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The Role of DNA Evidence in Arresting and Prosecuting Sexual Assailants

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Many people have read about cases or seen TV shows in which DNA evidence helped convict a rapist. But surprisingly little research examines the effect of DNA on arresting and prosecuting sexual offenders. The DNA "hit" on a police procedural TV show is not necessarily typical. This brief describes findings on the role of DNA in the criminal justice response to sexual assault from research by the Children and Family Research Center's (CFRC) Ted Cross and his colleagues. The research team:

- examined the link between DNA evidence and arrests, using statewide crime laboratory and police data we collected in Massachusetts;[1]
- examines the use of DNA evidence in cases prosecuted in an urban Northeast county;[2]
- conducted and analyzed interviews with prosecutors in a sexual crimes unit in that district attorney's office about their use of DNA evidence.[3]

Learning more about DNA evidence in sexual assault cases can help us understand how to use it effectively. Victims deserve this, especially given the demands that obtaining DNA evidence places on them. Because their bodies are literally the crime scene, the first step in obtaining DNA evidence is for victims to obtain a forensic medical examination at the emergency department of a hospital. Using a standardized forensic kit, examiners conduct a thorough physical examination and document their findings, and swab genital and other body areas that may contain traces of the assailant's semen, blood, saliva, or hair. Swabs may also be taken from clothing, bedsheets, or other items involved in the assault. To conduct the examinations, many hospitals have Sexual Assault Nurse Examiners (SANEs), who are specially trained in both patient care and evidence collection.

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[1] Cross, T. P., Alderden, M., Wagner, A., Sampson, L., Peters, B., & Lounsbury, K. (2020). Biological evidence in adult and adolescent sexual assault cases: Timing and relationship to arrest. *Journal of Interpersonal Violence*, *35*(7-8), 1828-1839. Cross, T.P., Alderden, M.A., Wagner, A., Sampson, L., Peters, B., Spencer, M. & Lounsbury, K. (2014). *Forensic evidence and criminal justice outcomes in a statewide sample of sexual assault cases*. Final Report. Award number 2011-WG-BX-0005, National Institute of Justice, Office of Justice Programs, U.S. Department of Justice. https://www.ojp.gov/pdffiles1/nij/grants/248254.pdf

[2] Cross, T. P., Siller, L., Vlajnic, M., & Alderden, M. (2022). The relationship of DNA evidence to prosecution outcomes in sexual assault cases. *Violence against women*, *28*(15-16), 3910-3932. Cross, T.P., Siller, L., Vlajnic, M., Alderden, M. & Wagner, A. (2017). Injury evidence, biological evidence, and prosecution of sexual assault. Final summary overview. National Institute of Justice grant 2013-NE-BX-0005. National Criminal Justice Reference Service document number 251036. https://permanent.access.gpo.gov/gpo84076/251036.pdf

[3] Alderden, M., Cross, T. P., Vlajnic, M., & Siller, L. (2021). Prosecutors' perspectives on biological evidence and injury evidence in sexual assault cases. *Journal of interpersonal violence*, *36*(7-8), 3880-3902.

Forensic medical examinations are not easy for victims. The exams can be long and uncomfortable, and victims are asked to describe the assault for the medical forensic history. It is understandable that some victims forego the exam. Others may delay getting an exam, but biological evidence degrades as time passes. The usual standard is to conduct exams within 72 hours of the assault. An important part of this story is the courage of the thousands of victims who seek forensic examinations across the country.

Completed kits can be sent to crime laboratories, which can analyze the swabs to look for a DNA profile of the perpetrator. But obtaining a DNA profile from the evidence kit is only a step in the process—the crime laboratory does not yet know whose DNA it is. It is not evidence unless it is matched with a DNA profile from a suspect, enabling identification of the perpetrator. Usually that involves obtaining a comparison sample from the suspect, often by a police officer who comes with a court order to get a swab from the suspect's mouth. TV dramas show detectives getting a sample from a suspect's drinking glass, but it is rare to obtain a sample in that way. The DNA profile can also be submitted to the FBI's national DNA database (the Combined DNA Index System, or CODIS) and sometimes this yields a "hit" that identifies the suspect. The CODIS database has been developed over years of collecting DNA from arrestees and convicts entering prison.

DNA can be essential to arresting and prosecuting sexual assailants

The most important effect of DNA evidence is to identify assailants in cases in which they are unknown. CODIS hits can make arrest and prosecution possible in cases in which it seemed impossible because the assailant could not be identified. Even when the assailant is first identified by other means (e.g., a witness who saw the assailant with the victim), a DNA match can confirm it. DNA evidence can also identify a suspect in cases in which the victim knows the assailant but cannot tell investigators who it is (if, for example, the victim is nonverbal or too traumatized to speak about it).

DNA evidence from genital swabs from the victim can effectively rebut a defendant's denying having sexual contact with the victim. DNA may also have an indirect effect. Defendants who may have considered denying sexual contact may choose not to because they know that the DNA evidence will contradict them, even if DNA testing has not yet been done. Instead, they choose the consent defense, which we discuss below. We are aware of no data on how frequently defendants change their mind about denying sexual contact because of DNA evidence, but this effect is certainly plausible.

Results in a small number of cases in our samples suggest these impacts of DNA. There were 10 cases in our police data set in which crime laboratory evidence was available before an arrest was made. There was a DNA match in five of these cases (50%), a significantly higher rate than in other sexual assault arrest cases (17.5%) and non-arrest cases (5.2%). Four of these matches came from CODIS. It seems likely to us that DNA evidence played a role in these arrests. In our prosecution data set, we looked at case files for 16 cases in which a DNA match was found and the defendant was convicted. In most of these cases, DNA appeared to have played a role in convicting the offender. In five cases, the defense claimed that the sexual contact was fabricated,

which the DNA evidence would have rebutted. In two cases, a CODIS hit identified the suspect, and CODIS confirmed a witness identification. In two cases, DNA was not a factor and in five cases, we could not determine from the case files whether DNA was a factor.

Prosecutors described another impact of DNA evidence that would have been difficult to measure in our coding of case files. Sometimes, they told us the specifics of the DNA evidence fit the victim's account of the encounter better than the defendant's account, and so support the victim's credibility over the perpetrator's. If the victim described how the defendant ejaculated on a pillowcase, for example, but the defendant's testimony provided a different account, finding the defendant's DNA from sperm on the pillowcase would have bolstered the victim's credibility and impeached the defendant's testimony.

Usually, however, DNA is not the critical evidence

Data from 2021 from the FBI's National Incident-Based Reporting System (NIBRS) show that the alleged victim knew the perpetrator in 87.5% of reported sexual offenses[4]. Usually, therefore, DNA evidence is not needed to identify the perpetrator. In our police data set, the vast majority (91.5%) of arrests took place before crime laboratory analysis could be conducted. In fact, most took place the same day as the assault or a day later, so DNA evidence could not have been a factor in making the arrest. Most of these cases were no doubt based on reports from victims who knew their assailant, so DNA evidence was not needed to identify the assailant.

A common response to criminal charges of sexual assault is the consent defense. The defendant acknowledges sexual contact with a victim but claims that sex was consensual. Prosecutors will then need to show other evidence that sex was non-consensual (unless the victim was below the age of consent). When the consent defense is used, DNA evidence may not be *probative*; that is, it cannot prove there was sexual assault rather than consensual sex. In the prosecution sample, we coded what the defendant used as their final defense. For much of the sample, we could not determine their defense, and others did not offer a defense but instead confessed. Among those that we could code for choosing a defense, 40.7% chose the consent defense.

Prosecutors valued DNA evidence even when it did not prove sexual assault

The prosecutors we interviewed noted that the value of DNA evidence is limited in many sexual assault cases because the suspect and the victim know each other, or the suspect admitted to sexual contact with the victim but claimed it was consensual. Yet prosecutors still felt that DNA evidence was important in these cases. They want to confirm that they are prosecuting the correct person, no matter what the defense does. Even if the defendant admitted sexual contact before the trial, the defendant might change their story at trial.

They also felt that they needed to present DNA evidence to juries. Presenting biological evidence shows that the victim takes this so seriously that she was willing to go through a forensic medical evidence, and prosecutors were so serious that they went through the effort of getting the

[4] 2021 data from the FBI's National Incident-Based Reporting System (NIBRS) show that the alleged victim knew in 87.5% or reported sexual offenses. See Federal Bureau of Investigation (2022). *Crime Data Explorer*. https://cde.ucr.cjis.gov/LATEST/webapp/#

necessary samples and having the crime laboratory do a thorough analysis. The hope is that this will help juries treat the prosecutor's case as serious.

Several prosecutors also felt that juries expected to see crime laboratory evidence because of TV crime shows that regularly (and unrealistically) present the impact of forensic evidence in court. This expectation has been dubbed the "CSI effect"[5], named after a popular TV show in this genre. Research evidence on whether the CSI effect is real is mixed[6], but anticipation of it can influence prosecutor behavior.

DNA plays a role in convicting sexual offenders, but we need to learn more about how it works

Our research examined whether convictions of defendants in sexual assault cases were more likely when there was a DNA match with the suspect[7]. We found a strong relationship between the two. More than half of DNA match cases featured a conviction (57.1%) compared to 12.8% of cases without a DNA match. But we had to deal with a major pitfall in interpreting this result. Prosecutors will obtain a suspect comparison sample and make sure the crime laboratory does the DNA analysis when they are serious about prosecuting the suspect. If they cannot prosecute the suspect (if, for example, other evidence is weak), they are not likely to invest the time and money to get a suspect sample and test for a DNA match. So, cause and effect are partially reversed—seeking a conviction in a sense "causes" the DNA evidence. This was clear when we saw that, in many cases, crime laboratory results were reported only *after* criminal charges were filed and/or a grand jury indictment was obtained. We do not think there would have been a DNA evidence in these cases if prosecutors had not decided to prosecute the case and seek a DNA match.

So, we did another analysis in which we looked *only* at cases in which the prosecutor had obtained a swab from the suspect for a DNA comparison sample. Because prosecutors were following up on *all* these cases, any difference on convictions between cases with and without a DNA match occurred because of the impact of the DNA match. This limited us to only 29 cases, but there was still a statistically significant result. More than two-thirds of cases with a DNA match (68.2%) resulted in conviction, compared to 6.8% of cases with no DNA match.

Cases with DNA evidence were also more likely to have other types of evidence (such as a witness corroborating the victim's account of the events surrounding the assault, physical evidence at the crime scene, and cell phone evidence). DNA evidence was significantly related to conviction even when we controlled for the number of other types of evidence.

When the DNA match was the only way the suspect was identified, the nature of the impact was clear. But, overall, we could not tell how much of the impact of a DNA match was because a) it influenced the prosecutor to go forward with the case and not dismiss it, b) it influenced the

[5] See, for example, Rhineberger-Dunn, G., Briggs, S. J., & Rader, N. E. (2017). The CSI effect, DNA discourse, and popular crime dramas. *Social Science Quarterly*, *98*(2), 532-547.

[6] Rhineberger-Dunn, ibid.

[7] Our analysis excluded cases in which the suspect was not identified and/or the victim declined to participate in the prosecution, because these two factors precluded prosecution, regardless of other evidence

suspect to plead guilty, or c) it influenced the jury to convict, or a combination of these. Future studies could select a sample of cases with DNA evidence and interview or survey prosecutors to learn about how probative this evidence was, how they used it, how defense attorneys countered it, and how these factors affected the criminal justice outcome.

DNA evidence clearly has benefits, but there may be a cost as well

DNA evidence is clearly useful when it identifies assailants who cannot otherwise be identified, rebuts false claims that the assailant had no sexual contact with the victim, and/or supports victims' credibility by corroborating their account. Studies have also shown that DNA evidence entered into CODIS has helped solve "cold cases" and identify serial rapists who have evaded detection.[8] DNA evidence may also prevent defendants from denying sexual contact, although we know of no research that shows that defendants considered doing this but decided not to because of DNA. The prosecutors we spoke to also felt that the presentation of evidence based on the forensic medical examination demonstrated to juries the prosecutor's and victim's seriousness and responded to juries' expectation for evidence from the crime laboratory. These additional effects are plausible, though we know of no empirical evidence for them.

Given widespread awareness of DNA evidence, it may be difficult to prosecute a sexual assault case without a DNA match. However, DNA evidence is not always available, even when victims get timely forensic medical examinations. Not all biological samples are adequate for DNA testing or yield a DNA profile when tested. It may also be difficult to obtain a suspect comparison sample. All of this is out of the control of the victim. If DNA evidence is required to prosecute sexual assault, that may place a burden on sexual assault victims that victims of other crimes do not have.

These findings suggest the importance of enhancing systems that produce DNA evidence and strengthening the use of other methods when DNA evidence is not available

The results from the present study underline the importance of providing victims access to quality forensic medical examinations, investing in crime laboratories' capacity to conduct effective DNA analysis, and training prosecutors to use DNA. Communities vary in the availability of SANEs or other trained medical examiners[9] and skilled crime laboratories.[10] We hope our results are useful for advocates promoting improvements in these capabilities. We also recommend further exploration of methods for prosecuting sexual assault cases when DNA

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[8] Campbell, R., Feeney, H., Goodman-Williams, R., Sharma, D. B., & Pierce, S. J. (2019). Connecting the dots: identifying suspected serial sexual offenders through forensic DNA evidence. *Psychology of Violence*, *10*(3), 255–267. Davis, R. C., & Wells, W. (2019). DNA testing in sexual assault cases: when do the benefits outweigh the costs? *Forensic Science International*, *299*, 44–48. Lovell, R., Luminais, M., Flannery, D. J., Overman, L., Huang, D., Walker, T., & Clark, D. R. (2017). Offending patterns for serial sex offenders identified via the DNA testing of previously unsubmitted sexual assault kits. *Journal of Criminal Justice*, *52*, 68-78.

[9] RAINN (2023). *Congress Moves to Address Critical Shortage of Sexual Assault Nurse Examiners; RAINN partners on bipartisan legislation*. https://www.rainn.org/news/congress-moves-address-critical-shortage-sexual-assault-nurse-examiners-rainn-partners#:~:text=Across%20the%20United%20States%2C%20there,a%20SANE%20after%20being%20assaulted.

[10] National Research Council (2009). *Strengthening forensic science in the United States: A path forward*. National Academies Press. https://www.ojp.gov/pdffiles1/nij/grants/228091.pdf

evidence is not available. DNA evidence is always used in conjunction with other evidence, never alone. Investment in enhancing capabilities for using other forms of evidence may enable more prosecution in cases that lack DNA evidence.

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