

INNOVATIVE STRATEGIES LEADING TO BACKLOG ELIMINATION AND EFFICIENCY GAINS FOR A HIGH THROUGH PUT FORENSIC DNA LABORATORY

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The NSW Forensic & Analytical Science Service (FASS), a network of NSW Health Pathology, worked collaboratively with the NSW Police Force (NSWPF) to implement streamlined collection and processing of casework samples in order to provide timely intelligence to assist in criminal investigations. The main strategies implemented to effect this change were subsampling in the field by NSWPF crime scene officers and total automation of the DNA analytical processes at FASS. Automation has also been effective in the examination of sexual assaults kits which has contributed to an efficient workflow within this work stream.

Prior to implementation of subsampling in the field, several investigations were required including suitability of swab types, introduction of a single swabbing technique and optimisation of storage of subsamples during transportation from scene to laboratory. Finalisation of a DNA Advancement Project was achieved in early 2014 with the implementation of the Hamilton Microlab[®] AutoLys STAR robotic platform for direct automated lysis of the subsamples submitted by NSWPF without any additional intervention. This completed total automation of casework sample processing through robotic extraction, PCR setup and capillary electrophoresis setup performed on Tecan Freedom EVO[®] robotic platforms. The extraction of semen samples has also been integrated into an automated DNA analytical workflow, typically following microscopic identification of spermatozoa. This process includes using the semi-automated Zeiss Metafer Slide Scanning System.

Electronic data exchange and reporting has also been implemented between NSWPF and FASS resulting in significant efficiencies. The historical backlog in DNA analysis has been eliminated and sustainable fast analysis has been achieved with the introduction of automated processing and electronic data exchange. The compelling productivity and efficiency gains in the examination of sexual assault kits and DNA processing leading to enhanced service delivery to NSWPF will be showcased.