

Forensic Examination

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- “Sexual Assault Nurse Examiner (SANE): Development & Operation Guide (1999). Written by Linda E. Ledray. of the Sexual Assault Resource Service of Minneapolis, Minnesota. Produced by the Office for Victims of Crime, U.S. Department of Justice (Grant #96-VF-GX-K012).
- Original contributions provided by Detective Sergeant Joanne Archambault of the San Diego Police Department.

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- “Police Response to Crimes of Sexual Assault: A Training Curriculum.” Written by Sharon M. Hunter, Bonnie R. Bentley Crewe, and Jamie L. Mills. Produced by the Connecticut Sexual Assault Crisis Services, Inc. Funded by Police Officer Standards and Training Council and STOP Violence Against Women Grant #VAW9606.
- “Model Guidelines and Sex Crimes Investigation Manual for Illinois Law Enforcement.” Produced by the Illinois Law Enforcement Training and Standards Board and Illinois Coalition Against Sexual Assault.
- “The Medical Examiner’s Role in Sexual Assault Response.” Training program developed by Dr. William Green and Dr. Marilyn Kaufhold of the California Medical Training Center. Funded by the California Office of Criminal Justice Planning.
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Dr. Kimberly A. Lonsway, Research Director, *National Center for Women & Policing*

Too often, sexual assault results in a case of one person's word against another in court – essentially a legal “he said, she said” with little or no physical evidence to corroborate the victim's story of what happened. Unfortunately, this situation increases the already existing tendency to focus solely on the victim's credibility when making judgments about the assault.

Although the techniques we've already described will go a long way toward overcoming challenges to the victim's credibility, there is nothing so powerful as physical evidence in corroborating the victim's account of events. For example, one study has demonstrated that sexual assault cases are approximately twice as likely to be prosecuted if a forensic examination was conducted with the victim.¹

- This demand for physical evidence is certainly not unique to sexual assault. In a burglary case, evidence will be collected at the crime scene as officers attempt to document the event and identify the perpetrator.
- In a sexual assault case, however, the victim's body is the most important source of physical evidence. The victim is, in essence “a walking and talking crime scene.” Often, the only thing standing between an officer and another case of “he said, she said” is the evidence recovered from the victim's body during a forensic examination.
- Another unique aspect of the forensic examination is that medical personnel act as an agent of the police investigation. A medical professional will collect the forensic evidence in a sexual assault case, both because of the intimate nature of this evidence and because a great deal of special expertise is required to conduct a thorough, meaningful examination.

We'll talk in detail about the evidence that is collected during the forensic exam – as well as exploring what can and cannot be concluded on the basis of this evidence. In general, however, evidence collected in the forensic exam can be used for four primary purposes:

- To identify the assailant
- To confirm recent sexual contact
- To establish force or threat
- To corroborate the victim's story

Most of the evidence collected in a forensic examination serves to identify the assailant. For example, DNA evidence collected from blood, saliva, semen, and other biological samples will identify the suspect with a great deal of certainty. In addition, other associative evidence such as hair or fibers can serve to assist in the identification of a suspect.

¹ Lindsay, 1998

Proof of sexual contact includes the examination of all orifices that the victim indicates were involved in the assault. In specific, the forensic examiner will look for redness, soreness, or other signs of physical trauma to corroborate that sexual contact occurred. Swabs will also be collected to identify seminal fluid from orifices in which the victim indicates there was penile penetration – or saliva from sites where the victim indicates that the suspect's mouth came into contact. In addition to a written description, a colposcope can be used to magnify and photograph genital microtrauma that serves as an indicator for recent sexual contact and penetration.

As for the third purpose, evidence to establish the presence of force or threat will include:

- The victim's verbal account of the incident during the medical interview
- Written documentation of genital and non-genital injuries
- Pictures of injuries
- Torn or soiled clothing
- Positive toxicology tests for drugs present in the blood or urine (in cases of drug-facilitated sexual assault)

Finally, all of the evidence collected in a forensic examination can be used to either corroborate or clarify the victim's account of the assault. Ultimately, the forensic examiner will conclude whether the forensic evidence is consistent with the victim's description of events.

The importance of the victim interview in interpreting forensic evidence

These purposes can be met with forensic evidence, but only if it is interpreted within the context of the victim's account of the assault. It is therefore critical that this module on the forensic examination be considered along with the previously provided information on victim interviews.

- For example, if the victim indicates to medical personnel where the suspect licked or kissed her body, these sites become crucial to swab for the presence of saliva. If the suspect's saliva is indeed found at these locations, moreover, this provides powerful evidence that the assault took place as described by the victim.

The interview can thus suggest locations on the victim's body where valuable evidence might be recovered. In addition, evidence collected in the forensic exam might suggest additional areas of inquiry to explore with the victim.

- For example, victims occasionally disclose penile-vaginal penetration in their initial interview with police or medical personnel, while withholding information on other types of penetration that are seen as especially embarrassing or humiliating (e.g., sodomy or oral copulation).

- The interviewer should thus always ask whether the offender committed sexual acts other than those already described by the victim.

Clearly, a forensic examination must be conducted in strict accordance with the guidelines provided in materials such as the Sexual Assault Nurse Examiner manual developed by Linda Ledray.² However, it is not enough to simply conduct a thorough forensic exam. These procedures must be performed along with a comprehensive victim interview in order to guide the interpretation and meaning of any forensic evidence obtained.

Traditional problems with the forensic examination

Despite the obvious importance of a forensic examination in the investigation of sexual assault, there have been a number of historic problems limiting both their value for law enforcement and their sensitivity toward victims. For example, sexual assault victims rarely require emergency medical attention. In a traditional medical setting that utilizes a triage system, sexual assault victims are thus given relatively low priority in receiving care. Patients coming into the emergency room with cardiac arrest, gunshot wounds, and other emergencies take priority over victims of sexual assault, which can leave them languishing for hours in the waiting room.

- For victims, this can be a terribly upsetting experience, particularly if they have been advised not to eat, drink, or urinate until after the examination is complete. The situation also compromises their right to privacy and confidentiality, and may deter some victims from receiving the care they need. It may even erode the victim's confidence and trust in the community response system, which can negatively affect their cooperation with police and prosecutors.
- For law enforcement, this wait is frustrating because it contributes to the loss or deterioration of evidence. It also means that the officer is spending unnecessary time waiting, rather than investigating the case or clearing to go back into service.

Other problems traditionally associated with the forensic examination include:

- Examiners who are insensitive or improperly trained
- Examiners with insufficient experience to maintain their proficiency
- Failure of examiners to recognize, properly collect, or preserve evidence
- Failure of examiners to recognize and document subtle physical findings
- Lack of appropriate equipment to conduct a thorough examination (e.g., colposcope)

² Ledray (1999)

In addition, many examiners are reluctant to perform a forensic examination, out of concern that they will be called to testify regarding the evidence obtained.

Coordinated community response

In response to this situation, cooperative community models have arisen for providing better and more coordinated services to victims.

- For example, some communities have implemented an interdisciplinary response system commonly referred to as the SART (Sexual Assault Response/Resource Team) model.
- Others (who may or may not use the SART model) also employ nurses with specialized forensic training to conduct the examination and provide testimony in court. These nurses are usually termed Sexual Assault Nurse Examiners (SANE).

Both of these models are discussed at greater length in the module on coordinated response.

The Forensic Examination

When to obtain a forensic examination

Generally, law enforcement should obtain a forensic examination of the victim if the sexual assault occurred within the previous 72 hours. Officers should also request a forensic examination beyond 72 hours if the victim is still experiencing pain, bleeding, describes an unusual amount of force, or reports ejaculation without cleanup.

- Traditionally, law enforcement officers were trained to determine whether the assault involved penile/vaginal penetration and ejaculation to evaluate the need for a forensic examination. Officers must understand, however, that this standard no longer applies.
- A forensic sexual examination should always be obtained if the sexual assault occurred within the last 72 hours. This is true regardless of the type of penetration, even when the contact is minimal (e.g., oral contact, digital penetration).
- Depending on the circumstances of the assault, this could even include attempted assaults. For example, the suspect may have kissed or sucked the victim's breasts but not completed penetration or ejaculation. The saliva evidence will still be critical to obtain, in order to identify a suspect and/or corroborate the victim's account of what happened.

How the forensic examination process is initiated

When law enforcement is called to the scene of a sexual assault, they will protect the victim from further harm, secure the crime scene, and take a limited statement from the victim to determine if a sex crime was committed.

- At this point, either the responding officer or communications personnel should call emergency room staff who will then contact the forensic examiner (nurse, physician, or SANE) and rape crisis advocate who is on call.
- By notifying the hospital or clinic that they are on their way, the facility can be prepared to receive the victim and officer. The forensic examiner can also prepare for the process of interviewing and examining the victim.
- Similarly, the rape crisis advocate can be dispatched to arrive as soon as possible and assist the victim throughout the medical and police procedures.
- When the police and victim arrive at the hospital, medical staff will determine if the victim should receive emergency room evaluation by a physician or begin the forensic examination.

If a victim originally presents to the emergency room, law enforcement should be called immediately to determine if a crime has been committed. If the elements of a crime have been established and the criteria for a forensic examination have been met, the rape crisis advocate and forensic examiner should be contacted. In a limited number of communities, a prosecuting attorney also responds to the hospital or clinic as a member of the response team.

In many areas, the police are called initially to certify that a crime has been committed. In these locales, the hospital is compensated for the medical evidentiary exam only if there is an accompanying police statement certifying that there was a crime.

Before the examination is conducted, law enforcement personnel should consult with the forensic examiner to share information about the case. This allows both professionals to maximize their knowledge of the case and promotes comprehensive evidence collection based on the victim's account of events.

Explaining the examination to victims

Before the forensic examination is conducted, it is important that the victim understands all of the following aspects of this process. Although these issues will typically be discussed by the forensic

examiner and/or rape crisis advocate, law enforcement personnel must also be prepared to address them with the victim. These issues include:

- The importance of forensic evidence and the need to collect it as soon as possible
- The fact that the cost of the exam will be covered if the victim meets certain criteria (or in those states where law enforcement is required to pay for all evidentiary examinations)
- General information regarding the process of forensic evidence collection
- The role of each professional involved in the forensic examination process, including law enforcement, medical personnel, and the rape crisis advocate
- What to expect after the crime is reported to the police
- That the victim's clothing may need to be collected if it was worn during or immediately after the assault
- That the victim's name will not be a matter of public record and will not be included in any media reports unless she wants it to be
- The extent of confidentiality in communications with each of the professionals involved (e.g., forensic examiner, law enforcement, rape crisis advocate)
- The right of the victim to refuse to cooperate with any aspect of the evidence collection or medical procedures

Law enforcement must also be aware of the state laws governing informed consent, especially with respect to complicating factors such as victim age, disability, or psychosis.

Addressing the victim's reluctance to report

If the victim is unsure or unwilling to make a formal statement to police about the assault, professionals involved in the team response should reiterate the importance of immediately collecting evidence. This is true even if the decision regarding police involvement is made at a later date.

- The medical facility or law enforcement agency may even be able to store the evidentiary kit for a specified period of time (usually 1 month) while the victim makes a decision regarding whether or not to participate in the criminal justice process.
- The victim will also be informed of her right to report at a later date and the procedures for doing so.

If an evidentiary examination is not completed for whatever reason, the forensic examiner can still treat any injuries, provide medications to prevent STD's, evaluate her risk for pregnancy, and administer emergency pregnancy interception (within 72 hours of the assault). In some cases, the forensic examiner may refer the victim elsewhere to receive these services. The forensic examiner

and/or rape crisis advocate will also provide referrals for follow-up medical care and counseling, as well as providing the victim with written information regarding follow-up care.

Components of a forensic examination

Once the victim has provided informed consent, the forensic examination will begin. Whether conducted by a SANE, physician, or other nurse, this examination will be completed according to established protocol. The forensic examination includes these general components:

- Comprehensive medical interview
- Collection of forensic evidence
- Evaluation of risk and prophylactic treatment of STD's
- Evaluation of risk and emergency pregnancy interception
- Crisis intervention and referrals³

An uncomplicated exam, without injuries, will generally take 2 to 4 hours to complete.⁴

Medical care for injuries

After obtaining informed consent, the emergency department or clinic staff will first assess the sexual assault victim for serious injury. If the injuries are life threatening or require immediate medical treatment, these will obviously receive attention before forensic evidence collection. However, this occurs with less than 4% of sexual assault victims.⁵

Comprehensive medical interview

Once any immediate medical needs are addressed, the forensic examination will begin. When the officer arrives at the facility, he/she must brief the examiner about the facts of the assault as they are known. The examiner will then need to obtain a complete history from the victim. This will include determining whether the victim is postmenopausal, and whether she has had children or gynecological surgery.

It will also include questions about the assault, such as:

- When and where the assault took place
- Prior sexual experience

³ Ledray, 1999

⁴ Holloway & Swan, 1993; Lenehan, 1991; Sandrick, 1996

⁵ Tucker, Ledray & Werner, 1990

- The type of sexual acts perpetrated by the suspect(s)⁶
- Whether ejaculation occurred and where
- Whether a condom or lubricant was used
- The position of the victim and suspect at the time of the assault
- Ingestion of any drugs or alcohol within the previous 12 hours
- A description of the type of force used

The forensic examiner must also ask the victim whether she had consensual sex with a partner within the previous 72 hours. If so, many of the same questions will need to be asked about the prior consensual activity.

Although the history obtained by the examiner is comprehensive, its focus should be on the sexual assault incident and not the surrounding events (e.g., pre- or post-assault behavior).

- It is critical that the examiner not attempt to conduct the type of interview required by a police investigator. This will subject the victim to more questioning than is necessary.
- In addition, joint interviews should be conducted whenever possible in order to reduce the questioning and potential for discrepancies in the reports of police and medical professionals.

Types of Forensic Evidence

Although some states have standardized their protocol, there remains significant variation in the evidence collection procedures in the forensic examination. However, the following are provided as guidelines. For each type of evidence, the specific purpose is noted both in the title and described in the text; these include identifying the assailant, confirming recent sexual contact, establishing force or threat, and corroborating the victim's story.

DNA evidence (identification)

The use of DNA evidence is a recent technology used primarily in the criminal justice system to identify an assailant. Preferred DNA collection procedures may vary as a result of laboratory processing. However, all require a comparison sample to be collected from the victim.

- Most jurisdictions require that blood must be drawn from the victim to distinguish her DNA from any foreign DNA recovered from her body or other crime scene evidence from clothing, bedding, etc.

⁶ If multiple suspects are involved in the sexual assault, they should be identified by number in the documentation. For example, the acts perpetrated by suspect #1 should be distinguished from those of suspect #2, etc.

- Alternatively, cell scrapings can be collected from the side of the victim's mouth (using a buccal swab) to distinguish her DNA from that of her assailant.⁷

These DNA standards from the victim are typically collected at the time of the initial forensic examination, however, some jurisdictions do not collect them unless/until they become necessary during the process of investigation and subsequent prosecution. They are then compared with any DNA evidence collected from the victim, suspect, and crime scene.

- DNA evidence can be obtained by collecting any available biological evidence that could have come from the assailant and remained on the skin or clothing of the victim.
- If the victim reports that she scratched the assailant, fingernail scrapings (or swabbings if the nails are too short for scrapings) should be collected for potential DNA or trace evidence. Although many jurisdictions collect fingernail clippings, there is some concern that this is invasive and adds no evidentiary value to the scrapings or swabbings.⁸
- DNA from semen can also be obtained by swabbing the orifices involved in the sexual assault with a standard size cotton swab.
- A swab should also be used on any part of the body that the suspect might have licked, sucked, kissed, or bitten.

Finally, any dried or liquid foreign matter on the body or clothing should be collected for DNA evidence.⁹

Hair evidence (identification)

The primary use of hair evidence is to identify the assailant. While obtaining foreign hair samples is relatively common, they are often not analyzed because they are less reliable for identification purposes than DNA evidence. Hair samples can only be used to make the most general of distinctions between people; they cannot identify a suspect with any degree of certainty as with DNA evidence.

- When foreign hair is collected and analyzed, samples must also be available from the victim for comparison purposes. There is some controversy, however, regarding how and when to collect these samples.

⁷ Frank, 1996

⁸ Clippings are also difficult to obtain among women with acrylic fingernails.

⁹ Ledray & Netzel, 1997

- For example, some examiners always pluck (or ask the victim to pluck) 15 to 20 head hairs and pubic hairs as a part of the evidentiary exam. Others cut hairs rather than pluck.¹⁰ Because the victim's hair may change due to perming, dyeing, or other treatment, many crime labs require that a sample of the victim's hair be collected at the time of the initial forensic examination.
- Still other examiners do not collect samples of the victim's hair as a routine part of the evidentiary exam because collection is uncomfortable and because hair is retrievable from the victim at a later date if it is needed.¹¹ If the hair evidence is not available later, either because the victim cannot be located or will not cooperate with law enforcement, it is unlikely that the case will move forward – with or without the hair evidence.

With the suspect, hair evidence should always be collected by plucking (either by the examiner or suspect), as law enforcement may have difficulty locating him later if he flees

Seminal fluid evidence (identification, sexual contact, corroboration)

Seminal fluid evidence is used for two primary purposes: to identify the assailant and to confirm that recent sexual intercourse occurred. It can also be thought of as corroborative evidence if the presence of seminal fluid is consistent with the victim's account of events. However, a percentage of rapists are sexually dysfunctional and others wear condoms or withdraw before ejaculation, so it is important to remember that the absence of seminal fluid does not disprove recent sexual intercourse.¹²

- Seminal fluid evidence is analyzed by crime laboratory personnel for spermatozoa and for acid phosphatase (ACP). ACP is actually an array of related isoenzymes which is found in much greater concentration in semen than in any other body fluid.¹³ A high level of ACP in vaginal secretions would therefore indicate that there has been recent sexual contact with seminal fluid left in the vagina.¹⁴
- Cases negative for sperm and positive for ACP typically indicate an assailant who has had a vasectomy, but this result is also possible in cases involving an assailant who is a chronic alcoholic or due to other reasons.¹⁵

¹⁰ Osborn & Neff, 1989

¹¹ Ledray, 1992b

¹² Tucker, Ledray, & Werner, 1990

¹³ Davies, 1978

¹⁴ Green, 1988

¹⁵ Enos & Beyer, 1980

Motile sperm can typically be recovered from the victim's vagina if specimens are collected within 8 hours of the sexual assault. It is also common to recover intact, nonmotile cells from the vagina up to 16 hours following intercourse; and less commonly as long as 144 hours afterward.¹⁶

Sperm has even been found in the postmortem vagina up to 16 days after death. In this case (investigated by San Diego Police Department) it is believed that sperm was still present because physical drainage of semen from the vagina was impossible due to the victim's posture at the time of death. In addition, sperm cells do not degrade as actively in the postmortem vagina due to an absence of cells normally found in a live victim's vaginal and cervical fluids.

- Sperm found in the mouth following oral copulation are more transitory than in the vagina. However, intact sperm cells have been recovered from the mouth up to 6 hours after ejaculation – even despite mouth rinsing or tooth brushing.¹⁷
- Sperm have been found in rectal swabs up to 20 hours after an assault, however researchers caution that conclusions regarding sodomy should be based on other factors in addition to sperm since semen draining from the vagina frequently contaminates the anal/rectal region.¹⁸

In conclusion, the vaginal site is the most likely location to obtain specimens positive for sperm. It also indicates that deterioration of evidence first occurs in mouth samples and then in vaginal or rectal samples.

Clothing evidence (force, corroboration)

Clothing is useful as evidence to prove that force was used, if it is torn or soiled. It can also be helpful to corroborate the victim's story. For instance, if the victim claims she struggled on the grass, stains on her clothing will corroborate this and the absence of grass stains can be used against her, as happened in the widely publicized trial of William Kennedy Smith. Of course, evidence such as foreign debris, blood, seminal fluids and other stains can also be collected from clothing (these are discussed in the corresponding sections).

- While some programs recommend collecting all of the victim's clothing,¹⁹ others specify that clothing should only be collected if it has clear evidentiary value -- for example, if the clothing has visible tears, stains, debris, or if it was worn closest to the genital structures.

¹⁶ Information provided by San Diego County Sheriff's Department

¹⁷ Information provided by San Diego County Sheriff's Department

¹⁸ Information provided by San Diego County Sheriff's Department

¹⁹ Frank, 1996

- For many victims, a winter coat or pair of shoes may be valuable property that cannot easily be replaced. It is thus sometimes appropriate to allow the victim to keep these items.
- On the other hand, crime laboratories have sophisticated equipment for detecting evidence, and clothing often has evidentiary value that cannot be detected by a forensic examiner. For this reason, it is generally advisable for forensic examiners to collect as much clothing evidence as possible.
- When examining clothing for stains, many forensic examiners utilize a Wood's lamp. This type of lamp emits a long wave ultraviolet light that make it easier to see stains caused by semen and other substances.
- For example, dried semen will usually fluoresce bright green or yellow under illumination with a Wood's lamp. Other substances will typically fluoresce easily using Wood's lamp illumination.
- Moist semen will fluoresce poorly or not at all, however, so the Wood's lamp should be used to supplement visual examination.

When clothing is collected as evidence, it should be allowed to air dry prior to placing each article into a separate paper bag, avoiding transfer from one item to another. Bags should then be labeled with the victim's name, identifying number, date, time, forensic examiner's name, and the type of article.²⁰

Saliva evidence (identification, corroboration)

Officers and examiners have been trained to note, photograph, and possibly even cast bite marks on the sexual assault victim in order to identify the offender. However, it is much more common for the suspect to kiss or lick the victim's body during an assault.

- The examiner should thus determine whether the suspect's mouth touched any part of the victim's body. Saliva swabs should then be obtained from these areas by the examiner for potential DNA analysis to assist in cases where identification is the issue. This is especially critical if the victim does not believe that the suspect ejaculated or if he used a condom; in these instances seminal fluid is unlikely to be obtained.

The collection of saliva evidence from the victim's body is also useful for corroborating the victim's account of what happened during the assault. If saliva evidence is recovered from areas

²⁰ Ledray, 1992b

of the victim's body that she indicated were licked or kissed by the suspect, this provides persuasive evidence that the assault took place as described by the victim.

Blood evidence (identification, force, corroboration)

The forensic examiner should always draw the victim's blood for type and DNA evidence (whether this is done at the time of the initial examination or later will depend on departmental policy).²¹ This evidence will then be used to assist in identification by distinguishing the victim's DNA from the suspect's.

Blood evidence is also used to corroborate the victim's story and establish the use of force. Evidence of the suspect's blood can be used to corroborate the victim's account and establish force if it resulted from a struggle with the victim. In addition to the blood provided by the victim for identification purposes, it is also recommended that an additional tube of blood be routinely drawn from the victim for toxicological screening, should this become an issue during the investigation and subsequent prosecution.²²

- Testing for the presence of drugs or alcohol may assist law enforcement by corroborating aspects of the victim's story or demonstrating that the victim's level of intoxication contributed to her vulnerability.
- It can also provide evidence that the victim's level of intoxication or even unconsciousness negated the possibility of consent. As discussed in the module on law and investigative strategy, extreme levels of victim intoxication or unconsciousness create a situation in which no force is necessary for sexual penetration to constitute criminal behavior.

Analyzing the victim's blood for the presence of drugs or alcohol requires separate consent in some jurisdictions, creating a controversy that is discussed in detail in the module on drug-facilitated sexual assault. Whatever the policy regarding toxicological screening, the issues must be discussed with the victim.

Urine analysis (force, corroboration)

As with blood evidence, a sample of the victim's urine should be collected in order to test for the presence of drugs. Again, this evidence may be used to corroborate the victim's account of drug use or to provide evidence for her intoxication or unconscious state. Recently a great deal of attention has focused on the specific drugs that are being used to facilitate sexual assault.

²¹ Frank, 1996

²² Ledray, 1992a

- As discussed in the module on drug facilitated assault, these “date rape drugs” include the long-acting benzodiazepine flunitrazepam (e.g., Rohypnol), the powerful sedative gamma hydroxy butyrate (GHB), the veterinary anesthesia known as ketamine (K), and many more.
- Although these cases often involve little memory on the part of the victim and uncertainty regarding whether or not a sexual assault took place, the forensic examination should nonetheless be conducted.
- If law enforcement has contact with the victim prior to coming to the hospital or clinic, she should be told to collect her first voided urine in a clean jar and bring it with her.²³

Whenever the victim’s story is consistent with a drug facilitated sexual assault, and if she is seen within 72 hours of the assault, a urine specimen should be collected for a complete drug analysis. It is important to do a complete drug screen with sexual assault victims, unless there is specific evidence that a particular drug was used.

Non-biological evidence (identification, corroboration)

Of course, any non-biological trace evidence should be collected which links the victim to the suspect and/or crime scene. This could include such items as lubricants, contraceptives, debris, fibers, soil, sand, paint, or other foreign bodies. This evidence can be used both to assist in the identification of the suspect and to corroborate the victim's account of the assault.

Non-Genital Injury Evidence (force, corroboration)

Physical injuries are the best proof of force and should always be photographed, described on drawings, and documented in writing on the report.²⁴ Evidence of injury can also corroborate the victim's account of events. It is imperative to note, however, that the absence of injuries does not mean that force or coercion was not used. Given that the majority of sexual assault victims do not sustain injuries, an absence of injuries does not prove consent.²⁵

Rates of non-genital injury

The literature indicates that injuries resulting from sexual assault are relatively rare.

²³ Anglin, Spears, & Hutson, 1997; Ledray, 1992b

²⁴ Ledray, 1992b

²⁵ Tucker, Ledray, & Werner, 1990

- In a review of 372 cases of sexual assault examinations conducted by the hospital emergency department, 68% of the victims seen had no injury, 26% had mild injuries, 5% had moderate injuries, and only 0.2% were severely injured.²⁶
- Other studies indicate that only 3-5% of all sexual assault victims have major non-genital injuries or injuries requiring treatment and that only 1% typically require hospitalization.²⁷

Consistent with our previous discussion in the dynamics module, non-genital injuries are not typical among sexual assault victims. Although evidence of non-genital injury is thus powerful in demonstrating force, the absence of injury should not be interpreted as consent.

Photographic evidence

Whenever photographs are taken of non-genital injuries, the first picture should always be of the victim's face, and others should follow in a systematic order, such as head to toe, or front to back.

- Photographs should be taken first without a scale to show that nothing is being concealed, and then with a scale to document size.
- While a coin such as a quarter is sufficient for documenting size, a gray photographic scale will also assist with color determination. Many forensic examiners utilize the L-shaped scale recommended by the American Board of Forensic Odontology.
- The forensic examiner should print his/her name and title, along with the date, the time, and the victim's name and/or record number on the back of every picture.

Although some agencies routinely photograph the victim's name on a label with 35 mm film or print it on the front with Polaroid pictures, there is some concern that practice this violates the victim's privacy and/or confidentiality. It is therefore recommended that the photographs be labeled on the back and/or use a medical record number rather than the victim name.

Photographic documentation of injuries should be completed using a 35 mm (or digital) camera with a standard 50 mm lens, or a 35-110 zoom lens, and 100-200 speed (ASA) color film.

²⁶ Tintinalli & Hoelzer, 1985

²⁷ Cartwright, Moore, Anderson, & Brown, 1986; Marchbanks, Lui, & Mercy, 1990; Tucker, Ledray, & Werner, 1990

- A disadvantage of 35 mm (or digital) pictures is that they must be sent out for developing and are often not available to the police when they investigate or to prosecutors when they are deciding if they will charge the case.
- Polaroid film has the advantage of being available to the police during their initial investigation. It has the disadvantage, however, of poorer quality; especially for close-ups. Polaroid film is also very expensive.²⁸ For all of these reasons it is generally not recommended for use in sexual assault investigations. Some have suggested, however, that the newer and more expensive Polaroid cameras designed for close-up photography overcome many of these disadvantages.

It is sometimes recommended that Polaroid pictures be taken in addition to the 35mm (or digital) photographs when non-genital injuries are present. This approach combines the advantages of each type of film. It also means that the photographs can be available to the prosecutor and judge when a suspect is in custody and decisions are being made to file a charge, enhance bail, issue a warrant, etc.

Some agencies have implemented a policy that photographs taken during a forensic examination will not be released to law enforcement. This practice has two primary advantages. First, it provides greater protection to the victim's privacy and/or confidentiality. Second, it encourages (in fact it necessitates) consultation between law enforcement and medical personnel.

Pattern of non-genital injury

The forensic examiner must be knowledgeable about the pattern of injuries resulting from violence, in order to ask the appropriate questions and locate injuries on the basis of the history.²⁹

The most common injuries among sexual assault victims include:

- Upper leg and thigh bruising
- Neck bruising from choking
- Punch bruising to the upper arm
- Defensive posturing injuries to the outer side of the arms

²⁸ Sheridan, 1993

²⁹ Sheridan, 1993

In a study of 304 adult victims of sexual assault, for example, the head, neck, and facial regions were the most commonly recorded site of non-genital injury. Of the cases involving non-genital injury, 53% were recorded as occurring at one or more of these three sites.³⁰

Also common are:

- Whip or cord like injuries to the back
- Punch or bite injuries to the breasts and nipples
- Punch injuries to the abdomen
- Punch and kick injuries to the thighs
- Facial bruising, abrasions, and lacerations³¹

Patterned non-genital injury

“Patterned injury” is different from the similar term, “pattern of injury” discussed above. Both are important forensic terms, however, “Patterned injuries” are those where the object used to inflict the injury can be easily identified by the pattern left on the victim. Examples include a coat hanger, iron, extension cord, belt, or the imprint of a ring worn by the assailant.

- Bite marks are important patterned injuries that can be linked to a suspect’s dental pattern.
- Strangulation also constitutes a patterned injury. Since most assailants who strangle their victim use their dominant hand, the fingertip pattern can be used to identify the assailant’s handedness. A right-handed assailant will usually grab the victim’s anterior neck so as to leave a single thumb bruise at the right of the neck and several fingertip bruises to the left of the neck.³²

Of course, bruising is also common among sexual assault victims, but the literature cautions against trying to closely date the age of a bruise by its color. While we know that recent bruising is red or dark blue in color, and older bruising may be green-blue or yellow-blue, and older still bruising may be barely visible -- people vary greatly in their rates of healing. Medications, skin tone, age, and other factors affect bleeding and healing response as well.

- Sheridan (1993) suggests that deep blue-purple bruising is best documented as a “relatively recent bruise” or as “consistent with Mary Jane’s report of being punched by Jim Smith 24 hours prior.”

³⁰ Lindsay, 1998

³¹ Sheridan, 1993

³² Sheridan, 1993

- Follow-up examination is especially important for documenting such non-genital injuries, because bruises often don't develop until after the initial documentation. It is therefore important to have a sequence of photographs taken over a series of days.

Genital Trauma Evidence (sexual contact, force)

Genital trauma is useful to show both recent sexual contact and force. Studies have consistently shown that although genital trauma can occur as a result of consenting sexual intercourse, it is much more likely to be seen after sexual assault.

- For example, research has found genital trauma in 45-89% of sexual assault victims, in comparison with 7-11% of adult women examined after consenting intercourse.³³
- These findings have led researchers to conclude that the incidence of genital microtrauma is "strongly suggestive" of non-consenting sexual intercourse.³⁴

However, even in cases of sexual assault there is often no evidence of genital trauma. Thus, the absence of genital trauma should not be interpreted as evidence of consent. In other words, the forensic examiner will often not find genital injuries, and the reasons for this must be explained to the jury.³⁵

Pattern of genital injury

The pattern of genital injury in female sexual assault victims has been a more recent area of study. For example, of the 311 sexual assault victims studied by Slaughter and colleagues, 213 (68%) exhibited anogenital trauma of some kind. Of these 213 victims with some form of genital trauma, the percentage with injury at each specific site was as follows:

posterior fourchette (70%)	vagina (11%)
labia minora (53%)	perineum (11%)
hymen (29%)	periurethral area (9%)
fossa navicularis (25%)	labia majora (7%)
anus (15%)	rectum (4%)
cervix (13%)	

For a definition of these and other medical terms, please see Appendix 1.

Since the posterior fourchette is the point of greatest stress when forceful stretching occurs and the point of first contact of the penis with the vagina, it is not surprising that this is the most

³³ Lauber & Souma, 1982; McCauley, Guzinski, Welch, Gorman, & Osmer; Slaughter et al., 1997

³⁴ McCauley et al., 1987, p.107

³⁵ Cartwright et al., 1986; Boyer & Dalton, 1997

common site of injury (often described as “acute mounting injury”).³⁶ Injuries most often seen can be described as TEARS -- Tears, Ecchymosis (bruising), Abrasions, Redness, and Swelling.³⁷

Association between non-genital and genital trauma

Studies also demonstrate that there is a strong association between non-genital injuries and injuries to the genitals, anus, or rectum.

- For example, Slaughter and colleagues found that 57% of the victims with non-genital trauma in their study also had some form of genital injury.³⁸
- In another study of 304 adult sexual assault victims, 79% of those with non-genital injury also showed evidence of genital trauma.³⁹

Despite the fact that sexual assault victims do not always exhibit genital or non-genital injury, positive findings certainly increase the likelihood of prosecution. For example, in a 3-year prospective study of evidentiary findings and disposition outcomes, suspects were more than twice as likely to be prosecuted if the victim’s examination revealed evidence of genital or non-genital injury.⁴⁰

Characteristics associated with genital injury

There are a number of characteristics that have found to be associated with genital injury.

- For example, in the study conducted by Slaughter and her colleagues, the *timing of the exam* was found to be crucial. Of 213 victims with anogenital injury, 73% were examined within 24 hours of the assault, 8% were examined between 24 and 48 hours following the assault, and 19% were seen at or beyond 72 hours.⁴¹ Clearly, the likelihood of identifying genital injury was significantly reduced if the examination occurred more than 24 hours after the assault.

³⁶ Lauber & Souma, 1982; Slaughter et al., 1997

³⁷ Redness and swelling are not necessarily indicative of trauma unless accompanied by tears, ecchymosis, or abrasions.

³⁸ Slaughter et al., 1997

³⁹ Lindsay, 1998

⁴⁰ Lindsay, 1998

⁴¹ Slaughter et al., 1997

- With respect to *victim age*, these researchers found that with the exception of tears of the hymen (which were nearly four times more common among adolescent victims), genital injury was not seen at different rates with older versus younger victims.⁴²
- Another study found that *prior sexual experience* was associated with differential rates of genital injury. Specifically, when 132 women were examined within 10 days of their sexual assault, 65% of those without sexual experience exhibited genital injury whereas only 25% of those with prior sexual experience showed similar trauma.⁴³
- Rates of injury appear to be somewhat higher among *male victims* in comparison with female victims. For example, studies have found that 50-67% of male victims exhibit anal trauma.⁴⁴

Colposcopic evidence

The literature also suggests that colposcopic examination to magnify genital tissue is an important asset to the identification of genital trauma.⁴⁵ Photographic equipment, both still and video, can also be easily attached to a colposcope for forensic documentation.⁴⁶

- To demonstrate the importance of the colposcope, positive genital findings are typically reported in only 10-30% of cases using gross visualization.⁴⁷
- With colposcopic examination, however, the general range for identified trauma is 60-80%.⁴⁸ One study even identified genital trauma in 87% of sexual assault cases using colposcopic examination.⁴⁹

When a colposcope is used, the magnification must always be well documented, the pictures or video must be well focused and clear, standard positions for examination should be used and documented, and a method of measurement should be used.⁵⁰ In addition, it is critical to explore with the forensic examiner any alternative explanations for positive findings.

⁴² Lindsay, 1998; Slaughter et al., 1997

⁴³ Briggs, 1998

⁴⁴ Hillman et al., 1990; Hillman et al., 1991; Kaufman et al., 1980

⁴⁵ Frank, 1996; Peele & Matranga, 1997; Slaughter & Brown, 1992; Slaughter et al., 1997

⁴⁶ As with photographs of non-genital injuries, it is recommended that colposcopic photographs remain with the medical facility and not be released to law enforcement.

⁴⁷ Boyer & Dalton, 1997; Cartwright et al., 1986; Norvell, Benrubi & Thompson, 1984; Satin, Hansell, Stone, Theriot & Wendel, 1991; Solola et al., 1983; Tintinalli & Hoelzer, 1985

⁴⁸ O'Brien, personal communication

⁴⁹ Slaughter & Brown, 1992

⁵⁰ Soderstrom, 1994

- For example, genital microtrauma can be caused by events other than nonconsensual intercourse, such as tampon use, vigorous consensual sex, etc.
- It is critical for police to understand that the colposcope cannot differentiate trauma caused by consensual intercourse, nonconsensual intercourse, or any other event.

Findings must therefore be interpreted in the context of a comprehensive victim interview and consultation with the forensic examiner.

Toluidine blue

Toluidine blue is a nuclear stain commonly used in sexual assault examinations to detect genital microtrauma.⁵¹ Some research suggests that toluidine blue can significantly enhance the detection of genital injuries compared with gross visualization alone.

- For example, one study found that the use of toluidine blue increased the detection of perineal lacerations among adult women from 24% with gross visualization to 40%.⁵²
- In a second study, the dye increased the incidence of positive findings from 4% to 58%.⁵³

Since toluidine blue is spermicidal in nature, the literature consistently suggests that it should only be used after all specimens are collected. There is no evidence, however, that it interferes with ACP levels.⁵⁴

Genital injury and human sexual response

When documenting genital injuries, the forensic examiner will generally use a clock to describe their location (e.g., 3 o'clock, 7 o'clock). Injuries commonly found in forcible sexual assaults are caused by an absence of human sexual response by both parties, resulting in the following factors:

- Lack of pelvic tilt to prepare for penetration
- Lack of partner assistance with the insertion of a penis or foreign object
- Lack of lubrication
- Lack of relaxation
- Increased force of penetration

⁵¹ There is some discussion of other dyes used for the same purpose, including Gentian Violet and Lugol's solution; however, Toluidine Blue is currently the most commonly used of these in the detection of perineal lacerations.

⁵² Lauber & Souma, 1982

⁵³ McCauley et al., 1987

⁵⁴ Bays & Lewman, 1992; McCauley et al., 1987

- Male sexual dysfunction
- Lack of communication

The forensic sexual assault examination has traditionally focused on the collection of evidence used to identify an assailant. However, given that the majority of suspects raise a defense of consent it is imperative that forensic examiners and law enforcement carefully document these genital and non-genital injuries to corroborate the use of force.

Follow-up examination

In those cases where genital trauma is identified, a follow-up examination of the victim may strengthen the documentation of evidence.

- The American College of Emergency Physicians recommends that sexual assault victims be referred for follow-up examinations 2 weeks, 3 months, and 6 months after the assault to evaluate for pregnancy and sexually transmitted diseases.⁵⁵
- Many prosecutors also like to have evidence from the follow-up examination to document that a particular finding was in fact an injury that healed within the expected time frame. Photographs should be taken at the time of the follow-up exam to document the healing of the genital injuries for comparison purposes in court.
- There are also situations where the forensic examiner is unsure whether the suspected “injury” is due to the victim’s medical history or other gynecological condition. In these cases, a follow-up examination can be used to evaluate whether the finding is the same or healed as an injury naturally would.

Unfortunately, most forensic examiners do not routinely perform follow-up examinations, and they may not be reimbursable in every state. This is something that investigators can therefore discuss with the forensic examiner and victim in a particular case.

In some cases, a forensic examination might be postponed for a few days following the assault if the victim is injured to the extent that a genital examination is intolerable. The examiner and investigator will need to discuss scheduling a postponed examination with consideration of both medical and forensic issues.

⁵⁵ American College of Emergency Physicians, 1999

Medical Components of the Sexual Assault Examination

*STD evaluation and preventive care*⁵⁶

The sexual assault exam always involves other components in addition to the collection of forensic evidence. These typically include STD evaluation and preventive care. Actually, the risk for contracting an STD during sexual assault is relatively low.

- The Centers for Disease Control and Prevention estimate that the risk of sexual assault victims getting gonorrhea is 4.2%, chlamydia is 1.5%, trichomonas is 12.3%, and bacterial vaginosis is 19.5%.⁵⁷
- Contracting an STD from the assailant is of significant concern to victims, however, and so it should be addressed as part of the initial examination.
- For example, one study found that 36% of sexual assault victims presenting to the emergency department stated that their primary reason for coming was concern about having contracted an STD.⁵⁸

For this reason, most clinicians recommend preventive treatment following CDC guidelines, just in case. Thus, although preventive treatment is generally recommended as a routine part of the sexual assault examination, the issue of assessment is controversial.

- Some agencies argue that a baseline evaluation should be conducted, so that any future STD can be attributed to the assault rather than any previous sexual encounter.
- However, given that preventive treatment is routinely provided, it is actually rare for victims to contract an STD as a result of the sexual assault. Routine preventive treatment is also more cost-effective than conducting baseline evaluations.
- Some agencies do perform baseline evaluation for STD's to give a more thorough medical assessment of the victim. Especially in cases where the sexual assault report is delayed, it is sometimes advisable to test the victim for definitive diagnosis.

⁵⁶ The preferred term among forensic examiners is now STI for Sexually Transmitted Infections. However, for ease of communication with law enforcement audiences we have retained the term STD (Sexually Transmitted Disease).

⁵⁷ Jenny, Hooton, Bowers, et al. (1990)

⁵⁸ Ledray, 1991

At present, there is no research to evaluate how useful the information provided in a baseline evaluation might be in court, although there is anecdotal evidence that the presence of a pre-existing STD can be used against victims by suggesting that they are sexually promiscuous.⁵⁹

For more information, call the National STD Hotline at 1-800-227-8922.

HIV testing

Since the early 1980's, HIV infection has been a grave concern for sexual assault victims even though the actual risk still appears to be very low.

- The more general risk of HIV transmission is thought to be the same as a single consensual sexual encounter: 0.1-0.2% for vaginal intercourse and 1-2% for anal penetration.⁶⁰

On this basis, routine HIV testing is not generally recommended with sexual assault victims. However, victims should be provided information by the forensic examiner about their risk, testing, and safe sex options. This will allow them to make decisions based on facts rather than fear, and it can help reduce the psychological trauma associated with the fear of HIV infection.⁶¹

- In cases where the assailant is known to be HIV-positive, it is possible to consider antiretroviral treatment. Initial post-exposure treatment must be started within 72 hours, however, or it is not recommended.⁶²
- As a result of various state and federal laws, involuntary HIV testing of the offender is now required. In most states, testing cannot be done until after the assailant is charged or convicted of sexual assault and a court order is obtained.

For more information, contact the National AIDS Information Hotline at 1-800-342-AIDS. For Spanish speakers call 1-800-344-SIDA, and for hearing impaired persons call TTY/TDD Hotline 1-800-AIDS-TTY.

⁵⁹ Ledray, 1992a

⁶⁰ American College of Emergency Physicians, 1999

⁶¹ Centers for Disease Control and Prevention, 1998; Ledray, 1993

⁶² Centers for Disease Control and Prevention, 1998

Pregnancy risk evaluation and prevention

Sexual assault victims of reproductive age also fear becoming pregnant as a result of the attack. This is another cause of concern and additional trauma for many victims. Most medical facilities and clinics providing forensic examinations will offer pregnancy prevention or interception for the woman at risk of becoming pregnant, if she is seen within 72 hours of the rape and has a negative pregnancy test in the hospital emergency department.

- Sometimes referred to as the “morning after pill,” oral contraceptives such as Ovral are used for emergency contraception. This will reduce the risk of pregnancy by 60-90%.⁶³
- Catholic facilities may not routinely provide emergency contraception to sexual assault victims, and the rape crisis advocate will usually assist the victim in making alternative arrangements. Many rape crisis centers also have networking agreements with medical personnel who will provide emergency contraception for victims examined at a Catholic hospital or clinic. In addition, a few Catholic facilities have obtained special permission to provide the morning after pill,⁶⁴ and others may assist with alternative arrangements.

In general, the risk of pregnancy from a sexual assault is the same as the risk of pregnancy from a one-time sexual encounter. This is estimated to be a 2-5% risk.⁶⁵ With emergency care provided after the sexual assault, however, it is possible that more of these pregnancies (or later abortions) can be prevented.

Crisis intervention and referrals

Another basic component of the evidentiary exam is crisis intervention and referrals for follow-up counseling. Some SANE programs even provide their own crisis intervention and follow-up counseling.⁶⁶ Referrals are also provided by forensic examiners, rape crisis advocates, and hospital or social service personnel.⁶⁷

Concluding the examination

While many sexual assault victims want to “go home and forget” about the experience, the information in the victim impact module suggests that this is unlikely. The information and referrals provided during the forensic examination are therefore crucial to assist the victim in her recovery from sexual assault.

⁶³ American College of Gynecologists, 1996

⁶⁴ Frank, 1996; O'Brien, 1997

⁶⁵ Holmes, Resnick, Kilpatrick, & Best, 1996; Yuzpe, Smith, & Rademaker, 1982

⁶⁶ Ledray, 1992b; Speck & Aiken, 1995

⁶⁷ Antognoli-Toland, 1985

- Some hospitals and clinics will provide the victim with a place to shower, brush her teeth, and change clothes after the exam. This is recommended where possible, as it gives the victim a chance to regain her composure and physical appearance before leaving the facility.
- Either the medical facility or rape crisis advocate should provide the victim with a change of clothes if needed.⁶⁸ The Assistance League, a national charitable organization, also provides clothing for sexual assault victims throughout the country. If a chapter exists in an area that does not currently provide this service, it may be willing to do so after being made aware of the need. Alternatively, the rape crisis center may address this need.

Finally, the victim will be provided with written discharge information to take home with her.⁶⁹ Follow-up phone calls are also typically made within 24 to 72 hours – either by medical personnel or the rape crisis advocate -- to check on the victim's emotional and physical status, medical concerns, and compliance with medications provided. Medical personnel or rape crisis advocates can also assist with additional referrals if needed.⁷⁰

Suspect Examinations

Many law enforcement agencies recognize the value of the victim's forensic examination yet local protocol does not always dictate that a medical-legal examination be conducted with the suspect. Suspect examinations should be obtained as soon as possible if the suspect is arrested shortly after the assault or if the officer believes that he has not bathed since the assault.

Types of evidence collected

The procedures involved in the suspect examination are basically the same as those for the victim. The suspect examination will include taking a medical history, conducting a general and genital examination, and collecting any physical evidence such as clothing, foreign debris, and swabs.

- In addition to considering evidence transferred to the victim by the suspect, officers must also consider any evidence transferred from the victim to the suspect.
- For example, vaginal fluids, saliva, and epithelial cells from the victim are often recovered from the body of the suspect. In cases of digital penetration, cells from the victim have been found under the suspect's fingernails even after he has washed his hands and/or bathed.

⁶⁸ Frank, 1996; Holloway & Swan, 1993; Sandrick, 1996; Thomas & Zachritz, 1993

⁶⁹ Osborn & Neff, 1989; Speck & Aiken, 1995

⁷⁰ Ledray, 1996; Osborn & Neff, 1989; Tintinalli & Hoelzer, 1985

- A forensic examination can be used to identify and document any injuries to the suspect that might have been caused by the victim.
- The victim might also describe some type of abnormality (e.g., genital warts, or tattoos) that the examiner can photograph.

If the suspect is not arrested for several days following the assault, a full forensic examination is not recommended, but an abbreviated exam should still be obtained to collect a DNA reference sample. Depending on state and local protocol, this might include blood and/or saliva samples, and it may require law enforcement to obtain a warrant or court order (see sample warrant included in Appendix 2).

Policies and procedures

Throughout the process of conducting a forensic examination with the suspect, it is crucial that law enforcement personnel are present at all times. In addition, if the suspect and victim are being examined at the same time, contact between the two (and their evidence) must be prevented at all costs.

- In some cases this may mean that the victim and suspect are transported to different medical facilities.
- In others, it may simply require logistic arrangements to preclude the possibility of contact (e.g., the suspect can be brought in after the victim and be examined in a different room and/or by a different examiner).

In addition to the examination conducted by a forensic specialist, officers should also be encouraged to carry mouth (buccal) swab kits in the field. Suspects often consent to providing mouth swabs because they do not have to be transported and it is much less intrusive than drawing blood. Law enforcement agencies also prefer mouth swabs because medical personnel are not needed, making the procedure less costly and time consuming. The procedures for collecting mouth (buccal) swab kits are described in the module on DNA.

Evidentiary Considerations

Clarify any discrepancies in documentation

After the forensic examination is complete, there are a number of evidentiary issues to consider with the goal of successful prosecution. First and foremost, police and medical professionals involved in the case should confer after the examination to compare notes and clarify any factual

discrepancies. This is perhaps best done immediately following the examination, but if this is impossible the conference should take place as soon as possible.

- As previously discussed, this comparison might reveal sexual acts that were only reported to one of the two professionals. These discrepancies should therefore be explored with the victim, to ensure that documentation is clear and consistent.

Update crime scene personnel

Officers should also question the forensic examiner about any foreign fibers or debris that might have been found during the sexual assault examination. These findings should be relayed back to the police or lab personnel who are processing the crime scene to ensure proper identification and collection.

- It is also common for victims to disclose information about condoms during the medical interview, or items that the victim or suspect used to clean genitalia after the assault. Again, this information needs to be provided to police or lab personnel who are processing the crime scene.

Maintain chain of custody

Maintaining proper chain of custody (or chain of evidence) is as important as collecting the proper evidence. Completed documentation is also essential and must include the signature of everyone who had possession of the evidence from the person who collected it to the individual bringing the evidence into the courtroom.

- If this proper chain of custody is not maintained, the evidence may be inadmissible.⁷¹
- In addition, maintaining chain of custody is critical to prevent any possibility of evidence tampering and to deter defense counsel from raising the issue of reasonable doubt on the basis of evidence integrity.
- Both signatures on the chain of evidence document are necessary for any transfer – one from the person releasing the evidence and a second from the person receiving it.

If the police are unavailable to pick up the evidence, the forensic examiner should place it in a locked refrigerator, preferably with signed access. When the police do return, the forensic

⁷¹ Ledray, 1993

examiner can then sign for the evidence that has been removed from the refrigerator and handed to law enforcement personnel.⁷²

Alternatively, some facilities release all evidence in their custody at some specified interval (e.g., twice a week) to an employee of the police property room. This eliminates one person from the chain of custody and releases officers and victims from having to wait for swabs to dry and evidence to be packaged, transported, and impounded

Maintain evidence integrity

While it is suggested that the specimens collected from a forensic examination be refrigerated for long-term storage to prevent deterioration, it is essential that the evidence be kept in an area of less than 75 degrees Fahrenheit. Of course, clothing and other non-biological evidence can be stored in an unrefrigerated area.

General rules for forensic evidence storage are these:

- If the sample was once living (such as blood and body fluids), it should be refrigerated or frozen, depending on local protocol.
- If the evidence needs drying, this should be done with air and NOT with heat (heat degrades).
- Plastic should not be used, only paper and glass. Plastic does not breathe and causes mold.
- Items must be stored separately to avoid transfer of trace evidence.
- Envelopes should not be licked to moisten, but taped and initialed.
- Items that might contain fingerprints should not be touched without gloves, and packaged to preserve them.⁷³

It is of course important to avoid contamination of any kind, but it is absolutely paramount that there be no possibility for contact between evidence collected from the victim and that collected from the suspect. For example, the suspect examination should NOT be conducted in the same location as the victim examination.

Although blood evidence has traditionally been stored in vials, some departments are storing blood evidence dried on rice paper swatches. There are three significant advantages to this storage method. These dried paper swatches require less space for storage, and they do not require refrigeration. In addition, dried swatches present less of a biohazard risk than traditional vials.

⁷² Ledray, 1993

⁷³ Guidelines are adapted from the American College of Emergency Physicians (1999)

Assessment of Forensic Evidence

In their report, forensic examiners will offer an assessment of the physical findings. This will generally refer to whether the examination was normal (i.e., no physical findings) or whether physical findings were documented as related to the assault. At the time of the forensic examination, conclusions should primarily focus on visible findings. Other conclusions are left until after crime lab personnel have analyzed the evidence collected in the forensic examination. Positive physical findings at the initial forensic exam could thus include:

- Any injury sustained during the assault
- Subjective tenderness described by the victim
- Stains or substances detected with a Wood's lamp
- Trace evidence collected
- Detection of sperm or ACP indicating seminal fluid

If the exam findings match the history given by the victim, it is also important for the forensic examiner to note this. This can be done in the report by stating that "there is congruence between the victim's story and her injuries" or "the injuries are consistent with the victim's account of the assault."⁷⁴

What can and cannot be concluded

When considering the assessment of medical personnel, it is critical that law enforcement understand what can and cannot be concluded on the basis of the forensic examination.

- For example, it is inappropriate for the forensic examiner to make a conclusion regarding the validity of the claim. In other words, medical personnel cannot make a conclusive "diagnosis" of sexual assault.
- It is also problematic for a forensic examiner to make a definitive conclusion about the degree of force used by the assailant, whether the victim consented to any sexual activity, and whether there was traumatic vs. non-consensual penetration.

What the forensic examiner can appropriately conclude is whether there is evidence of sexual contact and/or recent trauma. The forensic examiner can also make a conclusion regarding consistency between the physical findings and the victim's account of what happened.

- Consistency between the victim's account of events and the physical findings are not confirmation or proof that the assault occurred as described by the victim.

⁷⁴ Sheridan, 1993

- Rather, consistency means that the findings or lack of findings could have resulted from the events described.

Preparing for court

Because of their training and experience, a forensic examiner will likely be qualified to testify as an expert, rather than just a factual witness in a sexual assault case.⁷⁵ Both police investigators and forensic examiners should be familiar with the research cited in this manual and elsewhere, to counter the likely defense claim that the observed findings could have resulted from consensual sexual intercourse.

Usually the courts do not allow hearsay evidence, but there are two exceptions to this rule. An individual can provide hearsay evidence if the statement was made as an “excited utterance” (i.e., immediately following a trauma) or if it was made as part of a medical examination. (The courts recognize that people are likely to be truthful when their health is at stake.) Since forensic examiners conduct a medical-legal examination, they are able to testify in court about the things the victim says during the procedure. Many times important statements about the use of force or coercion are admissible into court in this manner (e.g., “I thought he was going to kill me”).

Although there is a body of research that compares the physical findings of sexual assault victims with women who have recently engaged in consensual sexual intercourse, there will always be aspects of a particular case that can be raised by the defense as possible explanations for the physical findings.

- It is therefore important for law enforcement, forensic examiners, and prosecutors to understand that the findings in a forensic examination can only be interpreted in relation to the victim’s history of the assault.

The majority of jurors will have some sort of sexual experience and will realize that their consensual activities did not result in the type of injuries documented in the forensic examination.

⁷⁵ Ledray & Barry, 1998

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Appendix 1: Medical and Anatomic Terms

Abrasion: An area of the body surface denuded of skin and mucous membrane by some unusual or abnormal mechanical process.

Adenexae: Pelvic appendages adjacent to the uterus, usually including the fallopian tubes and ovaries.

Anal Verge: The tissue overlying the subcutaneous external anal sphincter at the most distal portion of the anal canal (anoderm) and extends exteriorly to the margin of the anal skin.

Anterior Commissure: The union of the two labia minora anteriorly (toward the clitoris).

Anus: The anal orifice, which is the lower opening of the digestive track, lying in the fold between the buttocks.

Bartholin's Glands: Equivalent to Cowper's glands in male. Open at 5 & 7 o'clock outside the hymen in the vestibule. Lies in base of bulb.

Bulb of the Vestibule or Bulbi Vestibuli: Oval masses of erectile tissue in bulbocavernosus muscle in the floor of the vestibule. Equivalent to bulbus penis in the male

Cervical Ectropion: Eversion of the cervical canal exposing its lining.

Cervical Os: The opening in the cervix which leads to the endometrial cavity of the uterus.

Cervical Portio: The vaginal portion of cervix that projects into the cavity of the vagina.

Cervicitis: Inflammation of the cervix.

Cervix: The portion of the uterus between the isthmus and the vagina.

Clitoral Hood: The skin covering the clitoris. Homologous with the prepuce (foreskin) in the male.

Clitoris: A small cylindrical erectile body situated at the anterior (superior) portion of the vulva (covered by sheath of skin called the clitoral hood), which is homologous with the penis in the male.

Contusion/Bruise: A superficial injury produced from impact without laceration.

Corona of Glans Penis: The rounded proximal border of the glans penis, separated from the corpora cavernosa penis by the neck of the glans.

Ecchymosis: An extravasation of blood under the skin—these can be dated.

Epididymis: Tube which passes from the testes to vas deferens; the ducts within this tube store sperm.

Epididymitis: Inflammation of the epididymis.

Erythema: A flush upon the skin—A redness of the skin produced by congestion of capillaries which may result from a variety of causes.

Fossa Navicularis: Concavity of the lower part of the vestibule situated (inferior) to the vaginal orifice and extending to the posterior fourchette (posterior commissure).

Frenulum: A small fold of mucus membrane that attaches the prepuce to the ventral surface of the penis.

Glans Penis: The cap-shaped expansion of the corpus spongiosum at the end (head) of the penis, also called balanus. It is covered by a mucus membrane and sheathed by the prepuce (foreskin) in the uncircumcised male.

Hymen Orifice: The opening to the vagina through the hymenal membrane.

Hymen: A membrane which partially, or rarely completely covers the external vaginal orifice. It is located at the junction to the vestibular floor and the vaginal canal.

Induration: An abnormally hard spot or place.

Labia Majora: Rounded folds of skin forming the lateral boundaries of the vulva.

Labia Minora: Longitudinal, thin folds of tissue within the labia majora. In the prepubertal child, these folds extend from the clitoral hood to approximately the midpoint on the lateral wall of the vestibule. In the adult, they enclose the vestibule and contain the opening to the vagina.

Laceration: The act of tearing—A wound made by tearing.

Median (perineal) Raphe: A ridge or furrow that marks the line of union of the two halves of the perineum.

Mons Pubis: The rounded fleshy prominence created by the underlying fat pad, which lies over the symphysis pubis (pubic bone) in the female.

Myrtiformes Carunculae: Hymenal remnants usually rounded mounds; maybe seen after child birth.

Orchitis: Inflammation of the testes.

Pectinate Line (dentate line): The saw toothed line of demarcation between the distal (lower) portion of the anal valves and the pecten, a smooth zone of simple stratified epithelium which extends to the anal verge.

Pelvic Inflammatory: Infection of the fallopian tubes or ovaries disease commonly called PID.

Penis: Male sex organ composed of erectile tissue through which the urethra passes. Homologous with the clitoris in the female.

Perianal Skin Folds: Wrinkles or folds of perianal skin radiating from the anus, which are created by the contraction of the external anal sphincter.

Periurethral: Pertaining to tissue surrounding the urethra meatus.

Posterior Commissure: The union of the two labia minora posteriorly (toward the anus).

Posterior Fornix: A cavity within the vagina and located posteriorly (inferior) to the cervix.

Posterior Fourchette: The junction of the two labia minora posteriorly (inferiorly). This area is referred to as a posterior commissure in the prepubertal child. In children, the labia minora are not completely developed and do not connect inferiorly until puberty. In the postpubertal female, it is referred to as the posterior fourchette.

Prepuce:(foreskin): A covering fold of skin over the glans of the penis.

Proctitis: Inflammation of the rectum.

Prostate: Gland in the male which surrounds the neck of the bladder and urethra and contributes to the seminal fluid.

Prostatitis: Inflammation of the prostate.

Rectum: The distal portion of the large intestine beginning anterior to the third sacral vertebra as a continuation of the sigmoid and ending at the anal canal.

Scrotum: The pouch which contains the testicles and their accessory organs.

Testes: Male sex organs (gonads) which produce spermatozoa and testosterone.

Urethra Meatus: The external opening of the canal leading from the bladder.

Urethra: The membranous canal which conveys urine from the bladder to the exterior of the body.

Urethritis: Infection of the urethra.

Uterus: Hollow muscular reproductive organ of the female composed of body, fundus (above the opening of the fallopian tubes), isthmus, and cervix.

Vagina: The uterovaginal (genital) canal in the female. This internal structure extends from the uterine cervix to the inner aspect of the hymen.

Vaginal Introitus: The muscular band of tissue which forms the entrance to the vagina. The muscular bulbospongiosus in the female.

Vaginal Introitus: The muscular band of tissue which forms the entrance to the vagina (bulbospongiosus muscle).

Vaginal Rugae: Folds of epithelium (rugae) running circumferentially from the vaginal columns.

Vaginal Vestibule: An anatomical cavity containing the opening of the vagina, the urethra, and the ducts of Bartholin's glands. Bordered by the clitoris anteriorly, the labia on the sides, and posterior commissure (fourchette) posteriorly (inferiorly). The vestibule encompasses the fossa navicularis immediately posterior (inferior) to the vaginal introitus.

Vaginitis: Inflammation of the labia.

Vas Defferens: The tube which connects the epididymis to the urethra.

Vulva: The external genitalia or pudendum of the female. It includes the mons pubis, clitoris, labia majora, labia minora, vaginal vestibule, urethral orifice, vaginal orifice, hymen, and the posterior fourchette (or commissure).

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Vulvitis: Inflammation of the labia.

Appendix 2: Sample Search Warrant for Biological Reference Samples from a Suspect

I, Joseph Cristinziani, do on oath make complaint, say and depose the following on this - day of -, 1999: that I have substantial probable cause to believe and I do believe that I have cause to search: the person known as Paul Vasquez, an Hispanic male adult having a date of birth of 01-06-70, being about 5'8" in height and 145 lbs. in weight, and is believed to be currently residing and in custody of the State of Ohio under Ohio Department of Corrections number E02494, located at the Ohio State Prison; at 2737 West Cecil Avenue, Midtown, Ohio; for the following property, to wit: to seize the person and take hair, blood and saliva samples sufficient for comparison purposes using the least amount of force necessary to take said samples.

I am a peace officer employed by the Midtown Police Department (hereafter MPD) and have been so employed for about 20 years. I am currently assigned to the Homicide Division and have been so assigned for about 4 years. Prior to this assignment, I was assigned to the Sex Crimes Unit. I was so assigned for approximately 14 months. During my career, I have investigated at least 100 Homicide cases as well as approximately 100 sexual assault cases.

During the course of my duties, I have learned the following information based upon my discussions with the named witnesses or by having read the reports of or talked with other MPD officers who have spoken directly with the named witness. All references to dates refer to the current calendar year unless otherwise stated.

I have prepared the attached 17 page report in the course of my duties. I was assigned the case after the victim initially reported the crime to MPD patrol officers. I hereby request incorporation by reference herein of said report as if fully set forth and identified by MPD case number 95-091454 located in the upper left portion of the front page. This crime was a forcible rape, committed in violation of section 261(2) of the Ohio Penal Code. The victim in this case was identified as Ms. Jackie Lindsay.

During the course of the investigation, the victim, Jackie Lindsay, was examined by medical personnel following the rape and biological samples were taken from her vaginal vault. The evidence was analyzed by the Midtown Police Department and biological samples sufficient for DNA testing were identified. The Midtown Police Department used a Polymerase Chain Reaction (PCR) DNA test to identify the genetic markers of the assailant in Lindsay's assault. The evidence was then sent to Cellmark for RFLP testing with the intent to attempt to identify the suspect using the Combined DNA index system computer database (CODIS) maintained by the FBI. RFLP was obtained, however, there was no match in CODIS.

In June of 1999, Mr. Brian Burritt was hired by the Midtown Police Department Crime Laboratory as a Criminalist. His specific field of expertise is that of a DNA Analyst. Prior to his employment with the Midtown Police Department, Mr. Burritt was employed as a Criminalist with the Ohio Department of Justice, DNA Laboratory, Cincinnati, Ohio. Mr. Burritt has been qualified as an expert witness, in the area of DNA in the Superior Courts of 11 different counties within the State of Ohio. The Midtown Superior Court is included in that list.

Upon his employment with the Midtown Police Department's Crime Laboratory, part of Mr. Burritt's job description was to examine any and all unsolved cases containing DNA evidence and, to create a MPD data base for unsolved cases with PCR evidence.

On June 20, 1999, Mr. Burritt began an analysis of the PCR profile collected from Lindsay's case. Once the PCR profile from this case was entered into the database, the database compares the profile against at least 200 other PCR profiles collected from known sex and/or violent offenders from within Midtown County. The database compares against other PCR profiles searching for matches. The search revealed a PCR profile match to Paul Vasquez. Mr. Burritt examined Vasquez' PCR profile and found that in the Caucasian population the frequency

is 1 in 2600; in the Hispanic population the frequency is 1 in 5400 and in the Black population the frequency is 1 in 110,000.

Utilizing official police computers, I conducted a background investigation on Vasquez. I learned Vasquez was not in custody at the time Lindsay was forcibly raped. I learned Vasquez was living within the City of Midtown at the time the rape occurred. Vasquez' residence was located at 7106 Arillo Street, in the City and County of Midtown. Arillo Street is well within a three (3) miles radius of the location where Lindsay was raped. Through my background investigation, I learned Vasquez' physical description matched the suspect description given to me by Lindsay. Additionally, I learned Vasquez has prior convictions for sexually related type crimes.

A biological reference sample is now needed from Vasquez for RFLP testing which will provide additional genetic information to more conclusively include or exclude Vasquez as the person who sexually assaulted Jackie Lindsay. By obtaining saliva swabs from Vasquez, forensic laboratory personnel will be able to make further comparisons to the RFLP identified in Lindsay's case. I know that comparisons can be made between fluids found on or in the victim and that of the suspect. By removing blood and saliva, laboratory personnel will be able to make comparisons with those samples taken from the suspect to those taken from the victim using DNA and/or more conventional laboratory comparisons.

I have been advised that DNA is short for deoxyribonucleic acid. DNA molecules are contained within human cells and hold the genetic 'coding' that makes each of us individually distinctive (except identical twins). While forensic DNA technology cannot yet discriminate among human beings to the same extent as fingerprint evidence can, it is capable of identification within a very small percent of major populations depending on the type of analysis

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employed. Forensic DNA evidence has been routinely admitted in courts of Ohio since 1989.

Samples taken

from the suspect as described more fully above will be compared against that found on the victim. In removing the blood and other samples from the suspect, I will use medically accepted practices, utilize the services of a trained person in drawing the blood, and use the least amount of force necessary to collect the described evidence.

The suspect was booked into State Prison on an unrelated charge and was booked under the above described Ohio Department of Corrections number.

I request that this declaration, the affidavit, search warrant and supporting attachments be sealed pending further order of the court. I make the request for the following reason. Without sealing, the affidavit and supporting documentation and warrant become a matter of public record within ten days. Penal Code section 1534(a).

Also, Penal Code section 293 provides that a victim of a sex offense be advised that his or her name will become a matter of public record unless he or she requests that it not become a matter of public record. The victim in this matter has not yet determined whether or not she wishes her name to become a part of the public record. If the information in these documents is not sealed the victim's name can be revealed to anyone who wishes to examine the court files, and the victim will be denied her rights under Penal Code section 293. For this reason, I believe all information identifying the victim should remain sealed pending further order of the court.

Therefore, based on my training, experience, and the above facts, I believe that I have substantial cause to believe the above described property or a portion thereof will be on said person when the warrant is served. Based on the aforementioned information and investigation, I believe that grounds for the issuance of a search warrant exist as set forth in Penal Code section 1524. I, the affiant, hereby pray that a search warrant be issued for the seizure of said property,

or any part thereof, from said person at any time of the day, good cause being shown therefor, and that the same be brought before this magistrate or retained subject to the order of this Court.

This affidavit has been reviewed for legal sufficiency Deputy District Attorney
David J. Lattuca.

Given under my hand and dated this - day of -, 1999.

Joseph Cristinziani ID #2913
Midtown Police Department
Homicide Section
Subscribed and sworn to before me this - day of , 1999
at a.m./p.m.

Judge of the Superior Court
Central Division

The People of the State of Ohio, to any sheriff, constable, marshal, police officer, or any other peace officer in the County of Midtown: Proof, by affidavit, having been this day made before me by Joseph Cristinziani, a peace officer employed by the Midtown Police Department, that there is substantial probable cause for the issuance of the search warrant pursuant to Penal Code section 1524, you are therefore, commanded to make search at any time of the day, good cause being shown therefor, the: person known as Paul Vasquez, an Hispanic male adult having a date of birth of 01-06-70, being about 5'8" in height and 145 lbs. in weight, and is believed to be currently residing and in custody of the State of Ohio under Ohio Department of Corrections number E02494, located at the Ohio State Prison; at 2737 West Cecil Avenue, Midtown, Ohio; for the following property, to wit: to seize the person and take hair, blood and saliva samples sufficient for comparison purposes using the least amount of force

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necessary to take said samples, and, if you find the same, or any part thereof, to bring it forthwith before me at the Superior Court of the Central Division, County of Midtown, State of Ohio, or to any other court in which the offense in respect to which the property or things is triable, or retain such property in your custody, subject to the order of this Court, pursuant to section 1536 of the Penal Code.

Given under my hand and dated this - day of -, 1999.

Judge of the Superior Court

Central Division