SEXUAL ASSAULT KIT BACKLOG STUDY

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Executive Summary

Background

Sexual assault is one of the most serious crimes facing society and, over the past several decades, increasing attention has been paid to the proper collection of physical evidence from victims to document and reconstruct the crime, to identify the assailant, and to aid in the prosecution of the assailant. When victims report such offenses to the police and are examined at hospitals, medical personnel employ sexual assault kits and accompanying protocols to guide the collection of evidence from the victim. Sexual assault kit (SAK) report forms also record important information from the victim about activities prior to, during and after the assault. Given the likely transfer of biological secretions in such crimes, sexual assault kits and DNA evidence have the power to verify the crime and pinpoint the identity of the assailant. The probative value of such scientific evidence, however, depends largely on the circumstances of the particular case, being pivotal in one instance and less important in another.

Although law enforcement agencies and hospitals have greatly improved and expanded procedures to gather sexual assault kit evidence, scientific resources and procedures to test such evidence have not kept pace. The National Institute of Justice staff, researchers and investigative journalists have uncovered the fact that backlogged and untested sexual assault kits (SAKs) are a major problem facing forensic crime laboratories and law enforcement agencies throughout the United States. The combined untested SAKs from the Los Angeles Sheriff's Department (LASD) and Los Angeles Police Department (LAPD) reached 10,895 cases in the fall of 2008. As the result of growing public concern, Human Rights Watch undertook a study in Los Angeles to document reasons behind the accumulation of these untested kits and found a number of organizational and resource deficiencies throughout the city and county. They were not crime laboratory backlogs per se but were untested kits held in police property rooms in cold storage, where investigators and prosecutors had not requested that the SAK be tested. In 2009, however, the chief executives of Los Angles city and county law enforcement agencies announced that all backlogged kits would be tested, using outside private DNA testing laboratories.

Study Objectives and Research Design

The untested sexual assault kit problem in Los Angeles, coupled with the fact that agencies had decided to test all such kits for the presence of DNA evidence, presented a unique research opportunity. The Sexual Assault Kit Backlog Project at California State University, Los Angeles (CSULA) was funded by the National Institute of Justice (NIJ) in 2009 to accomplish four primary objectives: 1) evaluate the results of scientific tests performed by private laboratories on backlogged sexual assault kit (SAK) evidence from the LASD and LAPD crime laboratories, 2) review the sexual assault case processing literature and the role played by evidence and other factors in solving and prosecuting such cases; 3) determine the criminal justice dispositions of a sample of backlogged and non-backlogged cases before and after kit testing; and 4) identify principal case and evidence characteristics that could be used by forensic laboratories to evaluate and prioritize sexual assault evidence submitted to crime laboratories. The accomplishment of such goals would aid all law enforcement agencies and associated crime laboratories about the value of testing backlogged sexual assault kits and to set guidelines for processing such evidence in the future.

The backlogged cases in Los Angeles were ones where investigators and prosecutors had concluded the case would not be helped by SAK testing and failed to submit them to the crime laboratory for analysis by November 2008. Project researchers from CSULA developed a research design to randomly collect a 20% sample (1,948 cases) of the 10,895 backlogged cases to be tested and to evaluate the scientific results achieved by private testing laboratories. Data collection focused on the respective agencies' crime laboratory files and the DNA reports submitted by outside private testing laboratories. Data collection tools for this project focused on laboratory records and included key descriptive, investigative, dates of critical events, physical evidence, and analytical tests performed on the evidence. Records yielded information on DNA profiles and related CODIS submission activity. Researchers also took note of missing data in the laboratory files that often prevented a full accounting of forensic evidence processing. In addition, grant resources did not permit a complete review of detective case and prosecutorial records for these backlogged cases.

Researchers were interested in both the results of the scientific testing of these backlogged cases, and if the test results had any appreciable effect on the criminal justice outcomes of these or other cases. To accomplish this latter objective, we compared the disposition outcomes of a smaller sample of backlogged cases with a sample of current non-backlogged cases where SAKs were being tested in the home crime laboratories. While the backlogged sample represented cases that investigators (historically) thought would not benefit from SAK testing, the present day sample represented all cases where kits were collected and submitted to local crime laboratories for testing (current policy is to test all submitted SAKs.) The full report describes how these subsamples were chosen and tracked over a six-month period -- between receipt of laboratory test results and recording of criminal justice dispositions. In all, we tracked a random sample of 371 backlogged cases and 371 non-backlogged cases from both agencies for a total of 742 outcomes. Outcomes (arrest, charge, plea/trial, conviction, and sentence) were determined before and after testing occurred.

The research design also included a review of the sexual assault case processing literature focusing on the role sexual assault kits, forensic evidence, and related information supplied by the victim played in such cases. It addressed the general theory of forensic evidence and how such evidence documenting the assault and victim injuries, and other legal and extralegal evidence, may assist detectives and prosecutors in their investigation and prosecution of such acts. In addition, researchers held focus groups with sexual assault investigators, prosecuting attorneys, and criminalists to discuss the role SAK evidence plays in resolving both stranger and non-stranger sexual assaults. Such qualitative information helped to frame the data gleaned from laboratory files, and to gain first hand views of practitioners engaged in case level decisions.

This study was faced with similar challenges facing all researchers attempting to determine the role and impact of scientific evidence (from among a host of other case factors) in processing cases through progressive stages of the criminal justice process from arrest, through charging and adjudication, and concluding with sentencing. The fact this study focused on older, backlogged sexual assault kits confronted more hurdles because of: 1) the fact that paper and computer files were located in numerous locations and computer files; 2) the absence of important data from files describing key variables; 3) the lack of resources to review all detective and prosecutor files

associated with the kits; and 4) time constraints limited tracking of criminal justice dispositions of cases to six months after testing was completed.

Findings

Laboratory Results

Data from tested SAKs were drawn from crime laboratory files and focused on victim and assailant demographic characteristics, the nature of the sexual assault, information collected by sexual assault nurses at the time of victim examination, laboratory test results, and the success of laboratories in uploading CODIS profiles and achieving case-to-case and offender hits. Ninety-three percent of victims were female, victims averaged 22.2 years of age, and 39% were Hispanic/Latino. While female victims far outnumbered male victims by a ratio of 15 to 1, a significantly higher percentage of male victims were 13 or younger (47.6%) compared with females (16.7%). Two-thirds of victims knew their assailants, almost 35% self reported they were intoxicated with alcohol or drugs at the time of the assault, almost three-quarters (71%) reported sustaining one or more injuries, three-quarters reported vaginal penetration, and only about one-quarter thought the assailant had ejaculated. Victims also reported actions that could have compromised the scientific evidence present: a high percentage of victims (80%) reported they had engaged in post-assault hygiene, and almost half (46.4%) changed their clothing before undergoing the sexual assault examination.

The average post-coital interval (PCI) between the time of the assault and victim examination was 23.3 hours, but this time interval varied depending upon the gender, ethnicity, age of the victim, and the victim's relationship to the assailant. Both male and female victims 13 years of age and under (and their parents or caregivers) took much longer than adults to report the crime to authorities and to submit to an examination. Hispanic/Latino victims (in the LASD sample) waited the longest to undergo sexual assault examinations and victims who knew their assailants also averaged longer PCIs.

Bode Technology was the primary private laboratory performing tests on SAKs for both LAPD (66.8%) and LASD (40.9%); Orchid Cellmark was the second leading laboratory that performed testing of LAPD kits (30.4%) and LASD kits (12.3%). Laboratory results included screening tests to find different biological markers (sperm, P30, Y chromosome, acid phosphatase, amylase and epithelial cells) in various orifices and in dried secretions on the body. We then determined the percent time laboratories found foreign and male DNA in the kits, and developed full and partial DNA profiles. Semen markers and Y chromosome screening tests were positive from 40% to 50% of the time in the vaginal and external genitalia areas. Y chromosome screening tests were also positive about 50% of the time for dried secretions. Conventional serological marker and Y chromosome screening tests varied widely with oral, rectal and dried secretion tests. Using STR analysis, male DNA was found in about 80% of attempts with samples taken from the vagina and two-thirds of samples from the external genitalia and dried secretions. Full DNA profiles were determined in two-thirds of DNA samples taken from the vaginal area, but in a smaller percentage from other body regions. Samples from the rectal area yielded full DNA profiles less than half the time and in only about 5% of samples taken from the oral region.

Success in finding foreign DNA and CODIS uploads was related to post-coital interval (PCI), with diminishing success as PCI increased. Successful foreign DNA detection descended as PCI increased for both conventional and Y chromosome screening techniques for up to 72 hours, but Y chromosome screening had greater success after 24 hours and up to 72 hours. PCI is a critical factor in the successful detection of DNA and subsequent CODIS inquiries and underscores the value of rapid victim reporting and medical examination.

The respective LAPD and LASD crime laboratories were successful in uploading profiles to CODIS about 36% of the backlogged sample; and in achieving offender hits in almost 46% of the uploads and case-to-case hits in less than 4% of uploads. Offender hits (cold/warm and conviction matches) constituted more than 90% of all hits that occurred, and most of them resulted where the suspect was known to the victim. Although case-to-case hits occurred less than 8% of all hits, most of these hits also connected a known offender to one or more of the cases. Nevertheless, it was unusual for DNA/CODIS to link multiple cases together and to a known offender. The non-backlog sample yielded similar CODIS upload rates, but the overall hit rate was ten points lower, yet produced a higher rate of 'cold' offender hits and case-to-case hits. The use of CODIS to achieve such investigative ends needs additional study.

The full report also explains that in between 20 - 30% of the hits resulting from the backlogged sample the suspect was known, had been arrested and convicted in the same sexual assault, and his DNA already entered into CODIS. The DNA profile developed from evidence in these sexual assault kits essentially 'duplicated' the DNA profile (and offender's identity) that had already been entered into CODIS by virtue of a prior conviction. Jurisdictions contemplating the testing of backlogged cases should keep this limitation in mind.

Disposition of Backlogged and Non-Backlogged Cases

One of the primary objectives of the study was to examine the disposition of cases that had been backlogged with another sample of more recently investigated and tested, non-backlogged cases. Two smaller *disposition* subsamples of backlogged and non-backlogged cases were used for this purpose. For the backlogged SAK disposition sample (n=371), no new arrests resulted after SAK testing occurred, but one filing and two convictions did. We determined that neither of the two new convictions involved helpful DNA testing. Almost 40% of these sampled cases had previously resulted in arrests without the benefit of a SAK analysis and 18% had resulted in convictions. For the matched sample of 371 non-backlog cases, almost the same percentage of cases had resulted in arrest, filing and conviction prior to SAK testing. *After* the tests, however, an additional percentage of cases resulted in arrest (2%), filing (5%), and conviction (11%). SAK testing of the present day sample was primarily associated with cases going farther into the criminal justice system, many in conviction.

Much of the needed data to predict DNA testing outcomes is collected at the time of victim medical examination and from the sexual assault investigator's report on the assault, including the victim/assailant relationship. Just as crime laboratories provide information to investigators after testing evidence, they also need reliable data from investigators to determine if the SAK should be examined. Due primarily to missing data, researchers in this project were

unable to build statistical models predicting the successful development of DNA profiles and case outcomes. Bivariate analyses, however, showed that post-coital interval (PCI) was linked to development of DNA profiles and CODIS uploads, but so were other variables, including: if the victim had engaged in recent consensual sex or in post-assault hygienic activity, and if the assailant was thought to have ejaculated or used a condom.

A comparison of stranger and non-stranger files for both the backlogged and non-backlogged samples suggested that the identification of DNA in cases involving *strangers* within non-backlogged cases was associated with substantially higher rates of arrest, charging and conviction as cases moved deeper into the criminal justice system. While time to disposition, number of case files, and limited information about sampled cases precluded more definitive findings, this represents a promising area for future study.

Focus Group Findings and Better Data Collection

Focus group participants expressed the belief that mandatory testing of all backlogged SAKs was unnecessary and that future kit testing must reflect investigator and prosecutor evaluation of the case. Many of the cases in the backlog were those where the assailant's identity was not in question and investigators thought SAK results would not be of use. Focus group investigators thought that most of the (historical) decisions that led the kit to be placed in the backlog were sound and that testing would not have been of assistance. Communication between investigators and laboratory criminalists is paramount to set priorities in deciding when such testing in a case in the future is warranted. Prosecutors believed DNA results were primarily helpful in corroborating other evidence but believed investigators can properly employ discretion as to when such testing is necessary. Many cases with weak evidence to begin with will not be sufficiently strengthened by the DNA testing to permit a successful prosecution. The deputy district attorneys also expressed strong support for SAK testing in stranger cases and where it was vital to establish that a crime had actually occurred. Prosecutors saw positive DNA results as important leverage in securing guilty pleas and avoiding trials whenever possible. Given limited resources, criminalists believed it was important to consider sexual assault cases with all other cases coming into the crime laboratory in deciding if DNA testing should be done. All focus group members agreed that community (victim group) pressure should not dictate analysis protocols.

A system of priorities needs to be established to determine which cases (and which evidence within the kits) need to be tested and recognition that forensic resources are limited. DNA testing can contribute to both stranger and non-stranger sexual assault cases, but the SAK and the particular case at hand requires assessment before testing takes place. Also, although uploading DNA profiles into CODIS may have value in the long term, many of the backlog 'hits' that occur are those where the assailant's DNA profile has already been entered into CODIS for a prior arrest and conviction. This is another consideration in determining the value of testing contents of a SAK. An overall priority scheme with scientific, investigator and prosecutor input should be devised and implemented.

Principal Policy Recommendations

1. The forensic testing of ALL backlogged sexual assault kits is not recommended. Before testing, the goals of agencies must be clearly defined, the investigation status of cases determined, and agencies become familiar with the likely short and long term benefits of such testing. For future testing, unsolved stranger cases should be the primary focus.

2. Advisory committees, composed of law enforcement, medical and forensic representatives should collaborate to establish criteria for future SAK testing. Agencies should commit resources to share and compile data at key decision points in the investigation and prosecution process and work toward the development of consolidated databases and models to better predict successful sexual assault case outcomes and the role of scientific evidence.

3. Crime laboratories are in need of various types of investigative and medical information in order to begin their analyses of sexual assault kit evidence. Laboratories should routinely receive and review investigator case files, medical victim examination reports, and CODIS status information before commencing their examination procedures. Also:

a. Post-Coital Interval (PCI) is a key factor in predicting hits and is unknown (25%+) in an unacceptably high percentage of cases.
b. Data from the sexual assault victim examination reports (areas penetrated, possible ejaculation, use of condom, etc) yield results useful to criminalists examining sexual assault evidence in the forensic laboratory.
c. Samples from very young victims yield valuable information on biological secretions left on regions of the body that can help inform analytical procedures.

4. All victims, young and old, should report sexual assaults as quickly as possible and undergo sexual assault examinations; this is critically important in the successful recovery of evidence and in deciding if laboratory testing should be undertaken.

5. The long term effects of SAK testing are also reliant on more detailed information being available on CODIS hits that differentiate true cold hits from 'conviction match' hits that occur where the offender's profile is 're-identified' in the immediate case.

6. A range of quantitative and qualitative data is needed from investigators, hospitals, crime laboratories and prosecutors for inclusion in such databases. In particular, better information is needed on the sizable percentage of non-stranger cases (involving intimates, family members, dating, work and/or casual relationships), scientific results, and the role played by scientific evidence in the outcome of these cases.

7. Better published research will result from improved report keeping and comprehensive databases. The quantitative data would collect basic discrete factors on every sexual assault case, its investigation, analysis of sexual assault kit evidence. prosecution, adjudication and sentencing. Qualitative data would include such factors as the persuasiveness of various factors that influenced arrest, charging, plea negotiation, trial verdict (including interviews with jurors after verdict), and sentencing outcomes.

TABLE OF CONTENTS

CHAPTER I: INTRODUCTION..... 1
Theoretical and Practical Value of Forensic Evidence.....1
Sexual Assault Kits..... 3
The Los Angeles Backlogs.....4
Actions Leading up to the Current NIJ Study..... 5
Laboratory Processing of Sexual Assault Kits.....6

CHAPTER II: LITERATURE REVIEW..... 11
Introduction..... 11
General Theory of Forensic Evidence.....12
Sexual Assault Kit Components.....12
DNA Analysis of Sexual Assault Evidence.....16
Post-Coital Interval (PCI)..... 17
Combined DNA Index System (CODIS).....19
Nature of Victim and Assailant Relationship in Sexual Assaults.....20
Relationships between SAK Evidence, Other Evidence and Criminal Justice Disposition..... 20
Backlogged Forensic and DNA Evidence.....27

CHAPTER III: PROJECT OBJECTIVES, RESEARCH METHODS, AND STUDY SAMPLES.....35
Project Research Objectives.....35
Project Data: Backlogged and Non-Backlogged Sexual Assault Cases…..... 35
SAK Backlog Sample (BLS)..... 35
LASD Backlog Sample.....38
LAPD Backlog Sample.....38
Criminal Justice Case Dispositions.....39
LASD Comparison Samples..... 40
LAPD Comparison Samples..... 41
Data Collection Tools.....43
LASD Files..... 46
LAPD Files..... 47
Data Collection Issues.....48
Project Data: Focus Groups.....49

CHAPTER IV: SEXUAL ASSAULT KIT DATA ANALYSIS AND DISCUSSION..... 52
Backlog Sample (BLS) Descriptive Data..... 52
Backlog Sample (BLS) Laboratory Testing.....60
Criminal Justice Disposition Testing..... 73
Stranger and Non-Stranger Cases……..... 81
Prediction of DNA Profiles/CODIS Uploads and the Problem of Missing Data.....87

CHAPTER V: FOCUS GROUP NARRATIVE.....92
LAPD and LASD Detectives.....92
Deputy District Attorneys.....96
LAPD and LASD Criminalists.....98

CHAPTER VI: CONCLUSION, RESEARCH NEEDS AND RECOMMENDATIONS...101
Objective 1 Findings……101
Objective 2 Findings……...102
Objective 3 Findings……103
Objective 4 Findings……...104
Overall Recommendations……...105

REFERENCES.....107

APPENDICES

APPENDIX A: LAPD/LASD Sexual Assault Kit Backlog Data Collection Form

TABLES

Table 1 Backlogged Sexual Assault Kit Case Review..... 38
Table 2 Criminal Justice Disposition Sample..... 40
Table 3 Focus Group Participants..... 50
Table 4 Tested SAK Cases in Dataset by Lab..... 52
Table 5 Descriptive Characteristics of Victims and Assailants..... 54
Table 6 Descriptive Characteristics of Sexual Assault..... 55
Table 7 Victim Self-Report of Actual and Attempted Sexual Activity..... 56
Table 8 Characteristics of Sexual Assault by Victim Age and Gender..... 57
Table 9 Post-Coital Interval by Victim Age and Gender..... 59
Table 10 Positive Markers for Cases Analyzed..... 61
Table 11 DNA/STR Analysis per Conventional Positive Markers..... 63
Table 12 DNA/STR Results on Conventionally Screened Body Samples..... 65
Table 13 DNA/STR Results on Y Chromosome Screened Body Samples..... 66
Table 14 DNA/STR Results on Total Body Samples..... 67
Table 15 DNA/STR Results and CODIS Uploads by Conventional/Y Chromosome Screening per Post-Coital Intervals.....68
Table 16 CODIS Hit Type for Backlog and Non-Backlog Samples..... 69
Table 17 Full and Partial DNA Profiles Uploaded to CODIS..... 73
Table 18 Backlog Cases: A Comparison of Population and Sample Characteristics..... 74
Table 19 Backlog and Non-Backlog Criminal Justice Disposition Samples..... 75
Table 20 Pre- and Post-SAK Testing Criminal Justice Dispositions..... 77
Table 21 Finding of Foreign DNA with Post-SAK Testing Dispositions for Non-Backlog..... 78
Table 22 Logistic Regression of Criminal Justice Disposition by Case Characteristics.....80
Table 23 Outcomes per Victim-Assailant Relationship for Total Disposition Sample…….82
Table 24 Outcomes per Victim-Assailant Relationship for BLDS……... 84
Table 25 Outcomes per Victim-Assailant Relationship for NBLDS…… 85
Table 26 Potential Predictors for Achieving DNA Profiles and CODIS Uploads..... 88
Table 27 Missing Data on Variables for Calculating Post-Coital Interval..... 90

FIGURES

Figure 1 Study Backlog Samples..... 42

Chapter I

Introduction/Problem Statement

This first chapter will introduce the subject of forensic evidence, sexual assault, and the use of sexual assault kits to gather scientific evidence. Although sexual assault kits hold the potential to answer many questions surrounding these crimes, the circumstances surrounding such crimes may limit the value of scientific evidence. Sexual assault kit (SAK) backlogs have grown in many cities around the country, including the site of this research study - Los Angeles, California.

Theoretical and Practical Value of Forensic Evidence

Rape is one of society's most serious crimes, and greater attention is being paid to the collection of physical evidence from the victim (and the suspect) to establish that sexual intercourse took place, to help reconstruct the crime, and to identify the assailant. Evidence is transferred between parties in a sexual encounter and that evidence varies in quantity as a result of the intensity and duration of contact between individuals. Scientific evidence "can establish the elements of the crime, reconstruct the sequence of events, establish the identities of the victim and assailant, and corroborate or challenge witness statements and alibis" (Johnson et al., 2011). Laboratory methods are both used to identify evidence in question (identification) as well as serve to determine its source (individualization). It is important to note, however, that the probative value of physical evidence depends heavily on the circumstance of the particular case, being pivotal in one instance and inconsequential in another. The forensic examinations, however, are usually unable to distinguish if evidence was deposited lawfully as the result of consensual sex, or unlawfully in a case of sexual assault.

DNA evidence can yield important information in sexual assault casework due to its enhanced sensitivity, specificity and robustness, and its power to identify or exclude particular individuals. DNA profiles can be obtained from a variety of biological material (semen) that results from sexual intercourse and from buccal cells left on the victim as the result of kissing, biting or sucking. Dried biological stains left on bedding, clothing, or towels can also yield the DNA profile of the person leaving their semen, saliva or other body secretions. Cells left on the exterior or interior of discarded condoms or other objects (clothing, towels, etc.) handled by the assailant can also be DNA typed. The large and growing DNA CODIS database also gives investigators the power to identify otherwise unknown suspects (cold hits), to corroborate and/or test other case information, and to associate offenses committed by an offender in a serial fashion.

Typically, sexual assault forensic nurses at hospitals and medical centers employ kits to facilitate their gathering of physical evidence. If there is a suspect, the kits may also be used to gather physical evidence from the suspected attacker. The kits guide the examination of the victim, document physical trauma, as well as the collection of biological and trace evidence (e.g., vaginal, anal, and oral swabs, dried body secretion swabbings, and public hair combings), and the collection of blood and urine specimens. Sexual assault kit report forms also document important information from the victim about the assault and her sexual history. There is a growing literature surrounding the use and value of sexual assault kits in the investigation and prosecution of rapes, some showing that the willingness of the victim to undergo a sexual assault examination is associated with improved case success.

There are few studies that have traced the value of forensic evidence in the course of investigations and prosecutions. A recent national study of the role and impact of forensic

evidence in the criminal justice process included an examination of rapes (Peterson et al, 2010). This study found 80% of rapes were committed between persons having a prior relationship. Physical evidence and substrates (clothing, towels, etc.) were collected in more than two-thirds of incidents, most of it in the form of sexual assault kits. There was, however, a major decline in evidence actually submitted to and examined by crime laboratories and labs individualized biological and latent print evidence in only 2.5% and .5% of cases respectively (Peterson et al., p 93); the collection and examination of evidence, as well as a prior relationship between victim and assailant predicted arrest. This and other sexual assault literature will be covered in Chapter III of this report.

Sexual Assault Kits

The failure to analyze evidence in sexual assault kits has received major attention in the past two years. Perhaps the most comprehensive treatment of the problem is contained in the NIJ Report "The Road Ahead: Unanalyzed Evidence in Sexual Assault Cases" (Ritter, 2011). This report focuses on the purposes of these kits, estimates the quantity of untested evidence contained in these kits, and efforts ongoing to understand the reasons cited by law enforcement and crime laboratories for this situation. The report also describes funded projects to classify the types of scientific information resulting from the analysis of these kits, questions about the value of evidence in stranger versus acquaintance rape, strategies for notifying victims about the status of SAK testing, legal and statute of limitation considerations, the role of limited crime laboratory resources, and the setting of priorities in examining backlogged kits as well as kits submitted on a real time basis.

In 2009, NIJ published results of a survey of 2,000 law enforcement agencies nationwide that found agencies had not submitted forensic evidence to crime laboratories in 18% of

unsolved rapes, often because of one or more of the following: no suspect had been identified, the prosecutor had not requested the analysis, and because they were unsure of its 'usefulness' (Strom, et al., Research Triangle, 2009). A question that remains is: "What is the value of the analysis of the evidence contained in these kits?" Clearly, there needs to be further study to understand how law enforcement agencies weigh various factors in deciding to submit evidence for analysis, and how crime laboratories triage and prioritize such evidence. There is additional information on the utility of scientific evidence and other factors that predict successful sexual assault dispositions in the literature review contained in the following chapter.

The Los Angeles Backlogs

Sexual assault kit backlogs in law enforcement storage facilities in the City and County of Los Angeles had grown to more than 10,000 kits in the fall of 2008. (Up to this time, the New York City Office of the Medical Examiner had completed the largest single effort to undertake the examination of such backlogged kits, testing about 16,500 such kits between 2000 and 2003.) The chief executives of the Los Angeles Police Department and the Los Angeles Sheriff's Department made a public commitment in late 2008 to sexual assault victims and the citizens at large that their respective agencies would test all of the backlogged kits. Whereas crime laboratory resources were not sufficient to eliminate this backlog, various city, county, federal grants and other funding resources were identified that would enable the laboratories to outsource the testing of backlogged kits to private forensic testing laboratories.

Beginning in 2007, Human Rights Watch undertook a major study of sexual violence in the Log Angeles region, investigating the reasons and consequences of untested sexual assault kits and issued a report (Human Rights Watch, Testing Justice: The Rape Kit Backlog in Los Angeles City and County, March 2009). The authors of this report and various journalists had

investigated the problem of sexual violence in Los Angeles, finding that most untested rape kits were housed in police storage facilities (not crime laboratories). Some of the kits were more than ten years old and involved stranger assaults, but local crime labs lacked the capacity to perform the necessary testing of these kits, and the untested kits had consequences for the victims and the community at large. Interviews with victims found that the failure of the system to have a process for notification of victims of the status of testing of their kits was also an important and sensitive issue.

Actions Leading up to the Current NIJ Study

The reasons for the growth of these backlogs in Los Angeles and other communities around the United States over the past ten years are complex and involve many factors, including a reluctance by detectives and prosecutors to request an analysis of the SAK evidence in cases where they doubted the probative value of lab testing. While both the LAPD and LASD laboratories had given instructions to detectives to request analyses in cases when they believe evidence may shed light on the investigation, many sexual assault kits remained in storage awaiting analysis. Previous research suggests that many of these incidents involve cases where the suspected assailant is known, where he claims sexual relations with the victim was consensual, or where detectives question if a sexual assault had, in fact, taken place. Prosecutors had declined or dropped charges in many of these cases, as well. In both LASD and LAPD laboratories, thousands of sexual assault kits remained in cold storage and untested because authorities didn't believe the evidence to be of probative value and did not request an analysis.

If evidence in these backlogged kits were to be examined, DNA profiles generated through such testing would be uploaded to CODIS to potentially identify unknown offenders and possibly link together crimes committed by the same offender. Simultaneously, investigative and

prosecutorial information would be gathered about these cases to determine their status and the reasons why investigators and/or prosecutors had not requested scientific analyses of this evidence when the sexual assault kits were first gathered. Conceivably, the new scientific information might stimulate investigators and prosecutors to reexamine the evidence in these backlogged cases and pursue them through the criminal justice process. The identification of DNA profiles might also link the assailant in a backlogged case with other incidents where he left his DNA. The testing of this evidence and the review of case files presented an opportunity to determine the value of this testing to these investigations, and to help set priorities for sexual assault kit testing in the future.

Laboratory Processing of Sexual Assault Kits

Before data collection procedures and results are discussed, we first present the procedures employed by the in-house crime laboratories of LASD and LAPD, and those of private laboratories, in the review and testing of backlogged sexual assault kit evidence. The crime laboratories of the City and County of Los Angeles use the same manufactured sexual assault kit for the collection of evidence to standardize the documentation and collection process. The kit can be used on victims or suspects and on males or females. The LAPD and LASD crime laboratories began the analysis of the backlogged sexual assault kits by making an inventory of the contents of each kit. The kits were then shipped in their entirety (minus the urine samples) to the contract laboratories. Neither agency screened the kits for probative samples by laboratory testing (such as with presumptive catalytic tests) prior to the shipment of the kits. The samples collected for each case depended on the reported circumstances of the crime, but the samples enclosed in the kits may have included swabs and microscope slide preparations of the mouth, vulva, vagina, cervix, rectum, penis, scrotum, or dried secretions

(such as saliva stains on the neck or breasts). Additionally, a vaginal lavage (rinse) may have been collected with the vaginal swabs.

The sexual assault kits also contained materials for the collection of other types of physical evidence such as pubic combings, debris, and clothing. Each kit additionally enclosed a blood card for the collection of a blood sample from the victim. The blood sample was used to generate a DNA reference profile of the victim, which was needed for the interpretation of the evidence profiles, particularly those that were a mixture of victim's and suspect's DNA. However, the victim's reference sample was missing in some kits, which in some cases prevented the determination of the suspect's profile and its submission to the DNA database.

The contract laboratories were provided with written instructions from the departments as to the testing of the kits, the reporting of the results, and the return of the evidence. An analytical scheme was developed by each agency for the selection and testing of samples by the contract laboratories and the approach was dependent on the reported circumstances of each case. For example, for cases where the victim reported a lapse of memory or loss of consciousness, both agencies instructed the contract laboratory to screen all of the samples of the kit for probative evidence, and then perform DNA typing on all of the samples likely to give results. The same instructions were to be followed for cases reportedly involving multiple suspects. For cases involving one suspect as reported by the victim, the instructions were to screen all of the samples, but select the single best sample for DNA analysis. For certain cases, the LASD laboratory would select the single best sample for submission to the contract laboratory, and the selection was based on the victim's statements as to the sexual act recorded in the medical report which accompanied the sexual assault kit. This procedure was followed for LASD adjudicated cases and unfounded cases.

The LAPD also processed the sexual assault kits of adjudicated cases included in their backlog, but excluded the testing of kits from cases determined to be "unfounded" by detectives. DNA profiles generated from unfounded cases are ineligible for upload into the Combined DNA Index System (CODIS), and protocols of both agencies required analysts to strictly follow the data entry requirements of CODIS with respect to the STR profiles obtained from the sexual assault kit samples.

The LAPD and LASD outsourced the testing of the sexual assault kits among seven laboratories: Bode Technology, Fairfax Identity Laboratories, Marshall University Forensic Science Center, Orchid Cellmark, SERI, Sorenson Genomics, and Strand Analytical Laboratories. The contract laboratories screened the sexual assault kit samples for probative evidence by conventional serological methods and/or Y-chromosome detection systems. The conventional serological markers used for screening included acid phosphatase, p30, and sperm cells for the presence of semen, and amylase for the presence of saliva. Additionally, epithelial cells were used as markers for saliva and vaginal secretions; the mouth and vagina are lined with nucleated, squamous epithelial cells. The microscopic identification of sperm cells and the immunological detection of p30 (a glycoprotein produced almost exclusively by the prostate gland) are considered confirmatory tests for the presence of semen. Catalytic color tests for acid phosphatase (an enzyme produced in high amounts by the prostate gland) are considered presumptive tests for the presence of semen. The specificity of the amylase test for saliva is dependent on the assay; therefore, the conclusions drawn from the results as to the identification of saliva of this test will vary between laboratories.

Some laboratories employed Y-chromosome markers as a screening test for foreign male DNA, which is a recent and alternate approach to serological screening. Y-chromosome

screening is a PCR-based molecular technique, whereas conventional serological testing is based on catalytic color tests, immunological and enzymatic assays, and microscopy. In general, Y-screening is best suited for cases involving victims and suspects of different sexes; it has limited application with male versus male cases, and cannot be used with female versus female cases.

The contract laboratories employed their own various practices for the analysis of the evidence, but while in compliance with the testing requirements of each crime laboratory. The contract laboratories screened evidence with both conventional serological and Y-chromosome screening techniques. However, Bode Technology used Y-chromosome screening in 99.5% of the cases; whereas, the other laboratories used conventional methods in the majority of cases. Bode Technology initially used a domestic Y-chromosome assay, which was replaced by the Applied Biosystems Quantifiler® Duo kit in March 2009. (The Quantifiler® Duo kit targets human male DNA with a 130 basepair SRY [Sex determining Region Y] marker and provides information on the quantity of male DNA.) The laboratories may have tested a general lysate of the sample for male DNA or the individual fractions of a differential extraction carried out on the sample. (A differential extraction is used to separate sperm DNA from non-sperm DNA in mixture samples such as vaginal swabs that contain semen.)

Based on the results of the serological and/or Y-chromosome screening tests, and following the testing strategies of the agencies (which again were dependent on the circumstances of each case), the contract laboratories then performed short tandem repeat (STR) genotyping on select samples using the AmpF*l*STR® Identifiler™ PCR Amplification Kit (Applied Biosystems, Foster City, California). The AmpF*l*STR® Identifiler™ PCR Amplification Kit amplifies 15 tetranucleotide repeat loci and the amelogenin gender determining marker, which includes the thirteen CODIS core loci for databasing. The resultant

STR profiles were sent to the crime laboratories (in the form of hard copies of key GeneMapper® [DNA typing software] plots or the entire electronic GeneMapper® file) and then reviewed by qualified personnel under each laboratory's vendor review protocol. (The LAPD and LASD crime laboratories are not involved in the databasing of offender DNA profiles from arrests or convictions; their purview is restricted to casework samples.)

For a casework DNA profile to be eligible for CODIS entry at the state level (State DNA Index System), the profile must have results for a minimum of seven loci (STR markers). For entry at a national level (National DNA Index System), a casework DNA profile must have results for a minimum of ten loci. For casework samples, full or partial profiles from one person and profiles obtained from certain DNA admixtures can be eligible for CODIS databasing. A suspect's profile derived from an unequal DNA mixture (the suspect can be the major or minor contributor to the mixture) is eligible for CODIS entry if certain criteria are met. Mixture profiles that have ≤ four loci (STR markers) with each having no more than four alleles (DNA types), and with each remaining locus having one or two alleles, are eligible for uploading. For elimination purposes, DNA reference samples from consensual sex partners are routinely sought in casework. In the absence of an elimination sample, a profile foreign to the victim can be uploaded if an attempt was made to obtain the elimination sample. Additionally, profiles generated from cases rejected by the District Attorney's Office as having insufficient evidence to prosecute, but where detectives believe a crime was possibly committed, are eligible for CODIS databasing.

Chapter II

Sexual Assault Investigation Literature Review

Introduction

This project focuses on sexual assault kit backlogs in Los Angeles City and County, the scientific results obtained from the testing of this backlogged evidence, and if the resulting scientific information was associated with added criminal justice outcomes. Before reviewing these data, we present a brief literature review that addresses the general theory of forensic evidence and how such evidence collected from victims may assist detectives and prosecutors in their inquiry and evaluation of alleged sexual assaults. It also briefly reviews the social science literature examining the legal and extralegal factors that are associated with the arrest, prosecution and punishment of sexual offenders and the role played by physical/scientific evidence that documents the assault and/or injuries sustained by the victim.

Unlike most other serious crimes, the value of forensic evidence in sexual assault investigations is tempered by many social, demographic, and other factors about the assault that victims may provide medical and police personnel. The sexual assault kit is only one product of the medical examination and the interview of the sexual assault victim following the crime that may also produce important information about her leading up to the assault and her physical and mental health. This review will briefly touch on these various factors, and how such information shapes the progress of cases through the criminal justice process. This section concludes with a review of recent publications that treat how the backlog of sexual assault kits in law enforcement agencies and crime laboratories has grown into a national problem.

General Theory of Forensic Evidence

The physical interaction between the victim and assailant in the various forms of sexual assault will commonly result in the reciprocal transfer of physical material between the parties and with the crime scene. The quantity of evidence produced in a criminal act varies with the intensity and duration of contact between parties. Physiological fluids are often exchanged. The objectives of the forensic inquiry are to detect, preserve, and examine this physical evidence and provide information about the crime to law enforcement investigators and the courts. The sexual assault casework of forensic laboratories encompasses a wide range of unlawful sexual activity, from violent rape and date rape, to child molestation that produce a variety of biological and non-biological evidentiary materials. It is the biological materials that often help to prove that a sexual crime took place, to reconstruct the actions of the parties, and to associate or disassociate the accused with the victim. Numerous factors affect the success of the scientific inquiry: the speed with which the victim reports the crime and submits to an examination, the quantity and quality of the samples recovered, and the analytical capabilities of the forensic laboratory (Fisher, 2004; James & Nordby, 2005).

Sexual Assault Kit Components

Sexual assault kits (SAK) were created to aid the investigative and legal processing of such cases by standardizing the examination of the victim and the recovery of evidence from victims by specialized nurses and physicians (DuMont & Parnis, 1999). According to Gaensslen and Lee (2002), the sexual assault (or rape) kit evidence has a twofold purpose; first, to corroborate the victim's account of the incident by demonstrating the presence of seminal fluid found in the victim; and, second, the analysis of the specimens in the kit to establish the identity of the person from which the evidence originated. The examination of evidence collected in the

kit is often deemed to be the most accurate and valid means of providing evidence that a sexual assault took place (DuMont & Parnis, 1999).

The SAK consists of a small cardboard box or envelope into which biological and trace evidence collected from the victim of an alleged sexual assault is placed and routed to a forensic crime laboratory for analysis. The evidence often includes swabs taken from vaginal, oral, and anal orifices, and other dry secretions left on the victim's body that may contain the assailant's biological fluids and his DNA (Ritter, 2010). Samples from the SAK are typically compared with reference samples of known origin that can lead to an association or disassociation between persons. The significance and uniqueness of a comparison between DNA evidence and known exemplars may be expressed probabilistically (Sommers, Schafer, Zink, Hutson & Hillard, 2001) Other components of the SAK protocol include an examination of the victim for injuries, both genital and extra-genital, the collection of toxicological samples, and search for condoms and/or lubricants used by the assailant (Parnis & DuMont, 2006). Sexual assault nurse examiner (SANE) professionals are also instructed to obtain information regarding the victim's sexual history. This is done so that the laboratory examiners can verify the source of the secretions found in or on the victim. Considerable literature has developed over the past twenty-five years that evaluates the information collected through sexual assault examinations and the role this information plays in investigating, verifying, and prosecuting sexual assaults.

Genital Injuries

McLean, Roberts, and Paul (2011) found that while the rate of genital injuries sustained by victims of sexual assault is higher than for a comparison group of women engaged in consensual intercourse, the rate of genital injuries was substantially less than victims receiving extra-genital injuries. Hilden, Schei, and Sidenius (2005), found that most sexual assaults did

Yes (1588)	668	42.1	582	36.7
No (194)	94	48.5	89	45.9
Missing (166)	42	25.3	28	16.9

Profile and 175 (46.7%) of them resulted in a CODIS Upload. The rate diminishes to 17.6% and 20.2% for the 48+ -72 hours PCI time interval. The remaining four variables are worth noting as well**.** For example, for Consensual Sex, the percent of cases leading to a Full DNA Profile is 37.7% for cases where victims answered No to that question, and 56.8% of cases where the victim reported Yes. This is what we would predict. The table also shows a reversal of the percent of cases leading to a CODIS upload (29.1% of Yes responses leading to an Upload and 40.2% of cases where the victim answered No). This reflects the fact that having DNA present from a consensual partner does not lead to higher rates of CODIS Uploads because DNA resulting from consensual sex would not be uploaded.

For ejaculation, Table 26 shows that in cases where the victim answered Yes to that question, 55.9% of cases led to a DNA Profile; where the victim reported No, only 30.3% of cases led to DNA Profiles. Cases where the victim responded Yes to this question also reported higher percents of CODIS Uploads (49.6% to 26.0%). For condom use, we hypothesized that a victim answering No to that question leads to higher Full DNA Profiles and it does (slightly) (44.6% to 41.0%) and for CODIS uploads (40.6% to 33.3%). For post assault hygiene, a higher percent (48.5%) of cases where the victim reported not engaging in hygienic procedures, but 42.1% to those cases where she did. The difference in percentages is even higher (45.9% to 36.7%) for CODIS Uploads.

These bivariate relationships looked to be promising for construction of a multivariate model to predict DNA profile and CODIS upload success. However, the number of cases with missing values for key variables loomed large and eventually led to the conclusion such a model was untenable. As Tables 6 and 7 previously showed, two variables (PCI and Ejaculation) each

have approximately 25% missing values, while the variable Condom Use is missing 39.5% of responses. Table 23 indicates that at least a quarter of the cases for which these variables had missing values yielded DNA profiles and at least 20% resulted in DNA profiles being uploaded to CODIS.

Unquestionably, the most critical of these variables that needed to be retained for use in a predictive model examining testing types of body samples is PCI. The most common formula for determining PCI is the time elapsed between the assault start date and time, and the exam end date and time. As Table 27 shows, almost 20% of the data required for calculating assault start date and time were missing, while the majority of the data for assault end date and time were also missing. Because over half of the values were missing for exam end date and time, the decision was made to calculate the PCI using the exam start date and time, but even here 10% of dates/times were missing. Consequently, one-quarter of cases could not have the PCI calculated.

Table 27: Missing Data on Variables for Calculating Post-Coital Interval

	N	%
Assault		
Start Date	117	6.0
Start Time	381	19.6
End Date	1326	66.8
End Time	1391	71.4
Exam		
Start Date	100	5.1
Start Time	200	10.3
End Date	1107	56.8
End Time	1150	59.0

In addition, while the LAPD cases had a previously calculated PCI value on a form in the laboratory case file, this value was missing for almost half (47.3%) of their cases. Furthermore, we concluded there was a lack of consistency in the way these values had been calculated, by

checking them with other date and time data in the file explained above. Consequently, we concluded we could not use the pre-calculated PCI values in the place of the date and time calculation approach for any of the cases in which missing data were present.

Although we believe the missing values needed for calculating the PCI were randomly distributed, further examination indicated that a significant difference existed between cases where we could calculate a PCI and those where data was missing on the outcome of extracting a DNA profile. To this end, we determined that the use of statistical techniques to produce missing values (e.g. mean substitution) would not be appropriate and that we could not proceed with the regression model.

Chapter V

Focus Groups Narrative

We held a total of four focus groups during the study in order to gain the perspectives of the crime laboratory, investigator and prosecutor regarding the sexual assault kit backlog problem in the City and County of Los Angeles.

LAPD and LASD Detectives

Two separate focus groups were held to examine law enforcement perspectives. The first focus group consisted of eleven Los Angeles Police Department detectives who primarily work in Sex Crimes Units with both adult and child victims. The second focus group consisted of eight Los Angeles Sheriff's Department detectives who worked either with the Special Victims Bureau or were primarily responsible for handling sexual assault cases. Several themes emerged from both focus groups regarding the use and practice of DNA testing of evidence derived from the backlogged sexual assault kits.

The first theme concerned the utility of DNA testing, with most agreeing that testing can yield evidence critical for a case; as one detective stated, "DNA is a tool and it's an effective tool." While a suspect can be arrested solely through an alleged victim's accusation, use of DNA to corroborate victim accounts was acknowledged as a potential key to ultimately "make cases" where little or no other evidence exists because "we have to convince a DA that there's a 96% chance of winning." This was considered particularly true of family-based or non-stranger cases of sexual assault which, prior to DNA testing, prosecutors seldom pursued. DNA results were further considered important in the context of jury trials when cases involved unemotional victims whom the jury might perceive as not acting appropriately. While detectives stressed that

all evidence was important, although "a kit is a part, always a part, but it's just one part of a case", it had the additional benefit of being used as leverage in convincing some defendants to plead guilty, whether the kit had been tested or not.

The detectives were mindful of the need to detain suspects prior to DNA identification; DNA testing might "take us where we don't want to go, but we have to" in terms of potentially exonerating suspects who are innocent. Prior to passage of Proposition 69, many detectives were more concerned with the immediate value of DNA testing: "We're thinking this case, this case only." However, with the advent of CODIS, they now acknowledge the long-term benefit of collecting victim/casework DNA and suspected assailant DNA and how such evidence can help to identify serial offenders. While most detectives participating in the focus groups had yet to find CODIS valuable for linking together cases they had been involved with, LAPD detectives cited the "Grim Sleeper" serial murders as a recent example where DNA testing was key to linking decades old cases to a single offender. Investigators acknowledged the CODIS database "needs to grow" and become more of a "workable database" in order for it to be a more useful investigative tool, while some expressed concerns that current policy might result in innocent suspects being put into the database. It should be noted, however, that the criminalists who participated in a separate focus group were very mindful of the requirement that only the DNA profiles of those who had been arrested may be placed into CODIS.

The next theme concerned use of discretion; current LAPD and LASD policy dictates that detectives must submit requests for DNA testing of all sexual assault kits obtained, effectively removing the detectives' discretion in this area. While detectives clearly perceived DNA testing to be valuable, they were less supportive of the necessity for testing all sexual assault kits and there was concern that current policy was an "overreaction" on the part of their

agencies to the problem of the sexual assault kit backlog. Such procedures may result in "bum rushing these current cases because we're trying to cover ourselves." The primary concern in this area stemmed from testing cases that had already been unfounded or, from either the viewpoint of police or district attorneys, "the ones that are going nowhere" (e.g. consensual underage sex, rapes involving prostitutes). Some saw testing of all kits perhaps as ideal, but most questioned the wisdom of doing so when resources (time and manpower) were limited and felt testing of cases that cannot result in prosecution was counterproductive: "Are we doing it for the right reasons? The right reasons are getting the 'perps' off the street." Equally important, they felt it was delaying the testing of kits for what they considered more important cases and that it ultimately amounted to poor case management when caseloads were already heavy: "we're drowning, to be honest, we're being killed."

LAPD detectives believed the current policy permitted some discretion, which was a system for giving a case a priority and further requesting expedited analyses. Most felt 'testing all kits' was acceptable provided that cases they deemed as having higher priority were tested in the timeliest fashion. Clearly, both LAPD and LASD detectives felt that their expertise in handling such cases (e.g. "we're supposedly the experts", "we know if it's a garbage case", "any of us worth our salt can just tell") should afford them the right to use their discretion in deciding which cases should be given priority testing. However, confusion appeared to exist about whether the LAPD detectives themselves actually had discretion to assign cases a priority, with such prioritization occurring only after detectives had submitted requests for testing to the laboratory.

Communication with the analysts responsible for testing the kits was also seen as being important: "DNA is a tool, but you still have to investigate." The request forms allow detectives

to direct the laboratory to specific components of the sexual assault kit that are the most likely locations for yielding DNA. While indicating this on the submission form did not preclude the need for additional communication with analysts, some detectives conceded that they did not always speak with the analysts or only followed up on the cases they considered as "going somewhere." Noting the difficulty at times of understanding the scientific terminology supplied in laboratory reports, improved communications with the criminalist was also seen as desirable for fuller comprehension of results. Communication with sexual assault victims about the progress of investigations is important and may include information about the status of CODIS inquiries and hits. It is important that law enforcement agencies maintain contact and coordinate any information they share with sexual assault victims.

A final theme that emerged was additional pressures placed on the detectives by the expectations of the community and district attorneys. Some of this pressure was seen as being specifically connected to seeking expedited analyses of kits connected to cases that alarmed the public the most (usually stranger cases), hence underscoring the desire of detectives to have more discretion in relation to assigning priority to certain cases. There was also the issue of suspects in stranger cases who were identified via SNAP (expedited kits sent to the Cal DOJ Forensic Laboratory in Sacramento, CA); district attorneys typically require a confirmation DNA sample be taken from the suspect before filing charges. This can lead to delays in acquiring arrest warrants when the suspect cannot be located. Detectives find this requirement problematic because investigators believe they have identified the correct suspect and they should be allowed to make the arrest without first obtaining the reference sample. Time delays in obtaining the sample and having it tested can result in suspects skipping town and avoiding arrest.

Deputy District Attorneys

Another focus group consisted of six deputy district attorneys, all of whom were responsible for handling sex crime cases within Los Angeles. The district attorneys mirrored the detectives in their belief of the importance of DNA testing for the successful prosecution of certain cases, and that it was "vital...period" for its corroborative value in meeting the necessary legal standards of evidence and supporting the credibility of the victim. However, some felt that the length of time and cost of DNA testing was prohibitive and most agreed testing was not strictly necessary if other corroborative evidence (e.g. admissions, injuries) was available: "In the perfect world, test it all, but we can't." The decision to test kits was seen as being "all fact driven on your case" so that it was difficult to apply one standard (i.e., sexual kit testing is mandatory) to what evidence was required to file charges in a sexual assault case. So, even though corroboration of victim statements and victim credibility are key criteria in deciding whether or not to charge a suspect, one cannot say that DNA results are absolutely mandatory in every case. The deputy district attorneys expressed strong support for SAK testing where it was vital to establish that a crime even occurred and the identity of the suspect. As with the detectives, the district attorneys did not feel that all cases warranted testing, and that the "backlog was probably not due to we didn't care", but because the suspect's identity was not an issue or it was a "consent" case, where both individuals were underage. The district attorneys believed a system of laboratory testing priorities needed to be established, both in terms of which kits will be tested, as well as *what evidence* in the kits needed to be tested.

Delays in testing were acknowledged beyond decisions to forego testing of kits. Regarding the assertion of LAPD detectives that district attorneys would not file charges without

a confirmation sample on SNAP hits, this was confirmed as policy because a "cold hit" was only investigative evidence and not proof beyond a reasonable doubt, as required for conviction, so that a new reference sample was necessary. On new cases, however, the district attorneys indicated they were willing to file cases when DNA testing had yet to be completed in order to keep suspects in custody. Typically, testing is not completed subsequent to the preliminary hearing, which was not considered a problem except in stranger cases where the victim was unable to identify a suspect. While simply being able to have testing completed prior to trial (indicated as occurring on average two to three months after the preliminary hearing) was tolerable in many cases, the benefit of early testing and confirmation of the presence of the suspect's DNA was undoubtedly seen as obtaining "leverage" for securing guilty pleas and avoiding trial whenever possible.

Some deputy district attorneys suggested that mandating detectives to request, and crime laboratories to test, *all* sexual assault kits caused unnecessary delays. Such a practice was contrary to detectives' general belief in their judgment to direct the testing of collected evidence on a case-by-case basis. The district attorneys, however, did not believe that detectives necessarily always knew what *components* of the sexual assault kit would be most useful to a case. The attorneys cited the laboratory policy to stop testing once DNA had been identified as reason to maintain good relations and communication with the laboratories to facilitate additional testing when considered necessary. Being knowledgeable of the different types of DNA testing and costs associated with those tests was seen as being important and "frugality" in terms of the types of tests being asked for, particularly in light of the presence of other types of evidence, was considered to be appreciated by laboratories.

Law enforcement policies requiring the testing of all sexual assault kits were seen as being driven by community perceptions: "The community doesn't understand, sees it as violating a victim's rights when it's not tested." Such expectations have further been compounded by exposure to erroneous understanding of DNA testing as seen on television shows and that follows district attorneys into the courtroom: "Juries expect it, they're going to wonder why when the kit isn't tested." This state of affairs causes the district attorneys to feel it necessary to make special explanations during voir dire or during the trial itself as to why DNA testing has not been conducted. Ultimately, it was considered that educating potential jurors as to "what science can and cannot do" was vital because of "unrealistic expectations on their part" formed by watching CSI-based television shows.

LAPD and LASD Criminalists

A final focus group was held to examine the views of eight criminalists working for the LAPD and LASD crime laboratories. The criminalists had a clear view of their role as being to work cases and have them adjudicated: "We want to solve crimes." But it was a role they considered complicated by their parent agencies' new policies to test all sexual assault kits, which they regarded as having turned their agencies' missions into getting profiles uploaded into CODIS "regardless of case status" or whether the suspect already had a profile uploaded. While they acknowledged the long-term benefits that could be gained from CODIS, they noted that most of the hits resulting from the backlogged cases were for defendants who had already been convicted and that, to their knowledge, none of the hits had led to a defendant being exonerated.

If the detectives were dissatisfied that the examination of all sexual assault kits eliminated their discretion, the criminalists were even more so (e.g. "we don't get to triage, we get told what to do", "we just do what comes in the door"). Criminalists joined with detectives

and prosecutors in expressing the view that some cases were being tested unnecessarily and that laboratory resources could be used more efficiently if they were devoted to more important, high priority cases. This would include sexual assaults, committed by strangers and other assailants, where investigators had concluded a crime had taken place. As a consequence, the criminalists complained that they were "almost not able to keep up." While the criminalists from one laboratory noted that their agency hired new criminalists "like crazy", this fact was mitigated by their inability to train new criminalists on DNA procedures quickly enough, thereby limiting their usefulness in helping to process cases and they felt the agency was "throwing people and money at the problem at a rate we can't handle." The response to the backlog of sexual assault kits of requiring all kits to be tested was regarded more as crisis management; it was observed that strategic planning was required to address the issue on a long-term basis.

The criminalists generally felt detectives investigating the cases were capable of deciding whether or not the kits should be tested based on their knowledge and experience in working these types of cases? Communication between the criminalists and detectives was often described as being problematic; they noted that some detectives "feel we work for them" and "don't want to understand so much as they want to direct." Experiences with detectives varied among the criminalists. Some detectives were considered to have a lack of understanding both as to the resources (time and cost) required for testing and the science involved (e.g. "they have no connection to the science"), while others found the detectives open to understanding the limitations of resources and scientific findings when the criminalists took the time to explain these things to them.

The point was also stressed that sexual assault cases were not the only types of cases for which the criminalists had evidence to analyze and that the emphasis on testing all sexual assault

kits had the potential to lead to a backlog on other types of cases, particularly property crimes. In fact, some criminalists felt that in some cases evidence from property crimes actually deserved greater attention (e.g. “this is scientifically where we should be putting our energies”) because they perceived property crimes to be an indicator for future rapists and there was a need to “get them off the street *before* they rape”, as well as citing the higher rate of CODIS hits for property crimes (estimated by the criminalists to be about a 70% hit rate).

Forensic nurses were considered important by criminalists for their role in testifying in court about the sexual assault examinations they conduct and explaining the nature of injuries sustained by victims (although detectives had complained that it could be “horrible” (difficult) to get the nurses to court. In fact, all three groups-- detectives, deputy district attorneys, and criminalists -- considered sexual assault nurses very important in communicating information to fact-finders about medical examinations of victims and injuries they may have sustained. The quality of forensic nurses was seen to vary according to multiple factors including pay, policy, and training.

Summary

The consensus of practitioners – detectives, criminalists and prosecutors – was that mandatory testing of all sexual assault kits was unnecessary. All parties felt the testing of kits could be critical in selected cases but that testing of every kit was not prudent use of limited scientific resources. Practitioners believed that informed professional judgment, coupled with adequate laboratory and information resources, could identify those cases meriting examination and would provide the criminal justice process with the information needed to prosecute sexual assault cases.

Chapter VI
Conclusions, Research Needs, and Policy Recommendations

This research project had four primary objectives: To evaluate scientific test results performed on untested/backlogged sexual assault kits; to review the pertinent sexual assault literature; to determine the criminal justice outcomes of cases with delayed sexual assault kit testing, immediate testing, and no testing; and, lastly, to identify factors to help prioritize the testing of sexual assault evidence in the future. The study addressed a growing problem facing law enforcement agencies and forensic laboratories in the nation, and provides information about scientific test results that can be derived from such kits and used in the investigation and prosecution of these crimes. Study Findings are organized by the four project objectives and Overall Recommendations are included at the close of this chapter:

Objective 1— Describe and evaluate the results of new scientific tests performed by various private laboratories on backlogged sexual assault kit (SAK) evidence outsourced from the LASD and LAPD crime laboratories.

Findings:

1. The random sample of backlogged SAK cases yielded the following composite statistics:

    - 93.7% of victims were female, 92.4% of assailants were male; mean age of victims 22.2 years, and 39% were Latino.
    - 65.3% of cases involved non-strangers, and over three-quarters of female and male victims 13 years and under knew their assailant.
    - 34.9% of victims reported they were under the influence of alcohol or drugs at time of assault.
    - 71.0% reported being injured, 77.3% were vaginally penetrated, 27.9% thought the assailant ejaculated, 80% engaged in post-assault hygiene.
    - Average post-coital interval (PCI) was 23.3 hours; PCIs of victims 13 years and under, and those knowing their assailant were, on average, significantly longer.

2. Testing results varied by area of the body where the sample was taken, post-coital interval, case characteristics, and laboratory testing approaches:

- 97% of cases were screened for markers, and samples from the vaginal area tested positive for markers (overall) the highest percent of time.
- The Y chromosome screening technique yielded positive markers most often when the samples were taken from vaginal and external genitalia area and from dried secretions.
- The highest success rates of detecting foreign and male DNA were from samples taken from the vagina and external genitalia that had yielded positive markers for sperm and acid phosphatase.
- Oral and rectal samples generally yielded the poorest DNA results.
- Y chromosome and conventional serology screening techniques had comparable success rates in leading to positive STR results. However, the Y chromosome screening technique was more successful in detecting foreign and male DNA in samples taken from the vaginal and external genitalia areas and dried secretions.
- In developing full and partial profiles, the Y chromosome screening technique was superior with samples from external genitalia, and conventional serology techniques with samples from the rectal area; success in samples taken from the oral and vaginal areas and from dried secretions was mixed (see Table 17)
- Post-Coital Interval (PCI) was associated with superior laboratory results; although missing data prevented multivariate statistical analysis; as PCI increased, the success rate in finding foreign DNA and executing CODIS Uploads decreased.
- Conventional serological techniques were slightly better in cases with a PCI of six hours or less; but the Y chromosome screening method generally gave better success for samples when the PCI was greater than six hours, and particularly for PCIs of 24+ hours

3. CODIS Uploads and hit rates occur:

- Uploads occurred an average of 35.9% of the time for backlogged samples
- Single full (71.0%) and partial (21.2%) uploads made up the great majority of uploads to CODIS from the backlogged sample; multiple full and partial profiles made up 3.0%.
- Offender and case-to-case hits occurred in about half (49.6%) of the backlogged sample uploads; cold/warm hits occurred in about two-thirds of all hits and most of those occurred where the assailant was a non-stranger to the victim
- Case-to-case hits occurred in less than 8% of all hits and most of them also linked an offender to one or more cases
- Between 20% - 30% of the hits resulted from cases where the suspect had been arrested and convicted in this same sexual assault, and his DNA previously entered into CODIS. The DNA profile developed from evidence in the sexual assault kit essentially 'duplicated' the DNA that had already been entered into CODIS by virtue of a prior conviction. The DNA profile from the backlogged kit, therefore, did not contribute a new name, identity or DNA profile that was not otherwise included in CODIS.

Objective 2— Review the literature of sexual assault case processing, describe the characteristics of cases leading to the backlogged sexual assault kits, and define the primary criteria used by investigators in deciding to request the analysis of the sexual assault kits analysis of the kits;

Findings:

1. The social science and forensic science literature provides insights into factors that influence successful forensic/sexual assault investigation and prosecution practices. The forensic science literature has been expanding into this area in recent years but is not yet well defined and fully integrated into the social science sexual assault literature.

2. The literature on sexual assault kit **backlogs** and **untested evidence** is one area in particular that is growing and provides new insight into laboratory and investigation practices.

3. The literature does not address forensic evidence, reflecting how 1) investigators obtain the necessary information/evidence to make arrests, and 2) how prosecutors employ case information and scientific results in decisions to file charges, secure plea bargains, and take cases to trial. Similarly, data do not detail the effects of scientific information at trial, the expectations of fact-finders, and the relative importance of scientific information in achieving convictions/acquittals, plea bargains and sentences

4. There is little literature examining CODIS hit inquiries and practices; more detailed data are needed to describe and understand the process whereby DNA profiles lead to successful CODIS hits – both offender and case-to-case hits. Forensic crime laboratories and law enforcement agencies also must strive to identify CODIS 'conviction matches' from all CODIS hits. The former do little to expand the investigative power and potential of CODIS.

5. The impact of forensic evidence on sexual assault investigations will depend upon the ability of researchers to track cases from their origin, through law enforcement investigation and victim examination, to the crime laboratory, and to final case dispositions in the courts. Data maintained currently by the criminal justice system and crime laboratories are piecemeal and greatly inhibit comprehensive research. No data are maintained on how key decision makers make choices regarding their employment of scientific evidence in arriving at decisions.

6. A theme emerging from several studies of physical evidence utilization in recent years is the available evidence that is collected but not forwarded to forensic laboratories for examination. Sometimes such 'negative' decisions (and the reasons for them) are as important to document as ones that result in scientific examinations. The crisis that has emerged in sexual assault kit testing might have been averted had the reasons employed by detectives not asking for testing of kits had been recorded, tabulated, and reviewed. As it was, agencies had weak evidence to support choices that may have been correct (to not examine backlogged SAKs), but appeared indefensible to the public at large. As caseloads of forensic crime laboratories continue to mount and laboratories employ priority schemes that identify which evidence should and should not receive examination, such documentation will be valuable.

Objective 3—Determine the investigative/judicial outcomes of sexual assault investigations in: a) backlogged cases where no scientific testing was performed on SAK evidence; b) backlogged cases where testing <u>was</u> performed on SAK evidence; and c) the criminal justice status of current cases, before and after scientific testing was performed on the SAK evidence;

Findings

1. Backlogged cases were those where investigators in prior years had determined that SAK testing would not benefit the case. It was not surprisingly, therefore, that the new round of testing backlogged SAKs resulted in few immediate case effects. No new arrests occurred after testing of kits, one new filing and two convictions occurred, but laboratory results were not of assistance in such cases.

2. In terms of a composite profile of all cases sampled in this study, those involving 'stranger' victims were older, injured more often, and presented themselves for examination much quicker, but they were also more often compromised (intoxicated by alcohol or drugs) at the time of the assault.

3. The primary benefits of backlog testing were long-term and resulted from CODIS entry and offender and case-to-case hits; most hits were 'offender based' and not 'case-to-case' and resulted from non-stranger cases. Future hits should also occur as a result of new entry of DNA profiles of defendants not already in CODIS.

4. There were indications that a substantial percentage of CODIS offender hits resulting from testing of the Los Angeles SAKs were *conviction* matches of defendants already entered into CODIS.

4. Non-backlog testing of SAKs yielded more short-term benefits, taking place prior to new filings and adjudications.

5. Logistic regression analyses revealed that the only predictors of arrest, filing and conviction were victim/suspect relationship and the victim self-reporting use of alcohol and drugs. Regression analyses, however, failed to find any significant case adjudication effects for DNA testing when it occurred prior to arrest, filing or conviction.

6. Most sexual assault cases in the present sample that were adjudicated were resolved through plea bargains. The identification of foreign DNA in the non-backlogged sample contributed to the higher rates of arrest, charging and conviction as cases moved through the criminal justice system. Sentences of adjudicated defendants had more severe (longer) incarceration sentences in cases with DNA test results.

Objective 4— Identify and describe those principal case and evidence characteristics that will enable forensic laboratories to prioritize future sexual assault evidence submitted to crime laboratories by detectives.

Findings:

1. We were unable to develop a multivariate model that predicted successful DNA profiles and CODIS uploads due to missing data.

2. Table 26 showed through bivariate analyses that post-coital interval (PCI) was linked to DNA profiles and CODIS Uploads, but so were other variables, including: if there was reported recent consensual sex, ejaculation, condom use, and post assault hygienic activity.

3. Recovery of samples from different areas of the body also provided insight as to the likelihood that a

sample yields a DNA profile.

4. Much of the needed data to predict DNA testing outcomes is collected at the time of victim medical examination and from the sexual assault investigator's report describing the victim/assailant relationship and other case parameters. It is essential that crime laboratories collaborate with these medical and police agencies to insure reliable data are collected and made available to the forensic testing laboratory for review prior to analysis of the SAK.

Overall Recommendations:

1. Future testing of all backlogged SAK files is not recommended. The testing of such kits in other jurisdictions should not commence until the goals of affected agencies are clear, agencies are familiar with the criminal justice status of cases in the backlog, and local agencies are able to distinguish CODIS offender hits on the same case from new 'cold' hits. Unsolved stranger cases should be the focus, to include entry of the offenders' DNA profiles into CODIS. There is little need for SAK testing in known offender cases where the assailant does not deny intercourse, and where the offender has been arrested and his DNA already taken and profile entered into CODIS.

2. Local SAK advisory committees, composed of law enforcement, medical and forensic representatives, should be formed for two primary purposes: 1) to develop criteria to judge the priority of cases submitted for laboratory testing, and 2) to develop information factors that agencies will agree to record to be entered into newly created or expanded local forensic sexual assault databases.

3. Crime laboratories are in need of various types of investigative and medical information in order to begin their analyses of sexual assault kit evidence. Laboratories should routinely receive and review investigator case files, medical victim examination reports, and CODIS status information before commencing their examination procedures. Also:

> a. Post-Coital Interval (PCI) is a key factor in predicting hits and is unknown (25%+) in an unacceptably high percentage of cases.
> b. Data from the sexual assault victim examination reports (areas penetrated, possible ejaculation, use of condom, etc) yield results useful to criminalists examining sexual assault evidence in the forensic laboratory.
> c. Samples from very young victims yield valuable information on biological secretions left on regions of the body that can help inform analytical procedures.

4. The long term effects of SAK testing are also reliant on more detailed information being available on CODIS hits that differentiate true cold hits from 'conviction match' hits that occur where the offender's profile is 're-identified' in the immediate case.

5. Better cost benefit models need to be constructed from the above data files and those that accurately gauge the costs of various forensic/DNA testing protocols.

6. Sexual assault victims should be encouraged to respond to a medical facility as quickly as possible after the assault to speed the preservation, rapid recovery and analysis of scientific evidence.

7. All associated criminal justice agencies should share and compile data at key decision points and work toward the development of more comprehensive databases and models that can predict successful case outcomes. Sexual assault databases, or additional new fields in existing data bases, are needed that maintain offense characteristics, investigator files, victim sexual examination, laboratory results, and prosecutor information. The effects of forensic DNA testing on sexual assaults cannot be accurately estimated until there are better data maintained by all the various agencies in the criminal justice system handling sexual assault cases, and consolidated into a single forensic sexual assault database.

8. A range of quantitative and qualitative data are needed from investigators and prosecutors, in particular, to determine the value of scientific evidence in securing arrests, filings, convictions, and sentencing. The quantitative data would collect basic discrete factors on every sexual assault case, its investigation, prosecution, adjudication and sentencing. Qualitative data would include the persuasiveness of various factors that influenced arrest, charging, plea bargaining, trial verdict (including interviews with jurors after verdict), and sentencing. These qualitative data would be primarily beneficial in helping to explain outcomes in specific jurisdictions.

9. Better information is also needed on the sizable percentage of cases where the victim knows the assailant (intimate, family member, dating, work-related, or casual relationship), scientific results, and the role played by scientific evidence in case outcome.

10. All the above data will lead to better published research in the sexual assault investigation literature. Laboratory, investigator, victim examination, and prosecutor data are keys to the development of this literature.

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APPENDIX A

NIJ Project No. 2006-DN-BX-0094
LAPD/LASD Sexual Assault Kit Backlog Collection Form (3/10/2010)

Q1. PROJECT CASE #: _____		
Q2. Is the case file	☐ Backlog ☐ Non-Backlog	
CASE IDENTIFYING INFORMATION		
Q3. Agency:	☐ LAPD 1 ☐ LASD 2	☐ Outside Agency 3

Q64. Was there a DA filing?	☐ No 0 ☐ Yes 1	☐ Unknown 77
Q65. DA filing date:	___/___/_____	
Q66. Was there a conviction?	☐ No 0 ☐ Yes 1	☐ Unknown 77 ☐ N/A 88
Q67. Conviction date:	___/___/_____	
Q68. Type of adjudication	☐ Plea 0 ☐ Trial 1	☐ Unknown 77
Q69. Did the adjudication result in incarceration?	☐ No 0 ☐ Yes 1	☐ Unknown 77
Q70. Length of incarceration?	_____ (In months or years)	
Q71. Did the adjudication result in probation?	☐ No 0 ☐ Yes 1	☐ Unknown 77
Q72. Length of probation?	_____ (In months or years)	
Q73. Other adjudication info:	_____ _____	