



Forensic Evidence Collection for Nurses

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Purpose

The purpose of this course is to provide healthcare professionals with information about the science of forensics and forensic evidence collection as it pertains to sexual assault.

Learning Objectives

After successful completion of this course, you will be able to:

1. Define the term forensic and describe the importance of forensic evidence collection.
2. Identify the three main areas of forensic science.
3. Identify forensic principles.
4. Describe the fundamentals of forensic nursing.
5. Describe components of a sexual assault exam.
6. Identify when evidentiary exams should be performed.
7. Identify a key investigative tool used to identify perpetrators of sexual assault.
8. Describe methods for collecting evidence.
9. Identify the most common infections that women contract after a sexual assault.
10. Define PEP.
11. Identify which type of HIV post exposure medication is often prescribed.
12. Define the recommended methods to document sexual assault.

Introduction

When you think of the term forensics, what comes to mind?

Crime scene investigators sifting through remains? Pictures of death scenes?

Although the field of forensics does include some of these activities, the science of forensics includes much more.

It is not isolated to crime scene laboratories; the information that is obtained through the application of forensics plays a significant role in a variety of professions, including that of nursing.

What is Forensic Science?

- Forensics is the application of scientific knowledge to legal problems (Merriam-Webster, 2011).
- Forensics is a field of science that is dedicated to collecting evidence, examining evidence, and determining answers based on evidence.
- Forensics draws on a number of scientific principles and methods from different fields of practice such as biology, physics, and chemistry (Forensictrak, nd).
- Forensics is concerned with recognizing, identifying, and evaluating physical evidence (Forensictrak, nd).
- Since forensic scientists collect trace evidence and record findings at crime scenes, they are also required to have knowledge of judicial proceedings and often present their findings as expert witnesses in a court of law (Forensictrak, nd).

Overview of Forensic Science

There are three main areas of forensic science:

1. Biology: Crimes against people, usually involves collecting body fluids and blood and analysis of fibers and hair.
2. Drugs and Toxicology: Drinking and driving cases, deaths due to overdoses, poisons, drugs (criminal and noncriminal deaths).
3. Chemistry: Crimes against property that involve analysis of contact traces such as drugs, glass, or paint.

Physical Evidence Collection

Physical evidence is collected using forensic principles such as preventing contamination and preserving accuracy of the findings.

The evidence tells about the situation being investigated and links together the victim, the suspect, and the scene (Forensictrak, nd).

Forensics and Nursing

Processes utilized in forensic evidence collection parallel those used within the practice of nursing.

Nurses are taught to apply the process of assessment and information gathering in order to develop a plan of care based on the information (evidence) that has been collected.

Similar to other scientific bodies, the profession of nursing supports evidence-based solutions (Sigma Theta Tau, 2007).

As the knowledge base of the healthcare community and technological techniques continue to expand and advance, valuable relationships between the science of forensics and nursing practice are also developing.

The Field of Forensic Nursing

- New and evolving.
- First recognized as a specialty by the American Nurses Association in 1995.
- Forensic nursing as defined by the International Association of Forensic Nurses (IAFN) is:
 - *“The application of forensic science combined with biological and psychological education of the registered nurse – in the scientific investigation, evidence collection and preservation, analysis, prevention, and treatment of trauma and death-related medical issues”* (Jackson, 2011).
- Prior to receiving recognition as a formal nursing specialty, staff nurses often fulfilled a number of the same roles that are now classified as components of forensic nursing.
- In areas of the country where forensic nurses are not available, registered nurses continue to perform the tasks that would currently be performed by a forensic nurse specialist if one was available. If a healthcare facility or community does not have a forensic nurse specialist, nurses that work or float to the emergency department are frequently enlisted to assist with evidence collection.

Test Yourself

Forensic nurses apply the scientific aspects of healthcare in investigations (Advance for Nurses, 2007).

- A. True
- B. False

The correct answer is true.

Nursing Practice and Forensic Principles

- Nurses are a valuable resource when it comes to the science of forensics and the application of evidence collection in healthcare.
- Nurses already possess many of the skills required to support forensic principles that are necessary to establish legal cause and responsibility.
- Forensic nurse's role is governed by individual states nurse practice act (Jackson, 2011).
- Forensic nurses are held to a code of ethics by the IAFN.
 - Nurses have a responsibility to the environment and the public, obligation to science, care of the profession, dedication to colleagues, and fidelity to clients (Jackson, 2011).
- One area in which forensic principles are often required is in the emergency department.

Forensic Principles

- One of the most essential forensic principles is the preservation of forensic evidence.
- The accuracy and purity related to preserving forensic evidence is essential; especially in cases that involve victimization such as homicide and sexual assault.
- Without strict adherence to standards for the collection and preservation of evidence, valuable information can become lost due to a lack of knowledge and/or training.
- Since nurses are usually accustomed to collecting biological samples and understand the importance of correct handling procedures, they may be called upon to assist with the collection of evidentiary samples as well.
- Similar to the principles in place for the collection of biological specimens and the necessity of sterile technique, mishandling of evidence that has been lost or collected inappropriately does have the potential to severely impact legal proceedings and patient outcomes.

The Fundamentals of Forensic Nursing

As with any nursing specialty, forensic nursing requires learning and developing new fundamental skills. The fundamental skills associated with forensic nursing include:

- Interviewing skills
- Evidence collection
- Documentation
- Knowledge of criminal, procedural, and constitutional law
- Interdisciplinary collaboration

Forensic nurses may also be required to testify in court as an expert witness when applicable.

Test Yourself

Fill in the blank:

Forensic nurses also testify in court as an _____ when applicable.

The correct answer is “expert witness”.

Role of the Forensic Nurse: SANE Nurse

- One of the most common roles of a forensic nurse is that of a Sexual Assault Nurse Examiner (SANE).
- SANEs receive specialized training that expand the regular scope of a forensic nurse.
- SANEs provide care for victims of sexual assault and collect and document forensic evidence needed if a criminal case is pursued (American Forensic Nurses, 2010).
- According to American Forensic Nurses (2010) have made a significant difference in providing care and in the outcomes of investigations and prosecutions.

Other Roles of the Forensic Nurse

Other programs include SAFE (Sexual Assault Forensic Examiner), SART (Sexual Assault Response Team), and FNE (Forensic Nurse Examiner).

In some states specialty roles of the forensic nurse to include:

- Death investigators: depending on the state they can run for office of the coroner and work with the medical examiner (Jackson, 2011).
- Work in inpatient psychiatric or mental health facilities, collaborate with correctional facilities and prison systems to develop plans of care of domestic abuse, automobile accidents, and sexual assault (American Forensic Nurses, 2010).

Roles of the Forensic Nurse

There are many roles pertaining to forensic nursing. Within the specialty of forensic nursing there are many diverse opportunities that include:

- ✓ Correctional Nursing Specialist
- ✓ Forensic Clinical Nurse Specialist
- ✓ Forensic Nurse Investigator
- ✓ Legal Nurse Consultant
- ✓ Sexual Assault Nurse Examiner
- ✓ Forensic Gerontology Specialist
- ✓ Forensic Psychiatric Nurse
- ✓ Nurse Coroner/Death Investigator

(American Forensic Nurses, 2010)

Developing Skills for Forensic Nursing

In many areas of the country SANEs are not always available, and because nurses are competent (but not necessarily experienced) to assist with forensic collection, it is important for certain groups of nurses to develop an awareness of the processes and procedures required to collect forensic evidence.

Nurses can and should develop assessment skills that will help them in their work practice to identify and document forensic-related evidence and its effects on health.

Nurses with an understanding of forensics will also become more aware of interventions that can reduce vulnerability and increase safety, especially of women, children, and the elderly.

Sexual Assault Exam

Not all healthcare facilities have the services of a specially trained sexual assault nurse. Because of this, nurses that work in areas such as the emergency department (where they might have to provide care for the victim or perpetrator) will benefit from acquiring knowledge about the fundamentals, process, and procedure of forensic evidence collection.

Since the primary care setting should be the first line of defense against victimization and possible death, nurses' ability to provide care is extremely important (American Forensic Nurses, 2010).

Sexual Violence

According to the CDC (2009), sexual violence is:

- Any sexual act that is perpetrated against someone's will.
 - Sexual violence occurs when “the victim does not consent to the sexual activity or is unable to consent to the sexual activity” (CDC, 2009).
 - An attempted or completed sex act involving a person who is unable to understand the nature or condition of the act, decline participation, or to communicate unwillingness to engage in the sexual act due to age, illness, disability, influence of alcohol or other drugs, intimidation or pressure; and/or abusive sexual contact.

Physical Assault

Victims of sexual assault are frequently victims of physical assault as well. The physical injuries resulting from the assault must also be documented.

The CDC (2010) reports that physical violence includes:

- Pushing, shoving
- Throwing
- Grabbing
- Biting
- Choking
- Shaking
- Poking
- Scratching
- Hair pulling
- Slapping
- Punching
- Hitting
- Burning
- Use of restraints or one's body, size, or strength against another person

Physical violence can also involve the use of a weapon; gun, knife, or other object (CDC, 2010).

Components of the Sexual Assault Exam

If a SANE or other sexual assault nursing specialist is not available, any nurse may be asked to assist with an examination and the collection of evidence. The following list briefly describes components of a typical sexual assault examination that emergency department and other nurses may find useful:

- Obtain written consent for the procedure.
- Obtain an assault history including the orifices where violence was used or penetration occurred and by what.
- Photographs of injuries may be obtained.
- Types of violence used and where.
- Pertinent medical information including allergies, current pregnancy status, and menstrual cycle.
- Conduct a physical exam for trauma and areas of tenderness.
- Examine involved orifices for trauma and to collect sperm/seminal fluid.
- Collect any foreign matter present.
- Comb the pubic hair for foreign hair and matter.
- Obtain fingernail scrapings.
- Collect the patient's blood for type, DNA screen, or toxicology if needed.
- Collect saliva for secretor status (an individual's ability to secrete the ABO blood group substances in saliva and other body fluids).
- Collect any torn or stained clothing.
- Some facilities will pluck pubic and head hairs and obtain vaginal washings (depending on the state specifications) for evidence collection.
- Most states recommend that evidentiary exams be completed within 72 hours after a sexual assault; however, there may be cases in which injuries can still be documented or the victim has yet to change clothes and evidence might still be available (RAINN, 2009).

Timing of the Sexual Assault Exam

If possible, injuries should not be treated until after evidence is collected.

Methods for Collecting Evidence

Methods for collecting evidence may include performing a visual examination, visual search by illumination (ultraviolet light, laser) and magnification and collecting samples. When collecting samples the least intrusive technique should be utilized and may include:

- **Combing:** A clean comb or brush is used to recover evidence in body hair. The collection device is packaged with the collected evidence.
- **Clipping:** Trace evidence may be obtained by clipping the nails using clean clippers or scissors. The device is packaged with the clippings; clippings from right and left hands are usually packaged separately.
- **Scraping:** Evidence debris is scraped (such as that which might be found under the fingernails) with a small spatula type tool onto a clean collection surface such as paper and then immediately packaged with the scraping tool to avoid any loss of the sample.
- **Lifting:** Adhesive backed material such as tape is firmly patted or rolled over an item to lift up any trace evidence where it can be preserved until processed.
- **Picking:** Evidence may be separated from an item by using forceps or other pickups.
- **Vacuuming:** A special vacuum with a filter trap is used to collect evidence and used after other techniques since it is not as discriminate and can result in a large collection of other material as well.

(RAINN, 2009)

Small or loose evidence must be placed in clean unused containers or paper packets and secured in envelopes or a paper bag.

Large items such as clothing should be sealed in individual clean unused packaging. If items are wet they should be air dried to preserve evidence and kept secure until they are collected by law enforcement.

Preventing Contamination

The goal of preserving and packaging trace evidence and associated items is to prevent loss or contamination. The method of processing the evidence will vary depending on the type of evidence. All evidence must be properly sealed to prevent loss, contamination or tampering (RAINN, 2009).

Collection Considerations

- Individuals that are responsible for the detection and collection of evidence should be familiar with the laws in their state when applicable.
- Healthcare professionals should be aware that unless victims of crime require life saving intervention, it is important to preserve whatever evidence may be present.
- Law enforcement should be contacted immediately and any treatment that might jeopardize evidence should be withheld unless absolutely necessary.

Test Yourself

Fill in the blank:

In order to preserve evidence, _____ should be contacted immediately and treatment that might jeopardize evidence should be withheld unless absolutely necessary.

The correct answer is “law enforcement” or “police”.

Collection Considerations

In addition to collecting evidence, it is also important to document the areas where the evidence originated from and how it was collected. Impressions or pattern marks may need to be photographed. Providing treatment should be withheld (bite marks for example). Evidence that is collected must also have a documented and continuous chain of custody until it is released to authorities (US Department of Justice, 2013).

The Evidence

Prior to the recognition of DNA (deoxyribonucleic acid) as an important investigative tool, many rapists could not be identified. Once the Federal Bureau of Investigation developed CODIS (Combined DNA Index System) the ability to identify perpetrators of rape and other crimes increased significantly. Obtaining certain types of evidence may be the result of the victim's history of the event. For example, a victim that states she scratched the perpetrator should have fingernail scrapings obtained since there is a possibility that the assailant's blood is present (RAINN, 2009).

Did You Know?

In 1987, California became the first state to standardize their sexual assault protocol statewide. The first man to be convicted of sexual assault with the help of DNA evidence also occurred in 1987. In 1991, the Minnesota Bureau of Criminal Apprehension (BCA) Laboratory was the first state crime lab to identify a suspect on the basis of DNA alone.

Seminal Fluid

Seminal fluid may not always be present after a sexual assault. The use of condoms, vasectomy, chronic alcoholism, cancer, other illness (e.g. tuberculosis or mumps), or ejaculation outside of the body (US Department of Justice, 2013) are examples where sperm will not usually be identified. As many as 40% of rapists are believed to wear condoms and about 34% are thought to be sexually dysfunctional (RAINN, 2009).

Seminal fluid is often examined for motile (alive and moving) and non-motile sperm. Seminal fluid (including that of men who have had a vasectomy) also contains an enzyme called acid phosphatase that is present in large quantities in seminal fluid, and minimal concentrations in vaginal fluids. Therefore if a high level of the enzyme is collected in a victim of sexual assault, this supports that recent sexual contact has occurred (RAINN, 2009).

Sexually Transmitted Disease (STD)

According to the Centers for Disease Control and Prevention (CDC, 2010) among sexually active adults, identifying sexually transmitted infection after an assault might be more important for the psychological and medical management of the patient rather than for legal purposes since the infection could have been acquired before the assault.

Testing for Sexually Transmitted Disease (STD)

Forensic examiners used to test for STDs at the initial exam and then at follow up. If the exam was negative at first and positive at the follow up, it was assumed that the assailant (if caught) could also be tested and this would provide evidence.

Although individuals will still be tested and receive prophylactic treatment, a number of variables could account for a positive test result. This practice is no longer considered as reliable evidence in cases that involve teenagers and adults but is still recommended for children (Tolle, 2010).

Test Yourself

Individuals that have been sexually assaulted generally receive prophylactic:

- A. Sedatives
- B. Anti-virals
- C. Antibiotics
- D. Antihistamines

The correct answer is antibiotics.

STDs in Women

The most frequently diagnosed infections among women who have been sexually assaulted are:

- Trichomoniasis
- Gonorrhea
- Chlamydial

(CDC, 2010)

An examination post-assault does provide an opportunity to identify or prevent sexually transmitted infections, regardless of when they were acquired. Chlamydial and gonococcal infections in women are of concern because of the possibility of ascending infection. In addition, hepatitis B viral infection might be prevented by post-exposure administration of hepatitis B vaccine. Female survivors of reproductive age should also be evaluated for pregnancy if appropriate.

The STD Exam

The initial examination may include testing and collection of specimens that include:

- *N. gonorrhoeae* and *C. trachomatis* from specimens collected from any sites of penetration or attempted penetration.
- Culture or FDA-cleared nucleic acid amplification tests (NAAT) for either *N. gonorrhoeae* or *C. trachomatis*. NAAT offer the advantage of increased sensitivity in detection of *C. trachomatis*.
- Wet mount and culture of a vaginal swab specimen for *T. vaginalis* infection. If vaginal discharge, malodor, or itching is evident, the wet mount also should be examined for evidence of BV and candidiasis.
- Collection of a serum sample for immediate evaluation for human immunodeficiency virus (HIV), hepatitis B, and syphilis (CDC, 2010). Decisions to perform these tests should be made on a case by case basis (CDC, 2010).

STD Counseling

At the initial examination (and at follow-up examinations if indicated), patients should be counseled regarding symptoms of STDs and the need for immediate examination if symptoms occur, abstinence from sexual intercourse until STD prophylactic treatment is completed.

Test Yourself

Fill in the blank:

Individuals should be counseled regarding symptoms of _____ and the need for immediate examination if symptoms occur.

The correct answer is “STDs”.

Follow-Up STD Exam

After the initial post-assault examination, a follow-up exam should be repeated in one to two weeks after the assault (CDC, 2010). A second exam will provide an opportunity to:

- Detect new infections acquired during or after the assault (infection acquired during an assault may not have been concentrated enough to result in a positive test results during the initial exam).
- Complete hepatitis B immunization if needed.
- Complete counseling and treatment for other STDs.
- Monitor side effects and adherence to post-exposure prophylactic medication.

Testing should be repeated at the second exam unless prophylactic treatment was initially provided. If treatment was provided, testing should only be conducted if the survivor reports having symptoms. If treatment was not provided, a follow-up exam should be conducted within one week to ensure that results of any positive tests can be discussed with the survivor and treatment can be provided. Serologic tests for HIV and syphilis infection can be repeated in six weeks, three months, and six months after the assault, when initial test results were negative and infection in the assailant can't be ruled out (CDC, 2010).

Prophylaxis

Specialists often recommend routine preventive therapy after a sexual assault because follow-up care compliance of sexual assault survivors is very low. Post exposure prophylaxis (PEP) may or may not be necessary depending on the assault. The CDC (2010) recommends the following prophylactic regimen as preventive therapy:

- Post-exposure hepatitis B vaccination, without HBIG, should protect against HBV infection. Hepatitis B vaccination should be given to sexual assault victims at the time of the initial examination if they have not been previously vaccinated. Follow-up doses of vaccine should be given one to two and four to six months after the first dose.
- An antimicrobial regimen for chlamydia, gonorrhea, and trichomonas.
- Emergency contraceptives should be offered if the post-assault could result in pregnancy in the survivor.

Medication Regimens

CDC (2010), Recommended Medication Regimens:

Ceftriaxone 250 mg IM in a single dose

OR

Cefixime 400 mg orally in a single dose

PLUS

Metronidazole 2 g orally in a single dose

PLUS

Azithromycin 1 g orally in a single dose OR Doxycycline 100 mg orally twice a day for 7 days

The Risk of HIV Infection

HIV has been a concern for sexual assault survivors since the early 1980's, even though the actual risk still appears to be low (RAINN, 2009). The CDC reports that in consensual sex, the risk for HIV transmission from vaginal intercourse is 0.1-0.2% and for receptive rectal intercourse, 0.5-3%. The risk for HIV transmission from oral sex is much lower. Specific circumstances of an assault can also increase the risk for HIV transmission (trauma and bleeding) with oral, anal, or vaginal penetration; site of exposure to ejaculate; viral load in the ejaculate; and the presence of genital lesions or an STD in the survivor or assailant. Children might be at higher risk for transmission since child sexual abuse is often associated with multiple episodes of assault and might result in mucosal trauma (CDC, 2010).

HIV Prophylaxis

Post-exposure prophylaxis (PEP) for HIV therapy with has been shown to reduce the risk of acquiring HIV from percutaneous exposure to HIV infected blood and may be implemented for use in victims of sexual assault (CDC, 2010). The possible benefit of PEP in preventing HIV infection should also be discussed with the assault survivor if risk exists for HIV exposure from the assault.

For nonoccupational exposures such as sexual assault. Three-drug regimens are advised for nonoccupational exposures for which PEP is indicated. According to Tolle (2010), the preferred nonnucleoside reverse transcriptase inhibitor–based regimen is:

Medication	Dosage
Efavirenz (Sustiva)	Efavirenz: 600 mg once daily
PLUS	
Lamivudine or emtricitabine	Zidovudine/lamivudine: 300/150-mg tablet twice daily
PLUS	
Zidovudine or tenofovir Efavirenz/emtricitabine/tenofovir combination available as Atripla	Efavirenz/emtricitabine/tenofovir: 600/200/300-mg tablet once daily

The Risk of HIV Infection

Determining an assailant's HIV status at the time of the assault examination is usually impossible. If possible, the healthcare provider should assess any available information regarding HIV risk behaviors of the assailant(s) such as:

- A man who has sex with other men
- Injecting drugs or crack cocaine use
- Local epidemiology of HIV/AIDS
- Exposure characteristics of the assault

Assessing Risk of HIV Transmission

When the assailant's HIV status is unknown, other factors should be considered in determining whether there is an increased risk for HIV transmission that includes:

- Whether vaginal or anal penetration occurred.
- Whether ejaculation occurred on mucous membranes.
- Whether multiple assailants were involved.
- Whether mucosal lesions are present in the assailant or survivor.
- Other characteristics of the assault, survivor, or assailant that might increase the risk for HIV transmission.

Counseling for PEP

If PEP is offered, it is important to discuss the following information with the patient:

- The unproven benefit and known toxicities of antiretroviral medications.
- The close follow-up that will be necessary.
- The benefit of adherence to recommended dosing.
- The necessity of early initiation to optimize potential benefits (as soon as possible after and up to 72 hours after the assault).
- Baseline testing for HIV antibodies, preferable with rapid testing, and follow-up HIV antibody testing at four to six weeks, three months, and six months after exposure. Extended to 12-month follow-up if the person becomes infected by Hepatitis C, HIV, or and STI (Tolle, 2010).
- Anyone taking PEP should be monitored for drug toxicity at baseline and after two to four weeks of treatment including a CBC, renal, and kidney function tests (Tolle, 2010).

Healthcare providers should also emphasize that PEP seems to be well-tolerated in both adults and children and that severe adverse effects are generally rare (CDC, 2010). Tolle (2010) states that the 40% of people are not able to complete the full four-week course. The common complaints are nausea and fatigue.

Did You Know?

To prevent side effects from PEP medication, the practitioner should prescribe of adjuvant medications for symptoms to increase tolerance to PEP medications.

Examples:

- Promethazine for nausea
- Loperamide for diarrhea

Recommendations for Post-Exposure Assessment of Adolescent and Adult Survivors

The CDC (2010) recommends the following if the assault has occurred within 72 hours prior:

- Assess the risk for HIV infection in the assailant.
- Evaluate for any characteristics of the assault event that might increase risk for HIV transmission.
- Consult with a specialist in HIV treatment if PEP is being considered.
- If the survivor seems to be at risk for HIV transmission from the assault, discuss antiretroviral prophylaxis including toxicity and lack of proven benefit.
- If the survivor chooses to start antiretroviral PEP, enough medication to last until the next return visit should be provided.
- A re-evaluation of the survivor should be scheduled three to seven days after the initial assessment and should include an assessment of the tolerance of medications.
- If PEP is started, a CBC and serum chemistry at baseline (initiation of PEP should not be delayed, pending results) should be obtained.
- Perform HIV antibody test at original assessment; repeat at six weeks, three months, and six months.

PEP Hotline

Assistance with post-exposure prophylaxis decisions is available by calling the National Clinician's Post-Exposure Prophylaxis Hotline (PEPLine), telephone: 888-448-4911 (CDC, 2010).

Pregnancy

Pregnancy is a great concern for victims of sexual assault. Various factors (age, culture, religion) may impact how a victim views treatment options. The risk of becoming pregnant after a sexual assault is 2-5% (US Department of Justice, 2013). Victims with reproductive capability should be offered emergency contraceptives. This includes transgender males that have not had a hysterectomy. The recommended treatment is levonorgestrol.

- Levonorgestrol is most effective if used within 120 hours
 - Can reduce of pregnancy by 89%
 - Traditional dosing:
 - Levonorgestrol 0.75mg orally two doses 12 hours apart
- OR*
- Levonorgestrol 1.5 mg orally once

(US Department of Justice, 2013)

Other Injuries

Other non-genital physical injuries may be present and it is important that the nurse delay any care or treatment of the injuries (if possible) until after law enforcement has been able to document injuries or request evidence collection. Injuries may require photographic documentation but are not meant to replace thorough narrative documentation (RAINN, 2009).

- Two sets of photographs are usually taken, one for law enforcement, another for the patient's chart.
- A general rule is that the first set of photographs is taken of the survivor's face and others should follow in systematic order, such as front to back or head to toe (RAINN, 2009).
- The photographs are usually taken without a scale (a small ruler that law enforcement uses) first to show that nothing is being hidden and then with a scale to document size.
- While a coin such as a quarter is sufficient, a gray photographic scale will also assist with color determination.

Photographing Injuries

When photographing injuries consider to what degree forensic photography is necessary and explain forensic photography procedures to the patient. Use the most up to date technology available. Photographs taken by examiners should not immediately be turned over to law enforcement and remain part of the medical forensic record. Body diagrams will guide law enforcement in the decision to subpoena photographs (US Department of Justice, 2013).

- If a camera is being used, all photographs need to be labeled with the survivor's name and/or case number in the picture.
- Some protocols may recommend writing the date, time, survivor case number, and the examiner's name and title on a piece of paper that should be shown in the photograph.
- If photographs are required every attempt to maintain the individual's dignity should be made by draping and taking close up pictures only (RAINN, 2009).

Pattern of Injury

RAINN (2009) reports that an awareness of the likely pattern of injuries from violence will help to determine the appropriate questions to ask and where to look for injuries on the basis of the history that has been given. Research indicates that intentional injuries tend to be more central, and accidental injuries occur more toward the extremities. In cases of domestic violence, injuries are most often inflicted where the victim can easily hide them (RAINN, 2009).

The most common locations injuries occur from defensive posturing such as:

- Outer mid ulnar areas of the arms
- Neck bruising from choking
- Broken ear drums from slapping
- Punch bruising to the upper arms

Types of injuries include:

- Bite marks
- Injuries to the breasts, abdomen, and back
- Facial bruising
- Abrasions
- Lacerations
- Burns
- Kick injuries to the thighs

(RAINN, 2009)

IMPORTANT!

- Although the size and color of bruises should be documented, nurses should avoid trying to date the bruises since different people manifest bleeding under the skin in different ways (RAINN, 2009). In addition, identifying bruises on dark skinned individuals can be quite difficult.

Test Yourself

Fill in the blank:

Determining the pattern of injury from violence is facilitated by obtaining the _____ from the patient.

The correct answer is “history”.

Trauma to the Genitals

RAINN (2009) recommends the use of colposcopy to document and visualize genital bruises, tears, and abrasions that might not be visible with a speculum exam. The colposcope is often used for examinations in children as well. If colposcopy (similar to a pap test with a magnification type light source) is used, the level of magnification should also be recorded (RAINN, 2009). The use of an anoscope is useful for rectal examination.

Blood and Urine

Unless blood is being drawn for medical or toxicology purposes, consider collecting a dry blood sample. Collecting a dry blood sample is less invasive and easier to store. Several states recognize dry blood collection as acceptable method for collecting DNA samples (Department of Justice, 2013).

Urine sample should also be obtained if there is a concern about a potential alcohol or drug-facilitated sexual assault.

- If a sexual assault victim has little recollection of the incident, be certain to obtain blood and urine samples for toxicology.

Sexual Assault of Children

Identifying sexually transmissible agents in children beyond the neonatal period is suggestive of sexual abuse (CDC, 2010). Post-natally acquired syphilis, gonorrhea, and non-transfusion, non-perinatally acquired HIV is usually indicative of sexual assault or sexual abuse. Sexual abuse should also be suspected when genital herpes is diagnosed.

An investigation of sexual abuse among children who might have been sexually transmitted and have contracted an infection should be conducted in compliance with recommendations by clinicians who have training and experience in all elements of the evaluation of child abuse, neglect, and assault (CDC, 2010).

Evaluation of Children for Sexually Transmitted Infections

Examinations of children for sexual assault or abuse should be conducted in a manner designed to minimize trauma and pain to the child. Collecting vaginal specimens in pre-pubertal children can be very uncomfortable and should be performed by an experienced clinician to avoid any additional psychological and physical trauma to the child (CDC, 2010). Obtaining genital or other specimens from a child to conduct an STD evaluation must be made on an individual basis.

According to the CDC the following situations involve a high risk for STDs and are a strong indication for testing:

- Signs or symptoms of an STD or sexually transmitted infection such as vaginal pain or discharge, genital ulcers or lesions, genital odor or itching, or urinary symptoms.
- The suspected assailant is known to have an STD or to be at high risk for STDs such as a history of STDs or multiple sex partners.
- Another child or individual in the child's immediate environment has an STD.
- The parent or patient request testing.
- Any evidence of oral, genital, or anal penetration or ejaculation is present.
- If the signs, symptoms, or evidence of an infection that could be sexually transmitted are present in a child, the child should be tested for other STDs before the initiation of any treatment that could interfere with the diagnosis (CDC, 2010).
- In children, the scheduling of an examination should depend on the history of assault (or abuse). As with adults and adolescents, infectious agents acquired through a recent exposure might not have produced sufficient concentrations of organisms to result in positive test results. A follow-up visit about two weeks after the most recent sexual exposure may include a repeat physical examination and collection of specimens (CDC, 2010). Twelve weeks following the most recent sexual exposure a visit may be necessary to collect samples. If the child has been abused over an extended period of time only one examination may be necessary (CDC, 2010). The timing and nature of follow-up exams should be determined on an individual basis and performed to minimize the possibility for psychological trauma. Compliance with follow-up appointments might be improved when child protective services or law enforcement become involved (CDC, 2010).

After the Exam

Most medical facilities can provide a private area for the survivor to change clothes, brush their teeth, and shower (US Department of Justice, 2013). Keep in mind that a survivor may be afraid to return home alone, so it is important for the nurse or forensic examiner to offer to call a relative or friend to be with them during the exam and to take them home.

In some cases the survivor may need alternative safe housing such as a shelter; the nurse may need to help with this process as well (RAINN, 2009). The nurse should also be certain to provide the survivor with written instructions and materials since the individual may be in a state of shock. A post exam advocate continues to offer support by making follow-up phone calls within 24-48 hours or accompanying the victim to follow-up appointments (US Department of Justice, 2013).

Test Yourself

Infectious agents acquired through a recent exposure might not have produced sufficient concentrations of organisms to result in immediate positive test results.

- A. True
- B. False

The correct answer is true.

Initial and Follow-Up Exams

During an initial examination and two week follow-up exam (if indicated), the CDC states the following should be performed:

- Visual inspection of the oral, genital, and perianal areas for odor, discharge, irritation, warts, bleeding, and ulcerative lesions. Some STDs are manifested differently in children than adults; for example, typical vesicular lesions might not be seen in the presence of a herpes infection. All vesicular, ulcerative genital, or perianal lesions compatible with genital herpes should be swabbed and sent for viral culture (CDC, 2010).
- Collection of specimens for culture for *N. gonorrhoeae* from the pharynx and anus in both boys and girls, the urethra in boys, and the vagina in girls. Cervical specimens are not recommended for pre-pubertal girls. If boys have a urethral discharge, a meatal specimen discharge can substitute for an intra-urethral swab specimen (CDC, 2010).
- Cultures for *C. trachomatis* from specimens collected from the vagina in girls and the anus in both boys and girls. Some data suggest that the likelihood of recovering *C. trachomatis* from the urethra of pre-pubertal boys is too low to justify the trauma involved in obtaining an intraurethral specimen (CDC, 2010). In addition, pharyngeal specimens for *C. trachomatis* are not recommended for children of either sex because the yield is low, perinatally acquired infection might persist beyond infancy, and culture systems in some laboratories do not distinguish between *C. trachomatis* and *C. pneumoniae*.
- Wet mount and culture of a vaginal swab specimen for *T. vaginalis* infection and BV (CDC, 2010).
- Collection of serum samples for immediate evaluation, preserved for subsequent analysis, and used as a baseline for comparison with follow-up serologic tests. Sero should be tested immediately for antibodies to sexually transmitted agents. Agents for which suitable tests are available include *T. pallidum*, HIV, and HBV. Decisions regarding which agents to use for serologic tests should be made on a case-by-case basis (CDC, 2010).

Serologic Testing for HIV

Serologic testing for HIV infection should be considered on a case-by-case basis, depending on the likelihood of infection among assailant(s) since data are insufficient concerning the safety and efficacy of PEP among both children and adults (CDC, 2010). If antiretroviral PEP is considered, a professional provider that specializes in HIV-infected children should be consulted (CDC, 2010).

Counseling and Crisis Intervention

Other major components of the evidentiary examination that nurses must be familiar with include crisis intervention, a mental health assessment, and a referral for follow up counseling. Whenever possible, involve community services that can help support the survivor. This highly specialized form of counseling includes the emergency counseling in the immediate [aftermath of rape](#), and the longer, more complex counseling in the months following, as a victim tries to regain a sense of security and worth.

Healthcare professionals should be aware that ongoing anxiety and fear resulting from a sexual assault may significantly impact an individual's ability to function on a day to day basis. Counseling should be strongly encouraged. In addition to sexual violence, psychological violence or abuse may also have been used. Psychological violence is usually intended to control a victim and to cause fear, humiliation, and degradation.

In many instances, the initiation of emergency rape counseling is offered by first-response teams:

- Police
- ER attendants
- Doctors
- Nurses
- Rape-crisis call respondents

These patients should be referred to a psychologist, a clinical social worker, or therapists. Local rape centers can help provide the contacts:

- 1-800-656-HOPE

These people can deal more intensely with emotions such as:

- Grief
- Anger
- Misplaced guilt
- Fear
- Sexual anxiety

Hospitalization

Significant physical injury from a sexual assault is quite rare and occurs in only 3-5 % of sexual assault survivors. Minor injury is documented in approximately one third of sexual assault victims and statistics indicate that less than one percent of sexual assault victims have needed hospitalization.

When significant injuries do occur, they are usually the result of an assault by a stranger or an intimate partner as opposed to date rape (RAINN, 2009). Male victims often suffer more injuries than women. The absence of physical injuries from a sexual assault does not mean that the victim was not forced either.

The Chain of Evidence

Maintaining the proper chain of evidence is as important as collecting the proper evidence. Without complete documentation the evidence will be inadmissible (Rape, Abuse, & Incest National Network [RAINN], 2009). The examiner must maintain control of the evidence during the exam, while the evidence dries, and until the evidence is in the kit container and sealed (US Department of Justice, 2013). If law enforcement is unable to pick up the evidence, it can be stored in a locked storage area with limited access if this is within the policy and procedure of the state or healthcare facility.

Documentation

Accurate documentation is a critical component in forensic cases (American Forensic Nurses, 2010). Evidence collection and proper documentation are also a critical component of interdisciplinary collaboration between the field of nursing, law enforcement and the court. Documentation that best supports forensic evidence will reflect (healthcare prof. 4857280):

- Objective and detailed information.
- Direct quotes using quotation marks as often as possible (even if a patient uses vulgar terms or slang words that describe the event).
- Avoiding paraphrasing as it will detract from the patient's credibility. Using the patient's own words without medical terminology or grammatical corrections will help to establish the patient's history.
- Avoiding pejorative documentation such as the word alleged; alleged can imply the possibility that the patient's statements might not be true (use direct quotes whenever possible).

Components of Documentation

Remember that documentation is an important part of the chain of evidence and should include:

- Date and time of assault
- Nature of physical contacts
- Race and number of assailants
- Relationship to assailant(s)
- Weapons and restraints used
- Actual and attempted penetration of which orifice by penis, objects or fingers
- Ejaculation, if known, and where
- Use of condom
- Activities of the victim that may have destroyed evidence, such as bathing, douching, bowel movement
- Consenting sex within the last 72 hours and with whom
- Use of tampon
- Change of clothes
- Contraceptive use
- Current pregnancy
- Allergies
- Victim's general appearance and response during exam
- Physical injuries

(RAINN, 2009)

Legal Aspects of Documentation

In addition to the sexual assault exam report, the entire chart is a part of the legal record and can be submitted as evidence if the case goes to court. This means that all statements, procedures and actions must be completely, accurately, and legibly recorded. It is important to accurately and completely document the emotional state of the survivor and quote important statements made by the survivor, such as threats made by the assailant. When appropriate, qualifying statements that reflect what the patient actually states are best (RAINN, 2009).

Alleged Sexual Assault

The term "alleged sexual assault" should never be used in the documentation of a sexual assault because the statement has negative connotations that may be interpreted by judges and juries as indicating the victim was not honest about what happened (RAINN, 2009).

Intimate Partner Violence and Forensics

Intimate partner violence (IPV), also called spousal abuse, domestic violence, or battering can occur among same sex and heterosexual couples and is considered to be a significant health problem in the United States (CDC, 2014). According to the CDC abused women experience more health problems and also use healthcare services more often. Because of this, nurses that work in access to care areas may be required to collect forensic evidence in women that are the victims of IPV. Keep in mind that many victims do not want to report IPV because they may fear, love, depend on, or wish to protect the perpetrator. When medical care is required, women may try to attribute their injuries to other causes.

According to a study performed in 1995, almost one third of women that were sexually assaulted by their partner sought medical care; three quarters of these victims received treatment in a hospital emergency department.

Victimization Outcomes and Services Utilized

Victimization Outcomes and Medical Services Used	Rape	Physical Assault	Total
Victimizations	322,230	4,450,807	4,773,037
Victimization resulting in injury	116,647	1,847,085	1,963,732
Victimization resulting in some type of medical care	36,161	519,031	555,192
Victimization resulting in:			
Hospital care	28,784	407,958	436,724
Physician care	21,407	268,858	290,265
Dental care	6,654	43,308	55,962
Ambulance/paramedic care	7,377	77,336	84,713
Physical therapy	8,100	46,194	54,294
Victimization resulting in hospital:			
ED care	14,766	241,103	255,869
Outpatient care	8,865	98,726	107,591
Overnight care	12,550	132,994	145,544

Courtesy of CDC, 2003

Chain of Custody

Maintaining proper chain-of-evidence is as important as collecting the proper evidence. Without this complete documentation, with signatures, of chain-of-custody from the individual who collected the evidence to the courtroom, the evidence will be inadmissible.

It is not necessary, nor is it appropriate, for law enforcement to be in the exam room when the evidence is collected to maintain proper chain-of-evidence. Law enforcement can leave the area and the nurse can call them when the exam is completed, in two to three hours, to return and pick up the evidence. During this time jurisdictional protocol for storage of evidence must be followed. Kits without blood draws or wet evidence typically do not need to be stored in a refrigerator. Wet blood and urine are typically obtained for toxicology purposes. These samples should be stored in a locked refrigerator but may be stored at room temperature for 24 hours. When evidence is transferred to law enforcement, documentation of the transfer is required (US Department of Justice, (2013).

Contamination and Loss

Whenever healthcare professionals are required to collect items for forensic evaluation, it is extremely important to prevent contamination and loss.

In general, practices to prevent contamination and loss include:

- Ensuring the physical environment will not affect the evidence.
- Wear non-powdered gloves for examination and evidence handling.
- Change gloves frequently and always when examining different body surface areas.
- Appropriate protective wear including gloves and gown or lab coat to prevent contamination from the clothing of the examiner.
- Items collected for trace evidence should be handled as little as possible to decrease the chance of contamination or transfer between items or personnel (and minimize the possibility of loss).
- Collect, package, and seal items in appropriate packaging.

(US Department of Justice, 2013)

Test Yourself

Collect, package, and seal items in one big bag.

- A. True
- B. False

The correct answer is false. Use appropriate packaging to decrease contamination.

Texas Forensic Requirement for ER Setting: Forensic Evidence Collection CE

According to Texas Legislature, SB39 states that the forensic continuing education requirement applies to a "license holder who is employed to work in an emergency room..." A review of the bill reveals that the original concern is that sexual assault victims in rural areas may not receive the same level of care as those in metropolitan areas where SANE-trained RNs are typically available. When evidence is not collected or collected incorrectly by staff with no training in forensic evidence collection and documentation, law enforcement authorities may lack the necessary evidence to prosecute criminals who perpetrate crimes.

Effective September 1, 2005, the Texas Nursing Practice Act was amended, adding the CE requirement, Forensic Evidence Collection in Continuing Education, which applies to all nurses practicing in emergency room settings as either their home unit, floating, contracted, or other duties that involve functioning in the ER setting. This is a one-time requirement per nurse beginning September 1, 2006; however, compliance is ongoing for any nurse who begins practicing in an ER setting as there is no expiration date for this requirement under Rule 216.3(6). Frequently asked questions on this targeted CE may be viewed on the FAQ page for the Texas Board of Nursing: https://www.bon.texas.gov/faq_nursing_practice.asp.

Conclusion

In many ways, the processes utilized in forensic evidence collection parallel those used within the practice of nursing. Nurses are taught to apply the process of assessment and information gathering in order to develop a plan of care based on the information (evidence) that has been collected. Although the services of a specially trained forensics nurse are preferable, if necessary, nurses from other areas such as the emergency department can aid in the collection of forensic evidence.

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