EXTREME MAKEOVER: LABORATORY EDITION

Sylvia Thurmond
Denver Police Department Crime Laboratory

Over the past five years, the Denver Police Department Crime Laboratory Forensic Biology and DNA Unit has been motivated to "trim the workflow fat" due to significant yearly increases in caseload with minimal increases in resources. Expensive robotics, automation, customized LIMS and expert systems were not a viable option due to budgetary restrictions. This left low / no-cost improvements utilizing pre-existing tools as the solution. Process mapping identified several bottlenecks in the workflow and each was resolved through creative thinking, detailed planning, analyst input and the development of systematic checks to ensure quality. The primary goal of this presentation is to introduce practical efficiency improvements for forensic laboratories with various levels of resources that can be implemented on their own.

Significant changes to the Denver workflow involved adopting a team approach for case processing and eliminating the "one analyst to one case" assignment. Analysts were assigned duties according to their skill sets and a batching system was introduced with central tracking for organizing and prioritizing samples for analysis. Sample processing was streamlined through the use of electronic workbooks so paper worksheets and repetitive hand typed entries could be eliminated from the DNA workflow. A central electronic system for DNA extract storage was implemented to quickly and efficiently organize completed samples. Excel based macros were developed to summarize human and male quantitative data, to cross-check sample batches for contamination and to generate report tables. Review and reporting bottlenecks were tackled by implementing a batch review process and eliminating the need to print and review redundant electropherograms and laboratory worksheets. Recently, an Excel based statistical calculator was developed and validated to eliminate the need to perform time consuming manual calculations.

Pressure to improve workflow efficiency without sacrificing quality or increasing cost is a constant challenge facing forensic laboratories. In response, improvements to the Denver DNA workflow have been assisted through the implementation of new techniques, material modifications to existing procedures and some automation. Each new technology was evaluated to determine how the workflow and caseload would be assisted. Through innovative and relatively low-cost changes to the workflow, "working smarter, not harder" can be a reality for many forensic laboratories.