AN EVALUTION OF CUTTING SEXUAL ASSAULT KIT SWABS DIRECTLY FOR DIFFERENTIAL EXTRACTION WITHOUT PRESCREENING

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Many laboratories are evaluating ways to prevent or to eliminate backlogs of sexual assault cases. Since the beginning of 2011, the Forensic Genetics Laboratory of the Harris County Institute of Forensic Sciences has ceased prescreening sexual assault kit swabs. Instead, cuttings from each swab are for subjected to differential extraction directly. Portions of swabs from the same collection location are pooled prior to extraction. The new approach was effective at decreasing the Serological processing time however this approach greatly increased the number of differential extractions.

Sexual assault kits almost always contain vaginal and anal swabs, but oral cavity, neck, and breast swabs as well fingernail cuttings or swabs from them are not routinely collected. Sexual assault kits containing these less frequently encountered samples were reviewed before and after the introduction of the new method to determine whether cutting samples for differential extractions without screening was worthwhile. Results indicate that male DNA was rarely detected in the sperm fraction of these samples unless the complainant's statement indicated it might be.

Instead of prescreening, pooled cuttings of swabs from each collection site (e.g., vaginal, anal, neck, etc.) are placed in a tube containing the PSA buffer and incubated for 30 minutes at room temperature in a Thermomixer set to 1400 rpm. The sample is then centrifuged to pellet all cells and the supernatant is transferred to another tube for P30 testing. A sample of the pellet is stained and examined for the presence of sperm and, if the slide is negative, a sample of the supernatant is used to test for P30. The pellet is then further processed in a differential extraction. The new approach has significantly reduced the time required to process a sexual assault kits by utilizing the confirmation of semen through the differential slide and only testing for P30 if the differential slide is negative.

Our review of this approach revealed that semen is rarely detected in neck, breast, and oral swabs if the complainant did not report an oral assault or give an indication that the swabs were collected for possible semen. Even though semen was not detected, foreign male DNA was obtained less than 40% of the breast and neck swabs while the oral swabs obtained foreign male DNA from only 14% of the cases. Review of the results from fingernail swabs showed that even if a struggle was indicated in the offense narrative, only 14% of the swabs recovered foreign male DNA. Attendees will receive further information about the propensity of obtaining foreign male profile from these swabs and the quality of the profiles. Based on this study an attendee will be able to make an informed decision on whether to incorporate this new method of processing sexual assault kit swabs, which types of swabs should be sent directly for differentials, and the quality of the profiles that will be obtained.