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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

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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

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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)

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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

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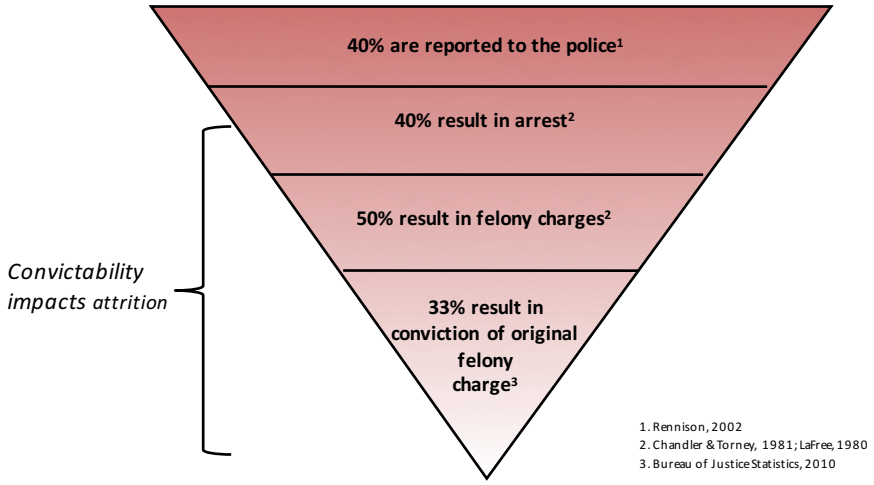
Sexual Assault Case Outcomes: Case Processing



1. Rennison, 2002
2. Chandler & Torney, 1981; LaFree, 1980
3. Bureau of Justice Statistics, 2010

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Sample Characteristics from Study 1

Characteristic	%/Median
Victim Sex	95.9% Female
Victim Age	23
Victim Age 12 to 18[1]	4.9%
Victim Race-Ethnicity	White 68.6% Hispanic 17.1% Black 9.1%
Victim-Assailant Relationship	Known assailant 68.2%

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

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Examination, Laboratory and Police Outcomes

Result	%
Non-genital injuries	53.0%
Genital injuries	35.6%
Kits tested by crime laboratory	77.6%
Biological evidence	84.2% of kits tested
DNA profile	28.3% of kits tested
DNA match to suspect	8.6% of kits tested
DNA match to CODIS-another case	2.0% of kits tested
DNA match to CODIS-convicted offender	4.7% of kits tested

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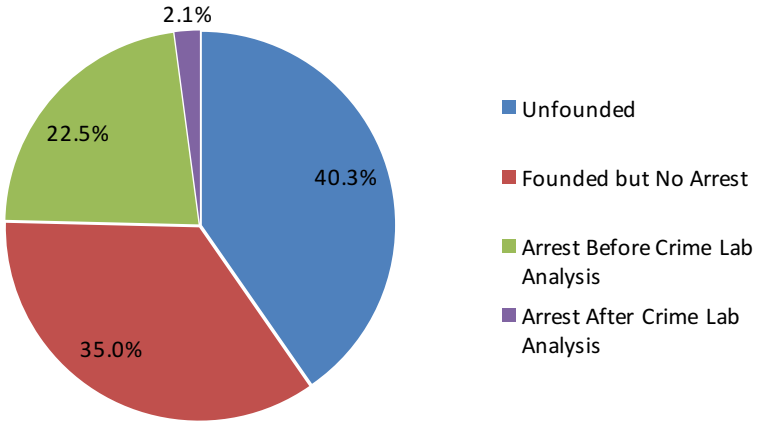
Founding and Arrest Outcomes



Founded = determination that an investigation was justified

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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

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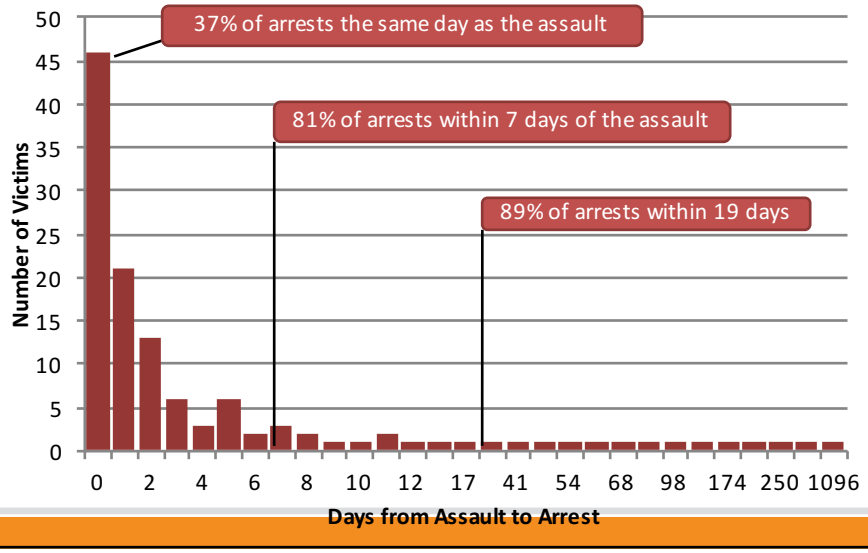
Time between Assault and Arrest



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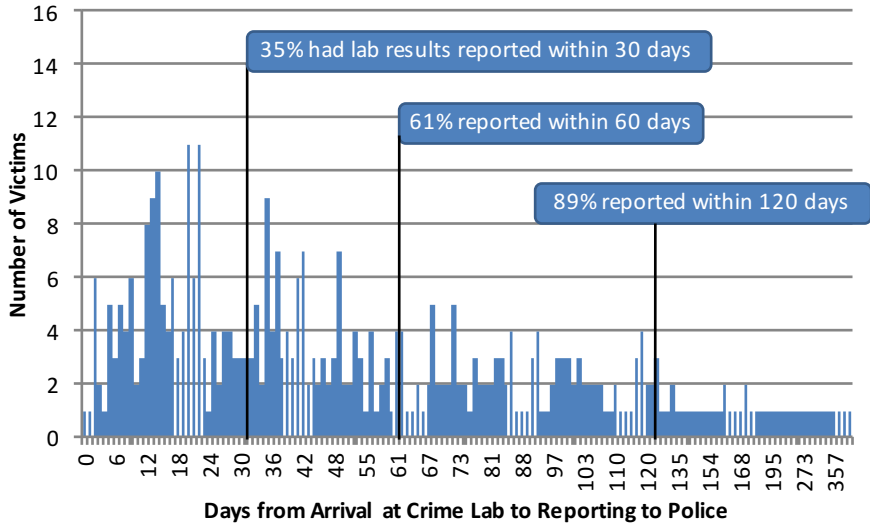
Timing of Reporting Lab Results to Police



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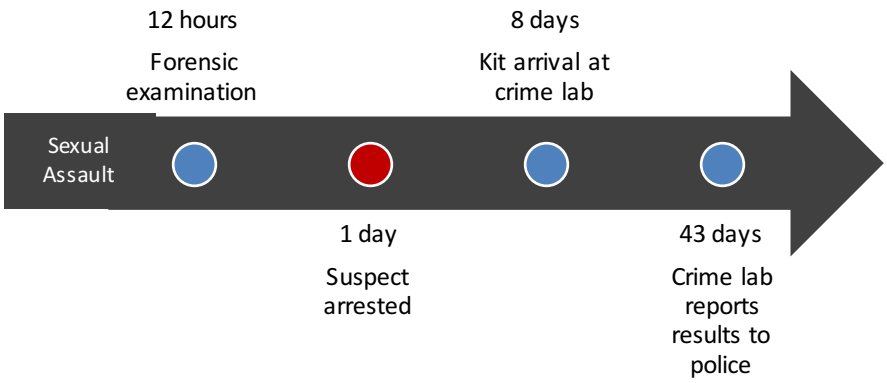
Timing of Arrest to Forensic Evidence



Based on median times.

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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)

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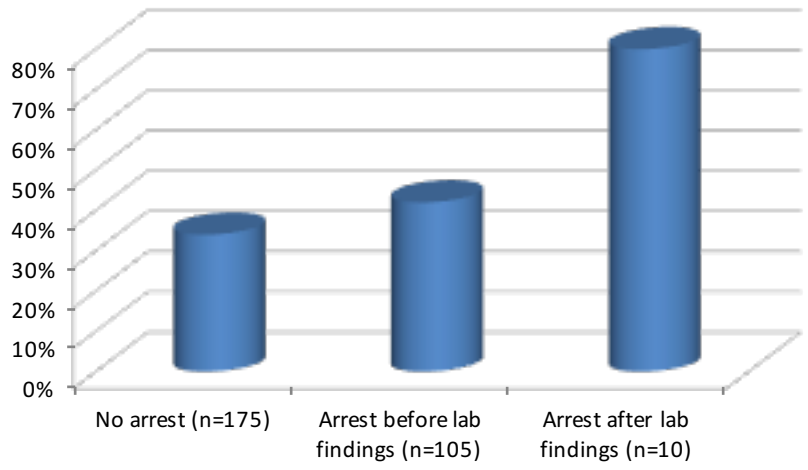
% DNA Profile Generated by Arrest Groups



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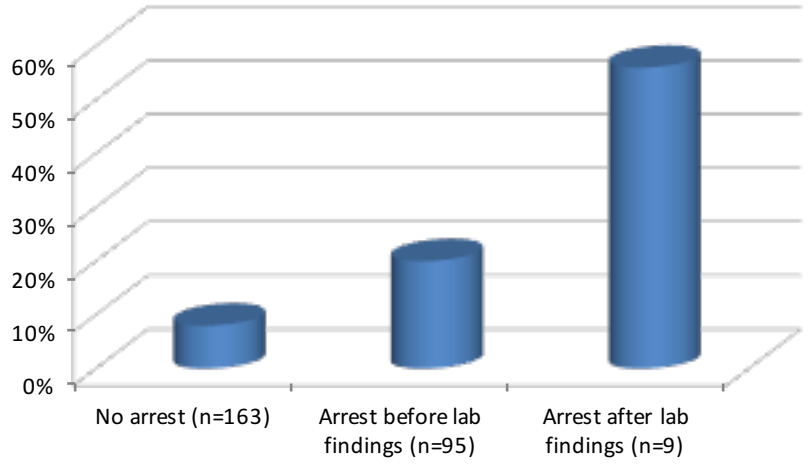
% DNA Matches a Suspect



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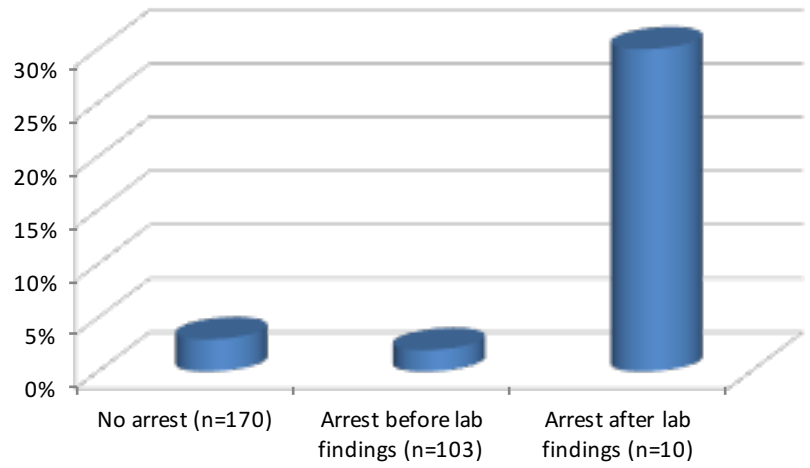

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Study 2: Forensic evidence and prosecution of sexual assault

- 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?

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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

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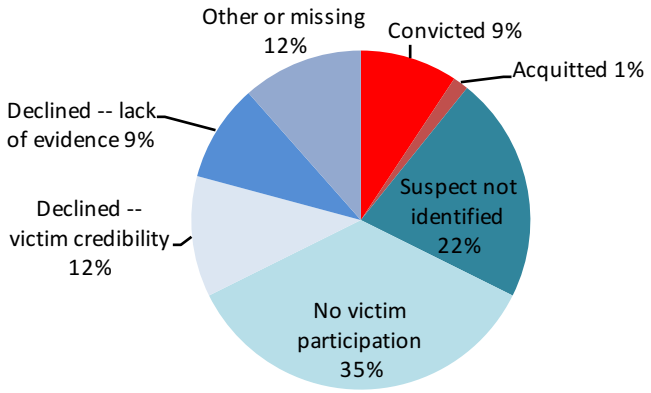
Case Disposition



DNA match in 60% of convictions vs. 8.1% to 9.7% of other cases, $p < .001$

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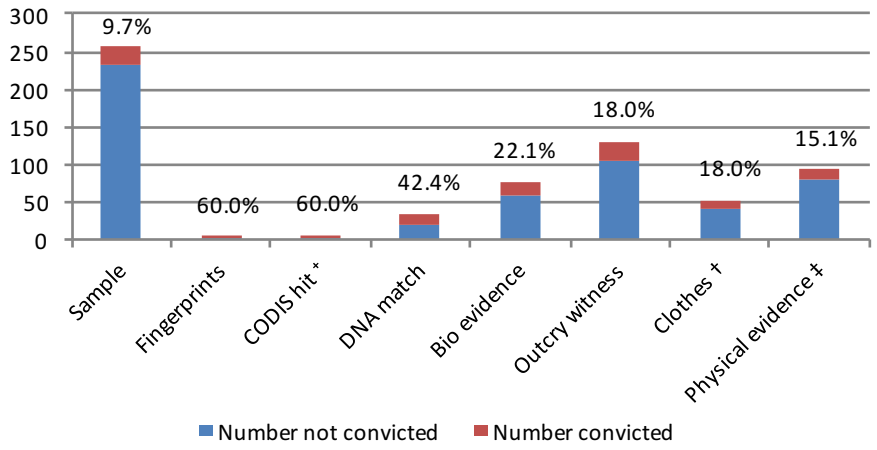
Number of cases and % convicted by type of evidence



+ CODIS hit to another investigation † collected at hospital ‡ from crime scene

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Logistic regression explaining conviction

Cases with identified suspects and victims cooperating with prosecutors

Variable	Odds Ratio	p
Victim below age of consent	33.29	.004
No victim credibility concerns	4.44	.09
Number of types of other evidence*	1.78	.07
DNA match to suspect	3.93	.04

- 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

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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

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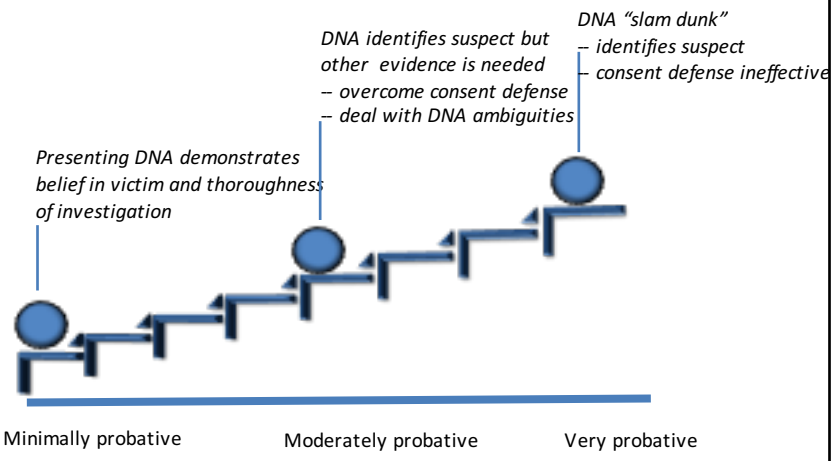
Biological Evidence: Continuum of Probative Value



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Minimally Probative DNA Match – Case Example

Incident

16 year old victim raped by relative who lived with her

Suspect Defense

Suspect claimed they had rough, consensual sex

Evidence

Credible victim

Victim kicked, bit, screamed and locked herself in bathroom

Witnesses corroborate victim's account

Clothes?

DNA

Suspect's sperm found on swab collected in medical exam

DNA match to suspect

Conviction & Sentence

Plea to reduced charges of assault and battery and incest

Probation

10 years

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Moderately Probative DNA Match – Case Example

Incident

Stranger assault.

Victim raped in home following break-in

Suspect Defense

Suspect used consent defense, claimed victim was a prostitute

Evidence

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

DNA

Suspect's sperm found on swab collected in medical exam

DNA match to suspect through CODIS

Conviction & Sentence

Plea to assault and battery with a deadly weapon

Prison and probation

12 years

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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

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How to Work with DNA: Prosecutors' Descriptions

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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.*

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Biological Evidence Assists the Investigation

- 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 . . .*

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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.*

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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.*

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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?*

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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].

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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.*

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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

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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

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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

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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

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Other Promising Projects

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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

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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

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Contact info

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