Forensic Evidence and Criminal Justice Outcomes in a Statewide Sample of Sexual Assault Cases

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Medical examinations and forensic evidence in sexual assault cases

• Sexual assault victims are unique in the criminal justice system: both witnesses and crime scenes
• Victims undergo demanding medical examination procedures to provide samples that can be analyzed by crime lab
• System of examiners, evidence kits and crime lab analysis
• Yet little is known about the effect of forensic evidence on the criminal justice system
Evidence from Forensic Medical Examinations

- Non-genital injuries
- Genital injuries
- Biological evidence
  - Semen/sperm
  - Blood
  - Saliva (amylase)
- DNA profile derived from bio evidence
  - Match to suspect
  - Match to another investigation in FBI's Combined DNA Index System (CODIS) database
  - Match to a convicted offender in CODIS

Uses of these forms of evidence

- Injury evidence can establish victim lack of consent and can also lead to physical assault charges
- DNA and other biological evidence
  - Can help identify stranger suspects
  - Can undercut suspect claims of lack of sexual contact with victim
  - Sometimes supports victim’s account of what happened vs. suspect’s (e.g., location of sperm)
  - Demonstrates prosecutor’s thoroughness (“CSI” expectation)
Study 1: Forensic Evidence and Police Actions in Sexual Assault Cases

- Research question: What is the relationship between forensic evidence and arrests?
- Statewide random sample of Massachusetts sexual assault cases with medical exams and police reports between 2008 and 2010 (N=528)
- Data collected from
  - Forensic medical examinations
  - Crime laboratories
  - Police files

Sexual Assault Case Outcomes: Case Processing

- 40% are reported to the police\(^1\)
- 40% result in arrest\(^2\)
- 50% result in felony charges\(^2\)
- 33% result in conviction of original felony charge\(^3\)

Convictability impacts attrition

1. Rennison, 2002
2. Chandler & Terry, 1981; LaFree, 1980
Sample Characteristics from Study 1

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>%/Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victim Sex</td>
<td>95.9% Female</td>
</tr>
<tr>
<td>Victim Age</td>
<td>23</td>
</tr>
<tr>
<td>Victim Age 12 to 18¹</td>
<td>4.9%</td>
</tr>
<tr>
<td>Victim Race-Ethnicity</td>
<td>White 68.6%</td>
</tr>
<tr>
<td></td>
<td>Hispanic 17.1%</td>
</tr>
<tr>
<td></td>
<td>Black 9.1%</td>
</tr>
<tr>
<td>Victim-Assailant Relationship</td>
<td>Known assailant 68.2%</td>
</tr>
</tbody>
</table>

¹ Results for victims under age 12 were analyzed in a separate sample

Examination, Laboratory and Police Outcomes

<table>
<thead>
<tr>
<th>Result</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-genital injuries</td>
<td>53.0%</td>
</tr>
<tr>
<td>Genital injuries</td>
<td>35.6%</td>
</tr>
<tr>
<td>Kits tested by crime laboratory</td>
<td>77.6%</td>
</tr>
<tr>
<td>Biological evidence</td>
<td>84.2% of kits tested</td>
</tr>
<tr>
<td>DNA profile</td>
<td>28.3% of kits tested</td>
</tr>
<tr>
<td>DNA match to suspect</td>
<td>8.6% of kits tested</td>
</tr>
<tr>
<td>DNA match to CODIS-another case</td>
<td>2.0% of kits tested</td>
</tr>
<tr>
<td>DNA match to CODIS-convicted offender</td>
<td>4.7% of kits tested</td>
</tr>
</tbody>
</table>
Founding and Arrest Outcomes

- 40.3% Unfounded
- 35.0% Founded but No Arrest
- 22.5% Arrest Before Crime Lab Analysis
- 2.1% Arrest After Crime Lab Analysis

**Founded** = determination that an investigation was justified

Timing of Arrest

- The vast majority of the arrests in the sample took place before crime laboratory analysis could be done
- Therefore evidence found at the crime laboratory can play a role in only a small percentage of arrests
Time between Assault and Arrest

- 37% of arrests the same day as the assault
- 81% of arrests within 7 days of the assault
- 89% of arrests within 19 days

Number of Victims

Days from Assault to Arrest

Timing of Reporting Lab Results to Police

- 35% had lab results reported within 30 days
- 61% reported within 60 days
- 89% reported within 120 days

Number of Victims

Days from Arrival at Crime Lab to Reporting to Police
Timing of Arrest to Forensic Evidence

<table>
<thead>
<tr>
<th>Event</th>
<th>Time Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forensic examination</td>
<td>12 hours</td>
</tr>
<tr>
<td>Kit arrival at crime lab</td>
<td>8 days</td>
</tr>
<tr>
<td>Suspect arrested</td>
<td>1 day</td>
</tr>
<tr>
<td>Crime lab reports results</td>
<td>43 days</td>
</tr>
</tbody>
</table>

Based on median times.

Cases in which Arrest Followed Crime Laboratory Analysis

- 8 cases had arrests following forensic result reporting to the police by the crime lab
- 3 cases had arrests within a day or two of the report
- These 11 cases accounted for 2.1% of the final sample (N=528) and 8.5% of arrests (n=130)
% DNA Profile Generated by Arrest Groups

No arrest (n=175)  Arrest before lab findings (n=105)  Arrest after lab findings (n=10)

% DNA Matches a Suspect

No arrest (n=163)  Arrest before lab findings (n=95)  Arrest after lab findings (n=9)
Study 2: Forensic evidence and prosecution of sexual assault

- Research questions:
  - Is DNA related to obtaining convictions in sexual assault cases?
  - How does it compare to other evidence?
  - How do prosecutors use DNA evidence?
Study 2 methods

- Sample from one Massachusetts county
- All cases referred by police to prosecutor from 2005 to 2010, victims age 12 and older (N=257)
- Data from
  - Forensic medical exams (70.7% had exams)
  - Crime labs
  - Prosecutor files
- Interviews with prosecutors asked how they used forensic evidence
- Still ongoing – presenting preliminary results today

Case Disposition

DNA match in 60% of convictions vs. 8.1% to 9.7% of other cases, p < .001
Number of cases and % convicted by type of evidence

Logistic regression explaining conviction
Cases with identified suspects and victims cooperating with prosecutors

<table>
<thead>
<tr>
<th>Variable</th>
<th>Odds Ratio</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victim below age of consent</td>
<td>33.29</td>
<td>.004</td>
</tr>
<tr>
<td>No victim credibility concerns</td>
<td>4.44</td>
<td>.09</td>
</tr>
<tr>
<td>Number of types of other evidence*</td>
<td>1.78</td>
<td>.07</td>
</tr>
<tr>
<td>DNA match to suspect</td>
<td>3.93</td>
<td>.04</td>
</tr>
</tbody>
</table>

- Count of following types of non-biological evidence: surveillance footage, physical evidence at crime scene, outcry witnesses, fingerprints

Note: Zero convictions had a DNA match to suspect but no other evidence
Relationship of DNA Match and Conviction

- DNA match may be both a cause and effect
- DNA match can ID perps and provide evidence of assault
  - Significant effect even when controlling for other evidence
- DNA match may also be an effect of successfully seeking conviction
  - Case may depend primarily on other evidence
  - DNA match may be part of an array of evidence

Biological Evidence: Continuum of Probative Value
### Minimally Probative DNA Match – Case Example

<table>
<thead>
<tr>
<th>Incident</th>
<th>Suspect Defense</th>
<th>Evidence</th>
<th>DNA</th>
<th>Conviction &amp; Sentence</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 year old victim raped by relative who lived with her</td>
<td>Suspect claimed they had rough, consensual sex</td>
<td>Credible victim, Victim kicked, bit, screamed and locked herself in bathroom, Witnesses corroborate victim’s account</td>
<td>Suspect’s sperm found on swab collected in medical exam</td>
<td>Plea to reduced charges of assault and battery and incest, Probation 10 years</td>
</tr>
</tbody>
</table>

### Moderately Probative DNA Match – Case Example

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</tr>
</thead>
<tbody>
<tr>
<td>Stranger assault. Victim raped in home following break-in</td>
<td>Suspect used consent defense, claimed victim was a prostitute</td>
<td>Suspect identified through investigation and photospread/line-up, Victim injuries following struggle, Fingerprints, Two witnesses saw victim jump out window, No prior phone contact with victim</td>
<td>Suspect’s sperm found on swab collected in medical exam</td>
<td>Plea to assault and battery with a deadly weapon, Prison and probation 12 years</td>
</tr>
</tbody>
</table>
Very Probative DNA Match – Case Example

Incident
Two victims sexually assaulted in home by stranger.
Assailant not identified in investigation

Suspect Defense
No suspect statement taken

Evidence
Crime scene photos
Rape kit
Outcry witnesses
Non-genital injuries
Fingerprints
Crime scene evidence

DNA
Sperm found on vagina, genital, and perianal swabs
Court ordered DNA in another case where fingerprints were linked to suspect
DNA linked through CODIS and identified suspect

Conviction & Sentence
Rape; Assault with Dangerous Weapon; Armed Burglary; Home Invasion
Prison
50 to 60 years

How to Work with DNA: Prosecutors’ Descriptions
Biological Evidence Assists the Investigation

• Identify suspects in stranger cases

ADA 3: [stranger rape of two women] There was a DNA—there was semen in one of the two kits from which a DNA profile was created. The case really went cold until 2010 when that DNA profile from one victim’s kit was matched to a DNA profile left at a scene in [location]. . . . That’s one, and DNA solved it, basically.

• Identify suspects in cases where victim unable to provide good witness

ADA 4: She was only 12 years old and she had been through a traumatic event . . . she had trouble talking about the perpetrator and who he was . . . . It was saliva that was recovered, I think from her breast, that ultimately had his DNA on it. That took this case from being a very, very challenging case to prove in terms of identity, who actually did this, to pin it down, and made it basically a slam dunk.

• Place suspects at the scene of the crime

ADA 6: The biological evidence is important because it places him there and it forces him to say he had sex around the alleged incident. It is always good to have DNA no matter what . . . . DNA bolsters the claim of the victim about the sex. DNA and blood at the same spot is good evidence to show that at the time of sex she was bleeding.

• Can assist in questioning suspects

ADA 2: Trying to give him every opportunity to admit he was at least in [location]. When he says he’s never been there, they then say “The reason that we arrested you is your DNA has been linked to a rape kit . . . . ” Then once he’s confronted with the fact that his DNA is there, now completely predictably, it changes to “Oh, you know what? I think I was in [location] . . . . The biological evidence there enabled them to confront him, and him on video and audio recording changing his story as predictably as he did when confronted with the DNA evidence is something . . .
Biological Evidence Helps Prosecution

• Bolsters victim’s credibility

   ADA 4: . . . .if she says, “He bit my breast,” and you’ve got a bite mark on a breast with saliva that matches the defendant, that’s hugely corroborative. Right? It also functions in another way, which is less direct, but important to think about, is the more we can show the victim was accurate about it, the more likely the jury is to accept the biological and the injury evidence for what she says it is.

Overcoming the Consent Defense

• Consent difficult to overcome

   ADA 2: It was really strong DNA and fingerprints, and he at first tried to refute, refute, refute the DNA. Then when he couldn’t, he then turned to consent in the middle of the trial. His new defense became consent because it’s a lot easier to challenge the credibility of a human than it is to challenge the science of DNA or fingerprints.

   ADA 7: The suspect denied sexual contact with the victim and his semen was found in the rape kit. The suspect and victim were acquaintances—they generally know each other. It became a he said, she said case, because he explained away his initial denial, saying that he did not initially tell the truth because he is married.
Challenges to DNA Results

• Challenging the chain of custody or results
  ADA 4: Really the only thing the defense can do is nibble around the edges and say the chain of custody is cloudy or the testing is unreliable in some crazy way, but really, there’s no defense.

• Alternative explanations for DNA presence
  ADA 5: This case was a girl claimed her uncle sexually assaulted her and put his mouth on her nipples and raped her, among other things. She got a kit done. They swabbed her nipple. His saliva was found on her nipple . . . He claimed that she’s a liar. They got in a fight that day—a physical fight—and he spit on her and it was spit that was on her chest area. . . I mean it just- they always have a—they always explain it away, right?

Defense sometimes raise questions about DNA to create reasonable doubt

• Questioning reliability of DNA to create reasonable doubt
  ADA 1: [About a case with a hung jury] The defendant, through counsel, got up there and said, “DNA can stay alive for four days. You heard that from the Commonwealth’s expert. You heard the Commonwealth’s person from the crime lab, say she doesn’t know how it got there. She could just say this, that, and the other thing. Nobody, at any time, ever identified my client. The Commonwealth wants you to believe that, just because that’s his DNA in there, that he did this.” It [this argument] convinced somebody [on the jury].
Court Culture and Forensic Evidence

• Forensic evidence presented even if not probative
  
  ADA 2: We still have a burden of proving the elements of the crime and the fact that the defendant is the person who committed the crime. . . Under the theory of better to be safe than sorry—we don't do it to the extent that we would in non-consent cases.

  ADA 4: When we have the evidence, we use it. When we don't have it, we bring in experts to explain why we don't have it every time, every time.

Lessons I

• DNA can be a significant factor in arresting assailants, but in a small number of cases
• DNA more useful with unknown assailants or assailants denying sexual contact
• Not as useful when defendants utilize consent defense
Lessons II

• DNA is significantly related to conviction, though it’s difficult to sort out cause and effect
• DNA on a continuum of probative value
• Even when DNA is not probative, it underlines prosecution’s and victim’s thoroughness, victim’s and hedge against defendant denying sexual contact

Lessons III

• DNA can support credibility of victim if circumstances of finding DNA match victim’s account
• Skillful prosecution needed to make DNA effective (e.g., countering switch to a consent defense)
• Prosecutors use multiple forms of evidence, not just DNA—other evidence like surveillance video needs to be understood better
• DNA is here to stay – juries may expect it even when it’s not strictly probative
Lessons IV

- Attrition process for DNA as well as for prosecution in general
- Improved use of forensic evidence is unlikely to dramatically increase arrest and prosecution rates
- Victim participation in prosecution and victim credibility are big factors—more needs to be learned
- Testing untested kits holds promise for catching serial rapists, but much more research is needed
- Need to increase opportunities for DNA findings and access to quality forensic medical examinations

Other Promising Projects
Detroit Sexual Assault Kit
Action Research Project--

- Over 11,000 untested rape kits discovered in an old warehouse in Detroit
- Professor Rebecca Campbell funded to study process of testing them
- As of November 2015, 1600 kits tested
- About 100 serial rapists identified

National TeleNursing Center

- A federally funded pilot project developed to provide telenursing consultation from expert SANEs to clinicians conducting forensic medical exams in remote and underserved areas of the United States
  - clinician-to-clinician assistance
  - real-time support & guidance
  - ongoing education

- Two Naval Hospitals receiving consultation for all exams (if patients consent)
  - Robert E. Bush Naval Hospital, Twentynine Palms, CA
  - Naval Hospital Camp Pendleton, Oceanside, CA

- Additional non-DOD pilot sites currently receiving real-time support services; expectations for a total of 6 remote sites to receive services by June 1, 2016
Contact info

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781-640-4532

See our Center’s webpage on sexual abuse and assault:
http://cfrc.illinois.edu/publications.php?dim=topic#SexualAbuse
andAssault