpret the results. Moreover I was able to see how Time of Flight mass spectrometry is used in an innovative way in this NHS laboratory, and could perform confirmatory testing of my positive specimens using this technique. I also gained experience of immunoassay and gas chromatography mass spectrometry (GC-MS) and the reasons why these techniques are more suitable for measurement of cannabis and for quantitation of drugs of abuse, respectively. I completed a small audit to look into whether morphine could be quantitated by UPLC-MS/MS rather than by the more labour-intensive GC-MS method.

As well as experience gained in drugs of abuse testing, whilst I was in this referral centre I had the opportunity to spend time in other specialist areas of Clinical Biochemistry, including ethylene glycol measurement, thiopurine S-methyl transferase (TPMT) measurement and the trace metals laboratory. Overall I enjoyed spending time in this friendly and innovative laboratory, gaining practical and interpretative skills in specialist techniques beyond the repertoire of my base laboratory.