

The National Problem of Untested Sexual Assault Kits (SAKs): Scope, Causes, and Future Directions for Research, Policy, and Practice

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Abstract

Victims of sexual assault are often advised to have a medical forensic exam and sexual assault kit (SAK; also termed a “rape kit”) to preserve physical evidence (e.g., semen, blood, and/or saliva samples) to aid in the investigation and prosecution of the crime. Law enforcement are tasked with submitting the rape kit to a forensic laboratory for DNA (deoxyribonucleic acid) analysis, which can be instrumental in identifying offenders in previously unsolved crimes, confirming identify in known-offender assaults, discovering serial rapists, and exonerating individuals wrongly accused. However, a growing number of media stories, investigative advocacy projects, and social science studies indicate that police are not routinely submitting SAKs for forensic testing, and instead rape kits are placed in evidence storage, sometimes for decades. This review article examines the growing national problem of untested rape kits by summarizing current research on the number of untested SAKs in the United States and exploring the underlying reasons why police do not submit this evidence for DNA testing. Recommendations for future research that can guide policy and practice are discussed.

Keywords

sexual assault, reporting/disclosure, offenders

When sexual assault victims seek formal help after an assault, they are often advised to have a medical forensic exam (medical forensic exam; Campbell, 2008; Martin, 2005). The purpose of this exam is to provide health care to victims (IAFN, 2009; Lynch, 2006; Valentine, 2014), which includes diagnosing and treating injuries sustained in the assault, offering emergency contraception to prevent pregnancy (if applicable), and administering prophylaxis for sexually transmitted infections that might have been contracted during the assault (Department of Justice [DOJ], 2013). In addition to these health-care components, the medical forensic exam can include the collection of a sexual assault kit (SAK; also termed a “rape kit”) to preserve physical evidence to aid in the investigation and prosecution of the crime (Campbell, Patterson, & Lichty, 2005; Du Mont & White, 2007; Ledray, 1999). The process of collecting an SAK is time consuming and highly invasive for victims, as it includes plucking head and pubic hairs; obtaining fingernail scrapings in the event the assailant was scratched during the attack; swabbing the genitals, anus, mouth, breasts, and/or other body areas to collect semen, blood, or saliva; and photographing injuries, if the victim consents and the health-care facility has the means to do so.

After an SAK has been collected by a health-care professional, it is taken into custody by law enforcement personnel

(DOJ, 2013). Police are then responsible for submitting the rape kit to a forensic laboratory for testing, which includes screening the samples in the kit for biological evidence and analyzing them for DNA (see Butler, 2005, 2010, 2012, for reviews). The resulting DNA profile can be uploaded to combined DNA index system (CODIS), the national forensic DNA database, which consists of reference DNA profiles from arrestees/convicted offenders and from samples obtained at crime scenes (Berson, 2009; Butler, 2005; Jobling & Gill, 2004; Stevens, 2001). The DNA sample in the SAK is then compared to those reference samples and if there is a match (termed a “hit”), then law enforcement personnel have a

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promising investigative lead, possible corroboration of the offender's identity, and/or the discovery of a repeat offender.

This multistep process of collecting and analyzing sexual assault medical forensic evidence is long and arduous, particularly so for victims, who often characterize the experience as highly traumatic, one that leaves them feeling violated, blamed, depressed, and reluctant to seek further help (Campbell, 2005, 2008; Campbell & Raja, 2005; Filipas & Ullman, 2001; Starzynski, Ullman, Filipas, & Townsend, 2005; Ullman, 1996). But for decades, rape survivors have endured the medical forensic exam and evidence collection kit because they were told they had to do so (Martin, 2005), because they believed there was no other way law enforcement would take their case seriously (Parnis & Du Mont, 2006), and/or because they wanted to keep others safe from future assaults by reporting and participating in the prosecution of the perpetrator (Patterson & Campbell, 2010). Survivors have assumed that the evidence in their SAK would be tested for DNA and the results would be utilized by the criminal justice system for the investigation and prosecution of the assault (Tofte, 2013). However, a growing number of media reports and social science studies suggest that for many rape survivors this is *not* what happened. In both major urban cities and smaller jurisdictions, police frequently do *not* submit SAKs for forensic testing, and instead, kits are stored in police property, unexamined and untested (Strom & Hickman, 2010).

Media stories about thousands of untested rape kits in police storage facilities have raised national attention and public outcry (Reilly, 2015), but what do we know—and need to know—about the scope of this problem and why it is happening in jurisdictions throughout the United States? The purpose of this review article is to examine the extant literature on untested SAKs and consider how future research can inform policy and practice regarding untested rape kits. First, we will describe what a rape kit is and how its contents can be analyzed to inform the investigation and prosecution of sexual assaults. Then, we will summarize current research on the scope of untested SAKs in the United States and examine the underlying reasons why so many SAKs are not submitted for DNA testing. Finally, we will conclude with suggestions for future research to guide policy and practice.

In reviewing the research literature, investigative projects, and media reports about this topic, it is important to note some key distinctions in terminology. In this article, our focus will be SAKs in police storage that have never been submitted to a forensic laboratory for DNA analysis, which the DOJ refers to as “untested/unsubmitted” SAKs; by contrast, “backlogged” SAKs are those that have been submitted to a lab but still await testing (Nelson, 2010; Ritter, 2011). Media and advocacy groups often use the term “backlog” to refer to SAKs in police property that have not been submitted for testing. Although the term backlog has intuitive meaning and appeal, we will be using the nomenclature recommended by the DOJ as it distinguishes kits not tested because police never submitted them to a lab for analysis (unsubmitted) from kits that have been submitted but await testing in a lab (backlogged). The purpose of this review article is to examine the problem of *unsubmitted*

SAKs that have been stored in police property without DNA analysis.

What Is a Rape Kit and How Can It Help the Criminal Justice System?

In an medical forensic exam, health-care providers collect multiple types of evidence that can be instrumental in the investigation and prosecution of a sexual assault, including victim statements regarding the assault; documentation of injuries (drawings, descriptions, and photographs); hair samples; and oral, anal, vaginal, and body surface swabs (DOJ, 2013). When a rape kit is submitted for forensic testing, such testing typically focuses on the analysis of the orifice/body swabs for DNA evidence (Peterson, Sommers, Baskin, & Johnson, 2010). Briefly, DNA testing is a multistage process that typically begins with a serology screening of the samples in the kit to determine whether they contain biological evidence (e.g., semen, saliva, and blood; see Butler, 2005, 2010, 2012, for reviews).¹ If the samples in the kit do contain bodily fluids, then the DNA is extracted, quantified, separated, analyzed, and interpreted. Over the years, different methods have been developed for these steps, but since the early- to mid-1990s, polymerase chain reaction methods have become standard, as this technique offers faster analysis with smaller samples of biological material; at that time, forensic scientists also began using short tandem repeat methods, in which shorter, specific units of DNA are copied and examined (Butler, 2012).

Once a DNA profile has been identified, it has limited utility in-and-of-itself; as Butler (2010) noted, “a DNA profile by itself is fairly useless because it has no context. DNA analysis always requires that a comparison be made between two samples” (p. 9). A national reference database of comparison samples, CODIS, was authorized by the federal DNA Identification Act of 1994, which dramatically increased the value of DNA testing to criminal investigations. In Figure 1, we present a heuristic representation of how CODIS is structured and the types of information stored within this database. A DNA profile may be eligible for entry into CODIS if it meets specified standards regarding biological quality of the sample, and reasonable assurances that a crime was in fact committed and that the forensic sample is most likely from the alleged perpetrator (Butler, 2005, 2010, 2012; Federal Bureau of Investigations, n.d.; Jobling & Gill, 2004; Stevens, 2001). If the DNA profile meets these standards, then it could be uploaded to one of the two indexing systems.

The *offender index* (represented as the left table within Figure 1) contains known DNA profiles from offenders obtained at the time of an arrest or conviction for a “qualifying offense.” There is variability across state laws with respect to which crimes “qualify” for mandated DNA collection, but typically, only in felony-level crimes would an individual be required to give a DNA sample (usually a buccal swab; Berson, 2009; Mukasey, 2008). State laws also differ as to whether the DNA sample is obtained when someone is arrested for a qualifying crime or only after he or she has been convicted of the offense (Berson, 2009; Mukasey, 2008). Thus, the reference

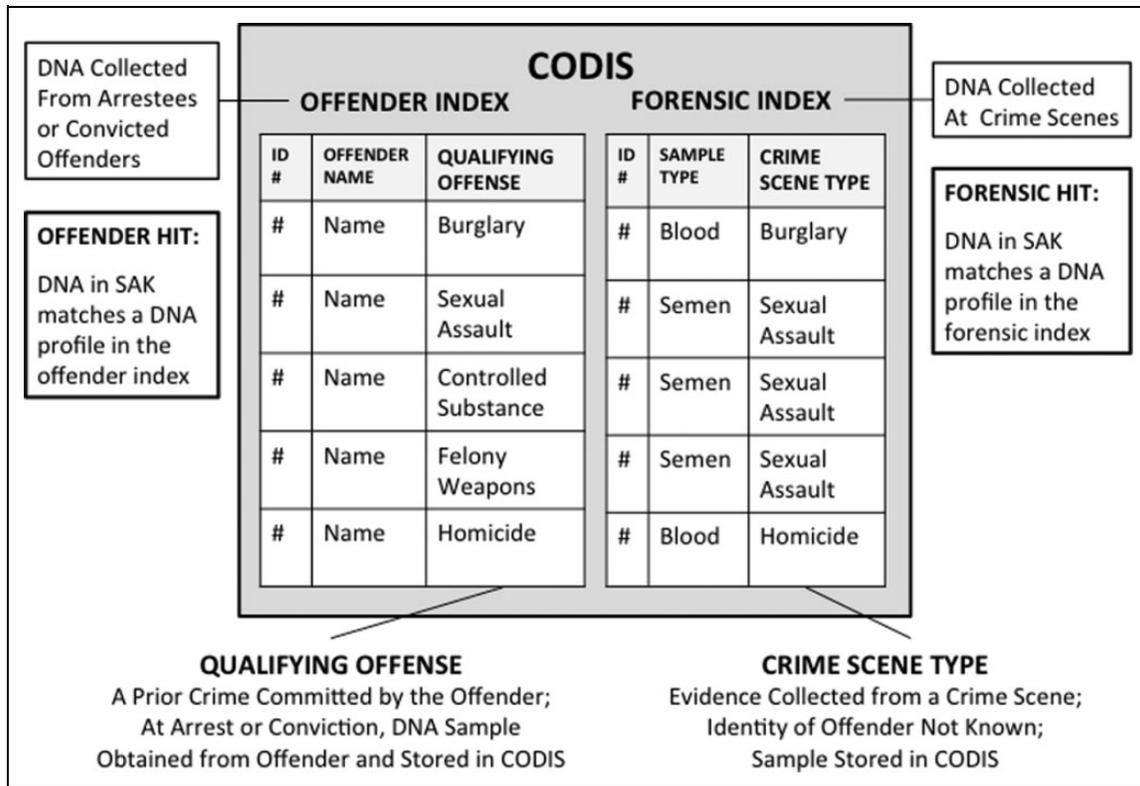


Figure 1. Overview of the structure of CODIS (Combined DNA Index System).

samples in the offender index are from individuals who have been apprehended for serious prior crimes, and their names, DNA profiles, and qualifying crime types are stored within CODIS so that law enforcement personnel can compare other samples to these data. For instance, when a DNA profile from a current case is entered into CODIS, it will be compared to reference samples in the offender index, and if there is a match—termed a hit, or more specifically, an “offender hit”—then law enforcement personnel have a promising investigative lead as to the identity of the offender or confirmation of the offender’s identity.

The *forensic index* (represented as the right table within Figure 1) contains unknown DNA profiles obtained at crime scenes. In contrast to the samples in the offender index, law enforcement personnel do not (yet) know who the offender might be (i.e., the crime was unsolved at the time the profile was entered into CODIS). For example, if there was blood at an unsolved burglary crime scene and there were reasonable assurances that the blood was from the possible offender, then the sample could be analyzed for DNA and uploaded to the forensic index of CODIS. Thus, the forensic index is a way of systematically cataloging DNA from unsolved crimes with the hope that in the future there will be a DNA match to those samples. When a DNA profile from a current case is entered into CODIS, it will also be compared to reference samples in the forensic index, and if there is a hit—termed a “forensic hit”—then a DNA linkage across cases has been established. The meaning and utility of a forensic hit depend on the circumstances of the case, which we will elaborate upon momentarily.

DNA testing and CODIS hits can be inordinately helpful in the pursuit of justice, and here we will consider four primary ways that testing SAKs can be useful in the investigation and prosecution of sexual assault crimes: identifying offenders in previously unsolved crimes, confirming identity in known-offender assaults, discovering serial sexual offenders, and exonerating those wrongly accused of crimes they did not commit. First, SAK testing can be instrumental in establishing the identity of offenders in unsolved crimes. DNA testing can help identify perpetrators in different ways, depending on whether the CODIS hit is to a sample in the offender index or forensic index, and whether the SAK is from a stranger-perpetrated sexual assault or a nonstranger assault (see Figure 2). Consider the offender hit depicted in hypothetical Case A in Figure 2: If this was a stranger-perpetrated sexual assault (i.e., assailant’s identity was unknown), then an offender hit—in this example, to a prior burglary offense—provides a promising investigational lead as to who might have committed this crime.² Now consider the forensic hit depicted in Case B (Figure 2): If this was a stranger-perpetrated sexual assault, the forensic hit establishes a DNA match between a burglary and a sexual assault, but the offender’s identity is still not yet known and the samples are stored in the event there is a later match to a known offender. However, if Case B was a nonstranger perpetrated sexual assault, the utility of that forensic hit would be quite different. Because the identity of the offender is known in the sexual assault case, this forensic hit would give the investigators in the burglary case a promising investigational lead as to the

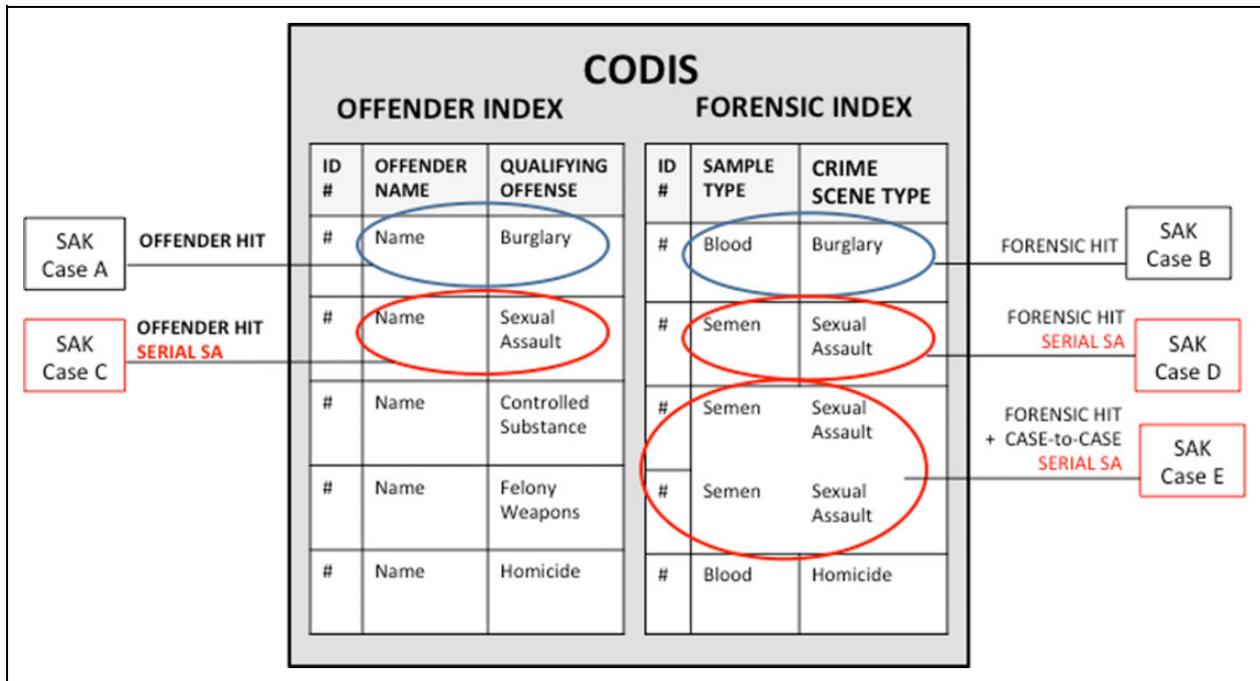


Figure 2. Illustrating types of CODIS (Combined DNA Index System) hits and the identification of serial sexual offenders.

offender’s identity. Thus, testing SAKs associated with non-stranger sexual assault cases can help identify offenders in other, previously unsolved cases cataloged in the forensic index of CODIS. Taken together, Case A and Case B highlight different ways in which SAK testing of both stranger- and nonstranger-perpetrated sexual assaults can help police and prosecutors identify the offenders in previously unsolved cases.

Second, SAK testing is useful for confirming identity in known-offender assaults. Law enforcement personnel may be reluctant to submit SAKs from nonstranger SAKs for DNA testing because the identity of the offender is not in question (Johnson, Peterson, Sommers, & Baskin, 2012; Peterson, Johnson, Herz, Graziano, & Oehler, 2012), though, as noted above, testing these SAKs can provide investigative leads in previously unsolved cases. In nonstranger sexual assault cases, typically the defense argument is that the incident was consensual (Beichner & Spohn, 2005; Ritter, 2011), and DNA evidence cannot “speak” to that issue. However, DNA evidence can establish whether there was bodily contact/sexual bodily contact between the victim and the alleged perpetrator, which are key elements that prosecutors must address in their case to establish the elements of the crime and to confirm the identity of the individual accused (Long, Kristiansson, & Whitman-Barr, 2015; Turman, 2001).

Third, building on the idea that DNA can be used to link multiple crimes to a single offender, SAK testing can help police and prosecutors discover serial sexual offenders. We define “serial sexual offenders” as others have done in the literature, namely, individuals who have sexually assaulted two or more individuals, in separate incidents over time (Caldwell, 2010; Lisak, 2008; Lisak & Miller, 2002; Lussier & Cale,

2013). There are several ways serial sexual offenders can be identified via CODIS. Referring again to Figure 2, consider the offender hit depicted in hypothetical Case C: the DNA in that SAK matched to an offender profile in CODIS in which the qualifying offense was a prior sexual assault (i.e., two sex offenses = serial sexual offending). If the Case C SAKs were associated with stranger-perpetrated rape, the assailant’s identity would have been “solved” by the CODIS hit because it was to a sample in the offender index; if Case C were a nonstranger rape (identity already known), DNA testing would have revealed that this offender has had a prior criminal sexual offense, and such information would likely be of interest to the police and prosecutors investigating Case C. Case D depicts a serial sexual assault forensic hit: the SAK profile hit to a previous sexual assault sample in the forensic index. If Case D were a stranger-perpetrated sexual assault, then this forensic hit would link two rape cases together, but the offender’s identity would not yet be known; if Case D were a nonstranger sexual assault, then the forensic hit would provide a promising investigational lead in a previously unsolved rape case and establish via DNA evidence that the offender has committed multiple sex crimes. Case E depicts a more complex serial sexual assault forensic hit. Two sexual assault forensic profiles already in CODIS are linked by the same DNA (termed a “case-to-case association”), which then matches the DNA profile in a new case, Case E. If the SAKs associated with Case E were also stranger-perpetrated, then three assaults would be linked, but the identity would not yet be known; however, if the SAKs were associated with a nonstranger assault, then identity would be solved and three sexual assaults would be linked to a now-known perpetrator’s DNA. Again, police and prosecutors

might proceed differently in a case if they have evidence indicating a pattern of repeat sexual offending by the perpetrator.

Finally, SAK testing can be useful to the criminal justice system by *exonerating individuals who have been wrongly accused of a crime*. False reporting of sexual assault is uncommon, as multiple reviews suggest that 2–8% of rapes reported to the law enforcement are untrue (Lisak, Gardinier, Nicksa, & Cote, 2010; Lonsway, 2010; Lonsway, Archambault, & Lisak, 2009), but when it does occur, or in instances in which the victim incorrectly identifies his or her offender in a police lineup (see Thompson-Cannino, Cotton, & Torneo, 2010), DNA testing can be critical for exculpation by revealing that the genetic material in the SAK does not match the accused (Gross, 2008; Gross, Jacoby, Matheson, Montgomery, & Patil, 2005; Gross & Schaffer, 2012). If an SAK is tested early in the investigation process, such information could prevent formal charges from being filed; in cases in which someone had already been adjudicated and sentenced, analyzing a previously untested SAK may be instrumental in an appeal for overturning the conviction (Gross, 2008; Gross & Schaffer, 2012). Gross and Schaffer (2012) reported that of the sexual assault crimes exonerated in the United States from 1989 to 2012, 63% were cleared by DNA testing, indicating how influential this evidence can be for this particular crime.

In sum, rape kit testing has tremendous utility to the criminal justice system, so the failure to test SAKs routinely and consistently is a serious concern. When SAKs are not analyzed for DNA evidence, sexual offenders are not identified and apprehended, which poses a significant threat to public safety (Human Rights Watch [HRW], 2009, 2010). Prior research consistently finds that many rapists commit multiple sexual offenses (Abbey & McAuslan, 2004; Abbey, Wegner, Pierce, & Jacques-Tiura, 2012; Lisak & Miller, 2002; McWhorter, Stander, Merrill, Thomsen, & Milner, 2009; Swartout, Swartout, & White, 2011; Swartout et al., in press), so it is troubling to consider how many repeat offenders are not being identified because SAKs are not being tested. For rape survivors, the failure to test the kit is a breach of trust as they consented to the medical forensic exam with the understanding that the kit would be analyzed and acted upon by the criminal justice system (Tofte, 2013). For those who have been falsely accused, the evidence that could clear their names is sitting on shelves in police property storage facilities (Gross & Schaffer, 2012). For all of these reasons, Strom and Hickman (2010) referred to the problem of untested rape kits as “justice denied” (p. 382) because there is no opportunity for that evidence to inform criminal proceedings—to aid in the prosecution of a perpetrator, to give justice to the survivor, to protect the safety of the community as a whole, and/or to clear those wrongly accused.

The Scope of the Problem: How Many Untested SAKs Are in Police Property?

Although DNA evidence can be uniquely informative for the investigation and prosecution of criminal offenses, it appears that in many jurisdictions throughout the United States, law

enforcement personnel are not routinely submitting rape kits for DNA testing (Reilly, 2015; Ritter, 2011). To date, much of what we know about the scope of this problem has come from the case studies of specific cities with large number of untested SAKs. For example, New York City (NYC) was the first U.S. jurisdiction reported to have a stockpile of untested SAKs (see Bashford, 2013; the Weiner Report, 2002). In the late 1990s, the police department initiated a reorganization of its crime scene property storage facilities. Typically, each piece of evidence is placed in boxes or bins, such that items from different crime scenes are stored together in one box/bin, each appropriately labeled (Rossmo, 2008). In the New York City Police Department reorganization, rape kits that had been previously dispersed throughout storage were located and grouped together, which revealed that they had approximately 16,000 untested rape kits (Bashford, 2013). Police officials informed prosecutors, forensic scientists, and the Mayor’s Office about the discovery, and the subsequent media attention and congressional review (see the Weiner Report, 2002) prompted the Mayor’s Office to allocate US\$12 million to test all SAKs. NYC officials have stated that all SAKs were tested by 2003 and they have remained current with rape kit testing since (Bashford, 2013; Office on Violence Against Women, 2010).

Los Angeles was the next city publicly identified as having large number of untested SAKs. Media reports from the early- to mid-2000s indicated that there may be thousands of untested rape kits in the Los Angeles Police Department and the Los Angeles Sheriff’s Department storage facilities, which garnered the attention of HRW. HRW pressured Los Angeles officials for an exhaustive count of all untested SAKs, and HRW attorneys filed California Public Records Act requests for documents regarding the collection and processing of rape kits. In 2009, HRW issued a report indicating that the Los Angeles Police Department, Sheriff’s Department, and 47 other independent police departments in the county had 12,669 untested SAKs in police storage facilities. With funding from federal, state, public, and private sources, all Los Angeles SAKs were tested by 2011 (Peterson et al., 2012).

When the State of Illinois disclosed in 2004 that there may be thousands of untested SAKs in police property facilities throughout the state, HRW initiated an investigative project there as well. By requesting records via the Illinois Public Records Act, HRW staff determined that only 1,474 of the 7,494 SAKs in Illinois booked into evidence from 1995 to 2009 had been confirmed as tested (HRW, 2010). The Illinois state legislature passed new laws requiring rape kits to be tested, and with funding from multiple federal grants, all previously untested SAKs in Illinois were tested for DNA by 2013 (Sweeney, 2013).

After the high-profile reports in the NYC, Los Angeles, and Illinois, advocacy organizations began systematically tracking and reporting which cities have large number of untested rape kits. The Joyful Heart Foundation’s (JHF) “endthebacklog.org” initiative publicizes which cities have untested SAKs with current estimates of how many untested kits exist in that jurisdiction based on media reports and interviews with public

officials. Because communities may not disclose that they have large number of untested SAKs (and thus there would be no media reports to track), the JHF launched “The Accountability Project” in 2014 whereby project attorneys use Freedom of Information Act (FOIA)/public records requests (as was done in the HRW projects) to obtain information about the number of SAKs in selected jurisdictions. From these combined efforts (i.e., tracking of media reports and FOIA requests in specific cities), it has become public that there are (or have been) substantial number of untested SAKs in Albuquerque, Atlanta, Atlantic City, Baltimore, Birmingham, Boston, Camden, Charlotte, Cincinnati, Cleveland, Dallas, Denver, Detroit, Gary, Hollywood (FL), Houston, Indianapolis, Jackson, Jacksonville, Kansas City, Knoxville, Las Vegas, Los Angeles, Miami, Memphis, Milwaukee, Nashville, New Orleans, NYC, Oklahoma City, Omaha, Philadelphia, Phoenix, Portland, Salt Lake City, San Antonio, San Diego, San Francisco, Seattle, St. Louis, Toledo, Tucson, and Tulsa. The estimated number of SAKs in these cities ranges considerably from approximately 200 in Nashville to 12,000 in Memphis.

These case studies suggest that many communities throughout the United States have large number of untested SAKs, but these city-by-city census projects do not reveal the full national scope of the problem and how pervasive these practices may be in all law enforcement agencies. For that, we need national-scale representative surveys of police agencies regarding SAK submission practices and untested SAK counts, and to date there have been only two such social science research projects. Lovrich and colleagues (2004) used stratified national random sampling to survey approximately 3,400 law enforcement agencies (both sheriff and municipal police departments) of varying sizes (e.g., 100+ officers, 50–100 officers, 25–50 officers, and <25 officers) regarding their estimated number of unsolved homicide, rape, and property cases over the prior 20 years that contained forensic evidence not submitted to a crime laboratory for analysis. A total of 1,692 law enforcement agencies completed the survey (49% response rate), which suggested that approximately 169,000 rape cases dating from 1982 to 2002 contained untested biological evidence (presumably, an untested rape kit). Strom and Hickman (2010) revised and expanded the Lovrich et al. (2004) survey to assess the evidence submission practices for the years 2003–2007 (i.e., five years after the Lovrich et al., 2004, project). Again, using a national stratified random sample of law enforcement agencies of varying sizes, a total of 2,250 sites completed the survey (73% response rate), which indicated that an estimated 18% (27,595) of all unsolved rape cases from 2003 to 2007 had unsubmitted forensic evidence.

Neither Lovrich et al. (2004) nor Strom and Hickman (2010) asked survey respondents to conduct an actual census of how many cases/kits were untested for forensic evidence, but based on the data that were reported, for crimes committed between the years 1982–2007, there may have been upward of 200,000 untested SAKs in police property in the jurisdictions studied. It is not clear the extent to which the samples in the two studies overlapped (i.e., the same law enforcement agencies

participated in both studies), or whether any of the high-profile case study cities were included in the research study samples (as research confidentiality does not permit the naming of participating sites). In 2015, an investigative reporting project by USA Today/Gannett News used FOIA requests to obtain actual census counts in over 1,000 law enforcement agencies throughout the United States, which documented 70,000 untested SAKs in police property (Reilly, 2015). Again, it is unknown the extent to which this sample of police agencies overlapped with prior social science studies on this topic. At a minimum, these three national-scale projects suggest that police in jurisdictions throughout the United States—not just those in high-profile cities—do not always submit rape kits for DNA testing.

Clearly, not all rape kits are submitted for testing, but is it fair to say that most SAKs are submitted for testing? Or does it appear that most of the time police do not submit rape kits for testing? Unfortunately, no national-scale studies have examined the proportion of SAKs that police do and do not submit for testing, but two regional-scale studies have shed some light on this issue. In a review of SAKs collected from adult rape victims in a Midwestern sexual assault nurse examiner (SANE) program, Patterson and Campbell (2012) verified how many SAKs were submitted by the police to the crime lab. Their analysis was limited to SAKs in which the victim made a police report and released the SAK for forensic testing (as opposed to cases in which the victim consented to the medical forensic exam and SAK and then decided not to engage the criminal justice system and file a report); thus, their sample reflects cases in which it could be reasonably argued that the police could have submitted a kit for testing. The results indicated that 41% of these SAKs were not submitted by police for DNA testing.

In a replication project using the same sampling criteria (i.e., a police report associated with the SAK and a signed release for kit testing), Shaw and Campbell (2013) documented that 41% of kits collected from adolescent victims (ages 13–17) across two Midwestern SANE programs were not submitted to the crime lab. However, the communities studied in these two projects had well-functioning SANE/sexual assault response teams (SARTs) that established coordinated multidisciplinary response protocols (including SAK submissions; see Campbell, Greeson, Bybee, & Fehler-Cabral, 2012; Campbell, Patterson, & Bybee, 2012), so the rates of SAK submission in these communities may be higher than typical. Put another way, in communities without SANE/SARTs, the proportion of SAKs that are not submitted for testing may be higher.

Taken together, what do these media reports, investigative projects, and social science studies tell us about the scope of the problem of untested SAKs? Whereas a national census of untested rape kits has never been conducted based on the data currently available, there may be 200,000+ untested SAKs in police property (see summary in Table 1). Furthermore, this problem does not appear to be isolated to large, high-crime urban areas, as both investigative reporting projects and research studies have found that law enforcement agencies in large cities as well as small communities are not consistently

Table 1. Key Points of the Research Review.

Key Points of the Research Review

- CODIS hits can be instrumental to sexual assault investigations in four primary ways:
 - Identifying offenders in previously-unsolved crimes
 - Confirming identity in known-offender assaults
 - Discovering serial sexual offenders via hits across cases
 - Exonerating individuals who have been wrongly accused of sexual assault.
- Between 1982 and 2007, there may have been 200,000+ untested SAKs in police property.
- Police jurisdictions in both urban areas and smaller communities have not consistently submitted SAKs for DNA testing.
- Law enforcement personnel's decision making regarding SAK submission can be affected by:
 - Victim consent/release of the SAK to be tested for DNA
 - Perceived utility of DNA testing for the investigation of the reported assault
 - Financial resources in their jurisdiction for timely forensic analysis
 - Perceived victim credibility and assault seriousness.

Note. SAKs: sexual assault kits.

submitting rape kits for DNA. Police personnel appear to exercise discretion in whether to submit an SAK for forensic testing, which raises the question: why do they submit some kits, but not others for DNA analysis?

Underlying Causes of the Problem: Why Aren't SAKs Submitted for DNA Analysis?

To date, there has not been extensive research on law enforcement decision making regarding SAK testing, but the current literature suggests four key factors are influential in determining whether a rape kit will be submitted for DNA analysis. First, it is important to note that not all victims *want* their kits to be tested. Some rape survivors seek medical forensic exam primarily for health-care reasons (e.g., prophylaxis for sexually transmitted infections) and are unsure at the time of the exam whether they want to file a police report and pursue criminal prosecution (Campbell, Patterson, Bybee, & Dworkin, 2009; Du Mont, White, & McGregor, 2009; Resnick et al., 2007). In such situations, victims may have agreed to SAK collection in order to preserve the evidence but did not give written consent for the kit to be released for testing. Typically, these SAKs would be retained by the health-care facility, but in some jurisdictions they are released to law enforcement (DOJ, 2013; National Center for Victims of Crime, 2011). Police need an incident report and/or victim authorization to submit an SAK for forensic testing (Archambault, Lonsway, & O'Donnell, 2014), so it is to be expected that some SAKs in police property have not been submitted for forensic analysis because the victims did not want them tested.³ However, given that these options for victims are relatively new (DOJ, 2013), it is unlikely that this is a primary reason why there are so many unsubmitted SAKs in police property facilities throughout the United States.

Second, law enforcement personnel may not be submitting rape kits for forensic analysis because they do not perceive that DNA testing is necessary or helpful to their task of investigating a reported crime. In their national surveys of law enforcement agencies, Lovrich and colleagues (2004) and Strom and Hickman (2010) asked respondents *why* they did not submit evidence from homicides and rape for forensic testing (the survey questions did not distinguish answers for each crime separately). In both studies, the most commonly cited reason for not submitting evidence was that the offender had not yet been identified (31% in Lovrich et al., 2004; 44% in Strom & Hickman, 2010). This finding may seem puzzling because testing can help *reveal* offender identity through CODIS hits (see above), but police indicated that they were not testing evidence if they did not have an identified suspect. In the early history of forensic DNA testing, crime laboratories often required police to submit a reference sample from the suspect to which they could compare the crime scene sample (i.e., detectives had to submit a DNA sample from the suspect and the sample from the crime scene to see if they matched; see Butler, 2005). With the emergence of CODIS in the mid-1990s, the need for known-suspect reference samples changed. Therefore, in the Lovrich et al. (2004) study, which surveyed police about their practices for the years 1982–2002, it is not surprising that having an identified offender was a key determinant of whether evidence would be submitted for testing; however, Strom and Hickman (2010) studied police practices from 2003 to 2007, which was well after the advent of CODIS, and the percentage of respondents who did not submit forensic evidence for DNA testing because they did not have an identified offender was even higher.

The other reasons police cited for not submitting evidence for forensic testing in the Lovrich et al. (2004) and Strom and Hickman (2010) surveys further underscore the notion that police do not perceive DNA testing to be useful for the investigational stage of the criminal proceedings. Police did not submit evidence for testing if the suspect had already been adjudicated or was expected to be adjudicated (14% in Lovrich et al., 2004; 24% in Strom & Hickman, 2010). As noted previously, DNA evidence can be instrumental in exonerating individuals who have been falsely accused/incorrectly identified, but police stated that adjudications were a reason for not testing. Other commonly cited reasons for not submitting evidence for testing included uncertainty about the usefulness of such evidence (6% in Lovrich et al., 2004; 17% in Strom & Hickman, 2010), no specific request from the prosecutors to test the evidence (9% in Lovrich et al., 2004; 15% in Strom & Hickman, 2010), and no charges filed against an identified offender (10% in Lovrich et al., 2004; 12% in Strom & Hickman, 2010; percentages within each study do not sum to 100% because respondents could select multiple responses). The consistent findings across these studies suggest that police may not perceive DNA testing as useful to *investigations* as it can be for *prosecution/adjudication* and *appeals*.

Third, it also appears that police do not routinely submit SAKs for DNA testing if there are insufficient resources in

Table 2. Implications for Research, Policy, and Practice.

Implications for Policy, Practice, and Research

- Development of a standardized methodology for conduct census counts of untested SAKs in police property is crucial for assessing the scope of the problem.
- Assessment of law enforcement personnel's decision-making processes regarding SAK submission to understand the root causes of the problem, with specific assessments of:
 - Police knowledge and beliefs about DNA testing in the context of sexual assault cases
 - The broader decision making process of police personnel in sexual assault investigations
 - How resources available for SAK DNA testing in a jurisdiction affect testing decisions investigations, and prosecutions.
- Creation SAK testing plans to resolve previously unsubmitted SAKs and to prevent the accumulation of more untested rape kits.
- Development and evaluation of victim notification protocols to determine which specific approaches minimize risk and promote healing and recovery for survivors.

Note. SAKs: sexual assault kits.

their jurisdiction for timely forensic analysis, which likely reinforces their perceptions that DNA testing is not useful during the investigation stage (see above). In general, there are growing concerns that U.S. forensic laboratories are overburdened and underresourced with insufficient funding and personnel to keep pace with the volume and demand for crime scene evidence testing (across all crimes; Strom, Hickman, McDonald, Roper-Miller, & Stout, 2011; National Research Council, 2009). For example, in the Lovrich et al. survey, 24% of the respondents noted that fiscal limitations (e.g., lack of funding for DNA analysis, inability of lab to produce timely results, labs not processing requests for DNA analysis) were the key reasons why evidence was not submitted for analysis. Similarly, participants in Strom and Hickman's (2010) study also indicated that forensic evidence is not routinely submitted because of insufficient staffing, equipment, and funding, which renders crime labs unable to keep pace with the evidence that is submitted. In an analysis of the untested SAKs in Los Angeles, HRW (2009) noted that city and county resource deficiencies contributed to the accumulation of untested SAKs. Peterson, Johnson, Herz, Graziano, and Oehler' (2012) in-depth analysis of a subsample of unsubmitted latex agglutination kits also found that lack of funding for testing and lengthy delays in processing were contributing reasons why police did not submit SAKs for DNA testing. Resource scarcity may be creating a vicious cycle whereby police do not submit all SAKs for DNA analysis because crime labs cannot test all SAKs, and because DNA testing is a limited resource, law enforcement do not view it as a primary investigative tool.

Finally, if the norms and expectations in a jurisdiction are that all SAKs cannot be tested, then police must decide which ones to submit, and emerging research suggests that they consider the credibility of the victim and characteristics of the assault when deciding whether to submit a rape kit for DNA testing. Shaw and Campbell (2013) found that victims aged

13–15 years were more likely to have their SAKs submitted than older victims, aged 16–17 years old, which is consistent with the other research indicating that police find younger victims more credible and that they invest more effort in cases involving children/younger adolescents than those older adolescents and adults (Campbell, Greeson, Bybee, & Fehler-Cabral, 2012; Cross, Walsh, Simone, & Jones, 2003). Non-White victims were more likely to have their kits submitted, though Shaw and Campbell (2013) noted this may be because the offenders' identities were also most likely non-White, and historically, men of color have been more vigorously investigated by the criminal justice system. Victims of gang rape were less likely to have their kits submitted for testing, consistent with some older research indicating that law enforcement personnel often view multiple-perpetrator crimes as "party rapes," not worthy of their investigatory effort (LaFree, 1981). SAKs associated with crimes that included multiple sexual penetrations (e.g., vaginal penetration plus oral and/or anal penetration) were more likely to be submitted for testing, which was also found by Patterson and Campbell (2012) in a sample of adult rape victims. SAK submission was more likely in adult cases in which the victim was physically injured and the perpetrator used physical force (Patterson & Campbell, 2012; Shaw & Campbell, 2013). Thus, when victims fit police officers' stereotypes about what constitutes "real victims" and/or "real crimes" (Caringella, 2008; Lonsway & Archambault, 2012; Spohn & Tellis, 2012), their kits were more likely to be submitted for testing.

Although there is still much to be learned about why police do not submit rape kits for forensic testing, the results of these studies suggest that police may not view DNA testing as part of routine investigative practice, but rather as an "extra" that cannot and perhaps should not be conducted for each and every reported sexual assault in which the victim had a medical forensic exam (see Table 1). Other research suggests that police often make a general determination as to whether they believe a sexual assault victim and feel a case is credible *before* they invest effort into an investigation, as opposed to beginning with an investigation and then, depending on how the facts unfold, making a determination as to the merits of the case (Campbell, Bybee, Kelley, Dworkin, & Patterson, 2012; Campbell, Patterson, Bybee, & Dworkin, 2009; Patterson, 2011a, 2011b; Shaw, 2014). With that context in mind, these findings regarding selective use of DNA testing based on victim credibility, assault seriousness, and perceived evidentiary value to the case are concerning, given the multitude of ways in which DNA could be informative at all stages of the criminal justice system.

Addressing the Problem of Untested SAKs: How Can Research Inform Policy and Practice?

Advocacy organizations have been instrumental in raising awareness about untested SAKs in police storage facilities through media engagement and investigative reporting projects. As we move forward to address this growing national

problem, reform efforts would greatly benefit from research on prevalence, root causes, and effective response strategies in order to create empirically informed approaches for resolving and preventing untested rape kits.

Assessing the Scope of the Problem: Developing Census Research Projects

City-by-city census projects and two national random surveys of law enforcement agencies indicate that the problem of untested rape kits is pervasive, but we do not yet have a comprehensive count of all SAKs in U.S. police facilities. Obtaining such information may be challenging because law enforcement personnel may feel there are significant disincentives to disclosing such data. To date, when it has become public that a city has large number of untested SAKs, pressure from advocacy groups and the media has tended to put public officials on the defensive (e.g., Los Angeles-HRW), which might curb efforts for transparency and cooperation. Furthermore, in at least one city (Memphis), public officials have been the subject of a class action law suit from survivors whose kits had never been tested (Anthony, 2015; Dries, 2014). Therefore, efforts to capture the full scope of this problem must take this political context into consideration with strategies that engage stakeholders, promote collaboration, and provide resources to help communities address this problem once it has been discovered in their jurisdiction. To that end, we suggest multiple, complementary strategies for ascertaining how many untested SAKs are in police storage.

First, there is merit in conducting rigorous case study research projects in a small number of jurisdictions with a goal of developing methods for conducting comprehensive census counts of SAKs in police property. In both the Lovrich et al. (2004) and Strom and Hickman (2010) projects, survey respondents were asked to *estimate* the number of unsolved criminal cases in their agencies that had untested forensic evidence; the survey directions specifically stated that “this is not a complete census and your best educated guess is always an appropriate response.” Estimation methods are not an unreasonable approach for exploratory research, especially in large-scale surveys, but developing a standardized methodology for true census counts is an important next step for future research, and case study methods offer a useful approach for such work (See Table 2). Researchers could work collaboratively with practitioners from law enforcement and forensic sciences to examine SAK processing and storage procedures in order to develop standardized census procedures that specify operational definitions, measurement, and assessment methods so that jurisdiction-to-jurisdiction variation in terminology (e.g., backlogged, untested, unsubmitted, “unfounded,” “ineligible”) and storage and submission policies can be understood and reconciled. Case study projects could also systematically document the challenges inherent in conducting an exhaustive count of all SAKs in police property, which would provide valuable data regarding the resources, training, and technical

assistance needs for assessing the scope of this problem in individual jurisdictions.

Second, case study research could then inform to the development of larger scale national random surveys of law enforcement agencies. Building on the work of Lovrich et al. (2004) and Strom and Hickman (2010), future studies should conduct actual census counts of all SAKs in police property (within the sampled law enforcement agencies) using standardized data collection procedures. It is critical that such studies use rigorous sampling designs so that the resulting sample data can be used to estimate population parameters. Given that a complete national-scale census of all SAKs in all U.S. law enforcement agencies would be an extremely resource-intensive effort (see below), studies with well-drawn samples offer a cost-effective approach for assessing national scope, if the designs were crafted with an eye toward such population-level extrapolations. The response rates in prior studies have been mixed, so future projects may also need to foster collaborations with key professional organizations within the law enforcement community to increase participation.

Finally, a national census of all law enforcement agencies would provide the most comprehensive data regarding the number of untested rape kits in the United States, but it is worth considering the time, effort, and resources necessary for such an endeavor. A national census would likely require a legislative mandate, oversight from key federal agencies (e.g., Federal Bureau of Investigation and DOJ), designated funding to support the task (e.g., training and technical assistance), and buy-in from key professional organizations. Case study projects and survey census projects of selected agencies (as proposed above) could provide useful data for estimating how costly a national census might be, which would help policy makers evaluate the potential gains of such an effort relative to investing in other initiatives relevant to this problem (e.g., testing, investigation, prosecution, and victim services).

Understanding the Root Causes of the Problem: Studying SAK Submission Practices

We know very little about why some SAKs are submitted for testing, but others are not, and future research is needed in three key areas to understand frontline practice and create policies that can prevent more untested rape kits from accumulating. First, it is essential to assess law enforcement personnel’s knowledge and beliefs about DNA testing in the context of sexual assault investigations. Prior research by Lovrich et al. (2004) and Strom and Hickman (2010) indicates that police do not submit rape kits for forensic testing in situations in which it might be instrumentally useful to do so (e.g., when a suspect is not known/has not been identified). The methods, procedures, and uses of DNA testing in legal contexts have changed rapidly in the past 10–15 years (Butler, 2012), and it is unclear whether that knowledge has reached frontline practitioners and is informing day-to-day decision making. Training and technical assistance for law enforcement personnel on the

utility of DNA testing during the investigation phase of a case may be warranted.

Second, we need to understand the broader decision-making process of police personnel in sexual assault investigations, as prior research indicates that law enforcement weigh victim and assault characteristics when deciding whether to test an SAK (Patterson & Campbell, 2012; Shaw & Campbell, 2013). Sexual assault investigations are a dynamic process, one that is likely influenced by historical factors, current organizational policies and procedures, organizational norms and culture, as well as detectives' individual-level knowledge, attitudes, and beliefs. To date, research on this topic has used decidedly static methods, such as statistical associations between coded variables (Patterson & Campbell, 2013) and checklists of factors considered by police (Strom & Hickman, 2010). Future research should utilize more sophisticated mediational quantitative methods and in-depth qualitative interview and ethnographic methods to elucidate the mediating pathways to key decisions, such as SAK testing and case referral to prosecutors for consideration of charges.

Finally, future research needs to consider how broader contextual factors affect SAK submission and testing practices. Police decision making in sexual assault investigations is likely influenced by formal and informal communications with crime lab forensic scientists, prosecutors, victim advocates, and medical professionals. The attitudes, knowledge, and beliefs of personnel in these other organizations and systems are useful to understand insofar as they may influence law enforcement decision making (directly or indirectly). Clearly, the resources available in a jurisdiction for testing, investigating, and prosecuting sexual assault cases also affect frontline practice, so research that systematically documents barriers—and solutions—to timely processing of DNA evidence is sorely needed.

Developing Effective Solutions to the Problem: Evaluating Response Protocols

When rape kit testing has not occurred consistently and a jurisdiction has accumulated a large number of untested SAKs, what then should a community *do* about the problem? Given the lack of research on this topic, most cities struggling with this issue have had to develop local-level solutions without the benefit of evidence-based strategies to guide their efforts. As such, there is a pressing need for research evaluating different strategies for SAK testing protocols and plans for notifying victims about testing results and the possible reopening of their cases (often termed “victim notification”).

Once a community has discovered that there are large number of unsubmitted SAKs in police property, should they plan to test all rape kits, only some kits, and how might they prioritize which kits should be submitted first? In New York and Los Angeles, stakeholders decided to use a “forklift approach” whereby all SAKs were outsourced en masse to private laboratory vendors for testing (Bashford, 2013; Peterson et al., 2012). On the return side, police and prosecutors had the challenging task of sifting through thousands of lab reports to decide which

cases to pursue for investigation and prosecution. It is unclear how many CODIS hits resulted from the forklift testing in these two cities and ultimately how many cases were eventually prosecuted (i.e., there are inconsistent and conflicting accounts in the media and published reports).

The testing approaches used in New York and Los Angeles raise a number of issues that merit scientific study regarding rape kit testing: should all previously unsubmitted SAKs be tested—what are the advantages, disadvantages, and unintended consequences of “test all” versus “test some” strategies? If only some SAKs are to be tested, is it possible to develop empirically based selection criteria that address the needs and concerns of diverse constituents (e.g., police, prosecutors, victim advocates, and survivors)? Evaluation projects should examine whether factors such as victim–offender relationship (i.e., stranger vs. nonstranger rapes) ought to be considered as a prioritization variable. As discussed previously, DNA testing can be useful in both stranger and nonstranger perpetrated crimes, and quantifying CODIS hit rates and serial sexual offenders identified could address whether there is any advantage to prioritizing testing as a function of victim–offender relationship. Given that it is highly likely that many previously untested SAKs are quite dated, jurisdictions may need to consider whether a case is still within the statute of limitations when deciding if and when to test a rape kit, so comparisons of CODIS hit rates by age of kit are also warranted. However a jurisdiction may—or may not—prioritize SAKs for testing, there is also a pressing need for empirical guidance on how to manage and share information posttesting so that the results can be used for investigation and prosecution.

Testing previously unsubmitted SAKs also raises complex issues regarding how victims ought to be notified about what had happened to their kit, what is currently happening, and what might happen in the future. Although there is no prior research specifically on victim notifications in cases of unsubmitted SAKs, there is an extensive body of literature on trauma and its aftermath, which offers a cautionary tale about what this process could mean for survivors. Activating traumatic memories triggers neurobiological and physiological responses in the brain and body that are emotionally and physically distressing (Banks, 2002; Foa, Keane, & Friedman, 2000; Garfinkel & Liberzon, 2009; Roozendaal, McEwen, & Chattarji, 2009; Rubin, Berntsen, & Bohni, 2008; Sher, 2010; Southwick, Rasmusson, Barron, & Arnsten, 2005). Recovery from traumatic events is often a long process, and many victims struggle for years with symptoms of depression, post-traumatic stress disorder, suicidality, substance abuse, and addiction relapse (see Campbell, Dworkin, & Fehler-Cabral, 2009; Herman, 2002; Steenkamp, Dickstein, Salters-Pedneault, Hofman, & Litz, 2012, for reviews). As such, victim notification can pose significant emotional and physical risks for survivors, which may or may not be mitigated by the information provided (e.g., testing results, CODIS hits, and suspect identification) and opportunities for action and/or closure (e.g., investigation and prosecution). Therefore, there is a pressing need for collaborative research projects that develop and evaluate victim notification

protocols to determine which specific approaches minimize risk and promote healing and recovery for survivors.

Conclusion

Victims of sexual assault endure a lengthy, invasive medical exam and evidence collection process with the understanding that the criminal justice system will use that evidence to hold perpetrators accountable for their crimes. When SAKs are not tested, the DNA evidence within those kits cannot inform investigation, prosecution, and appeal decisions, which is essential for protecting public safety and preventing wrongful convictions. Understanding why SAKs have not been routinely tested for many years, in many jurisdictions, can help inform long-term response strategies to remedy this problem and to prevent it from happening in more cities.

Authors' Note

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Notes

1. Newer methods have been developed over the past decade that allow forensic scientists to skip traditional serology screening in favor of a faster screenings that determine if there is any male DNA in the samples ("Y-screening methods"; Butler, 2012).
2. A CODIS hit is an investigational lead; it does not "solve" a case (hence our use of quotations). A CODIS hit must be thoroughly investigated to determine its probative value.
3. None of the investigative reporting projects or social science studies on the scope of this problem (reviewed previously) provided data regarding how many SAKs in police storage were not tested for this reason.

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Jessica Shaw, PhD, is an Assistant Professor in the School of Social Work at Boston College. Her research focuses on community responses to sexual assault and emphasizes improving community systems through collaborative, multidisciplinary efforts. She is interested in using evaluation as a tool to initiate and support policy-level change and improvement and in identifying mechanisms to translate research into practice.

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