

A Pilot Program Evaluating Sexual Assault Kit Processing Utilizing the ANDE 6C Rapid DNA System

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Laboratories across the country are dealing with backlogs of sexual assault kits waiting to be tested. Laws in many states have changed requiring all kits to be tested, increasing the caseload for laboratories as well as the turnaround time in which results are obtained. The ANDE 6C Rapid DNA System can analyze an evidence sample in under two hours; however, sexual assault kits are challenging due to mixtures of the victim and suspect's DNA. A pre-processing step was developed by ANDE to separate the suspect DNA in sperm cells from the victim's DNA, providing clean suspect profiles which can be searched against a database. The purpose of the study was to determine if this procedure could produce a searchable suspect profile using actual evidence samples, collected during a forensic sexual assault exam. Successful processing of Rapid Sexual Assault Kits would provide an officer with an investigative lead in the early stages of the investigation rather than months after the assault.

In cooperation with ANDE a pilot project was designed to evaluate the effectiveness of sexual assault kit processing utilizing the ANDE 6C Rapid DNA System. Three jurisdictions in Kentucky were chosen: Louisville, Lexington and Covington. Jurisdictions were chosen based on number of case submissions to the laboratory, 24 hour SANE coverage, and cooperation from both law enforcement agencies and Commonwealth's Attorneys. Rapid sexual assault kits were assembled containing the following: information sheet, victim reference standard envelope, and two evidence collection envelopes. Each of the envelopes contained two swabs identical to those found in KSP's traditional sexual assault kit. Four swabs are collected for the traditional sexual assault kit so the laboratory requested that 2 additional swabs be collected for the Rapid kit. The Rapid Kits came directly to the laboratory while the traditional sexual assault kits were collected by law enforcement and submitted to the laboratory following their evidence handling protocols.

Upon receipt, Rapid Kits were analyzed as quickly as possible following Rapid DNA protocols. Any samples potentially containing semen were processed using a pre-treatment step. This pre-treatment step was an effort to separate victim and suspect DNA to produce single source profiles. Any suspect profiles obtained were searched against a copy of the state database housed in the ANDE FAIRS software. Hits obtained during this process were confirmed and reported to law enforcement as an investigative lead. The traditional kits were fast-tracked through serology screening and DNA testing and comparisons made between the traditional DNA analysis and the results from the ANDE 6C system.

The ANDE 6C system can produce clean suspect profiles following the pre-processing step when sufficient suspect DNA is present, thus allowing the laboratory to quickly report an investigative lead to officers. The conclusions from the study, to include concordance, sensitivity, the efficiencies gained, and the changes in interaction with law enforcement will be discussed.