BUSINESS PROCESS RE-ENGINEERING IN A FORENSIC BIOLOGY LABORATORY

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In response to a continually increasing caseload (the past three years have seen successive increases in case processing requests of 17%, 63%, and 42%, respectively) and the demand to deliver a timely service, the Biology Section of the Centre of Forensic Sciences (CFS) has completed the design phase of a project to re-engineer its work processes. The central theme to the plan involves tailoring services for three different streams of casework: high-volume crime, sexual assaults, and major crime. We report here some of the key recommendations made by teams of staff tasked with designing the most efficient and effective workflow for each of the three streams:

- implementation of a fully automated DNA analysis process for high-volume crime – including DNA IQ™ (Promega) extraction on a Perkin Elmer Multiprobe II PLUS HT EX platform, QPCR using CFS-HumRT on an ABI 7900HT SDS, normalization and STR PCR setup on a Multiprobe II PLUS HT EX platform, amplification on an PerkinElmer 9700 thermal cycler, electrophoresis on an ABI 3100 multicapillary system, and software analysis using ABI's GeneMapper ID.
- elimination of conventional screening of swabs in sexual assault kits in favour of direct analysis for male DNA – the proposal involves the development / incorporation of a multiplex real-time QPCR system that would simultaneously detect total human DNA as well as male DNA, which would allow for a decision to be made as to whether to proceed with autosomal STR analysis or Y-STR analysis, depending on the ratio indicated.
- adoption of a web-based case assessment and support tool for investigators to use prior to submission of items to the laboratory – the tool would prompt investigators regarding the case history and, in turn, identify the items of greatest probative value, or in more complex cases, direct users to a scientific advisor at the laboratory for a personalized consultation service.

Other considerations from this phase of the project will also be presented, including staffing and distribution of work, the concept of paperless case files, information management, and expert systems for interpretation.

Finally, recommendations designed to ensure the continued job satisfaction of staff will be presented in the framework of change management.

We anticipate that the implementation of the proposed changes will lead to significant efficiencies not otherwise attainable without added resources. The plan will also create a flexible environment that allows for expansion of services and enhances the job satisfaction of staff members.