

Forensic Nursing: An Overview

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Faculty

Michelle Booth, RN, BSN, received her Bachelor's degree in nursing from San Diego State University in 2005. Since then, she has worked primarily in emergency and critical care settings, during which time she gained an appreciation of the importance of forensic evidence collection and supportive care of assault victims. She currently works as an emergency department nurse in Santa Clara, California.

Faculty Disclosure

Contributing faculty, Michelle Booth, RN, BSN, has disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

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Division Planner/Director Disclosure

The division planner and director have disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

Audience

This course is designed for all nurses involved in the assessment and care victims, including sexual assault nurse examiners and other forensic nursing specialists.

Accreditations & Approvals



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Course Objective

Forensic nurses are an important link between the medical and legal worlds. The purpose of this course is to inform nursing professionals about forensic evidence collection and documentation, being mindful of preserving evidence while managing critically injured patients, and making referrals to or requesting the assistance of forensic specialists.

Learning Objectives

Upon completion of this course, you should be able to:

1. Outline key points related to forensic evidence preservation.
2. Discuss best practices for the physical examination and interview of the forensic patient.
3. Apply standards for the collection and documentation of forensic evidence.



Sections marked with this symbol include evidence-based practice recommendations. The level of evidence and/or strength of recommendation, as provided by the evidence-based source, are also included so you may determine the validity or relevance of the information. These sections may be used in conjunction with the course material for better application to your daily practice.

INTRODUCTION

Nurses working in emergency centers often care for victims of intentional harm, criminal neglect, accidents, and workplace injuries. These include, but are not limited to, patients who have been shot, stabbed, or otherwise assaulted with or without weapons; physically abused; sexually assaulted or abused; injured in or by a motor vehicle; bitten by animals; injured while on the job; and poisoned. Perpetrators of crime (or crime suspects) may also require care in the emergency department.

When nursing practice interfaces with the law, it is considered forensic nursing and the patient is considered a forensic patient. Forensic cases require that a thorough physical examination, collection of trace evidence, and diligent documentation of all marks and injuries be made without causing further physical or psychologic harm. It is important to remember that the central paradigm of forensic nursing is truth; justice for victims, those accused, and society is reliant on this paradigm [1]. Workplace injuries also require collection/documentation of evidence and are in fact the most common forensic category. Though the focus of this course is on injuries resulting from crime and negligence, many of the procedures and techniques for workplace injury documentation are similar.

According to the Centers for Disease Control and Prevention (CDC), there were 1,684,000 visits to emergency departments due to various forms of assault in the United States in 2017 [2]. Although they account for less than 4% of the nearly 43.2 million injury-related annual visits and only about 1.2% of the nearly 139 million total annual visits, admissions for assault present unique challenges and require extra conscientiousness of emergency department staff [2]. Victims of violent and/or sexual crimes are often emotionally traumatized, and these needs must be addressed along with the treatment of physical injuries sustained during an attack and preservation of evidence.

There were 459,310 rapes/sexual assaults of individuals 12 years of age or older in the United States in 2019 [3]. Although rape and other sexually based offenses are by no means the only crimes for which forensic evidence must be gathered, special attention should be given to these cases because there is a persistent culture of permissiveness and doubt surrounding rape and rape claims, even among seasoned investigators [4]. It is partially due to this fact that only 24.9% of rapes/sexual assaults are reported, which is by far the lowest reporting rate of a violent crime and lower than all categories of property crime reports [3].

It is imperative that no judgments are made in the emergency department or evidence collection facility, lest important evidence is overlooked in haste and prejudice. For example, a woman who appears intoxicated or who is wearing revealing clothing may be viewed as unworthy of due diligence [4]. (However, the fact that a victim is intoxicated is an important fact, as she may not have been a willing participant in the intoxication.) Likewise, demeanor, race/ethnicity, gender, sexual identity, religion, or relationship status should not influence the level of attentiveness when working with victims of any form of assault. Again, the unbiased collection of evidence and documentation of findings to aid in any investigation are the goals of the forensic exam.

A growing number of hospitals now employ dedicated forensic nurses, including sexual assault nurse examiners (SANEs) and sexual assault forensic examiners (SAFEs); other facilities may use floating forensic nurses. However, these specialists are typically not the first professionals to interact with the patient. All nurses, particularly those in an emergency care setting, should be aware of evidence collection protocol in order to preserve and possibly to document evidence when a specialist is unavailable. Because prosecution rates of various crimes are lower than would be ideal (many times due to insufficient or improperly collected evidence, or not following evidence through the chain of custody), this course aims to help eliminate errors in the medical-forensic aspect of an investigation.



The World Health Organization recommends that clinicians should take a complete history from survivors of sexual assault, recording events to determine what interventions are appropriate, and conduct a complete physical examination (head-to-toe including genitalia). The history should include:

- The time since assault and type of assault
- Risk of pregnancy
- Risk of HIV and other sexually transmitted infections
- Mental health status

(<https://www.who.int/reproductivehealth/publications/violence/9789241548595/en>. Last accessed January 15, 2021.)

Level of Evidence: Indirect evidence

EVIDENCE PRESERVATION

The emergency department or trauma nurse is often the first to interact with assault victims and their families, and the ability to quickly recognize forensic patients is a valuable skill to possess [5; 6]. This is considered as vital as providing medical treatment. The U.S. Department of Justice recommends that forensic patients be given priority as emergency cases [8]. Although lifesaving measures take precedence over evidence preservation, it should be recognized that quality of life can be significantly diminished for those whose assailant is not brought to justice. A high-quality medical forensic exam performed in a timely manner can minimize psychologic trauma, promote healing, and help ameliorate patients' concerns [8].

Forensic evidence is crucial to the successful arrest and prosecution of crime perpetrators. Evidence of the use of force, the perpetrator's identity, and the perpetrator's ties to the victim must be gathered to aid law enforcement in their investigation. It is essential that evidence remain intact as much as possible until proper collection and documentation is completed. It is equally important to accurately record all statements made by the victim, regardless of its seeming pertinence to his or her medical care. Evidence that is improperly collected by untrained individuals, destroyed or mishandled during the course of treatment (e.g., contamination, using wound sites for drainage), or not followed in the chain of custody may be of limited value to law enforcement and justice officials.

The emergency department can become a chaotic environment at times, especially when managing multiple trauma patients. But even when working at a hurried pace or when short-staffed, it is important to be mindful of evidence preservation. The first step in preserving evidence is identifying the nature (e.g., physical, sexual, emotional) and origin (e.g., accident, neglect, violence, torture, drug-related) of the injuries to determine the type of forensic evidence that may be obtained from a variety of search locations. The time from the assault should be ascertained, as evidence can deteriorate with time to the point of uselessness. For example, DNA in saliva deteriorates especially rapidly, often in less than 48 hours. It is recommended that a sexual assault forensic exam be administered within 96 hours of an attack for the collection of trace evidence; however, bruises, bite marks, and other injuries should still be documented after this time frame [7; 8]. Forensic patients (especially sexual assault patients) must be encouraged at every contact to rush to an evidence collection facility [9].

Victims' or perpetrators' clothing is considered critical forensic evidence but is not part of the medical forensic exam, except for noting damage [5]. Each item present should be dried and placed in an individual evidence bag (type determined by jurisdiction) for forensic study by a law enforcement criminalist. Ideally, the able patient will disrobe over a drop sheet, which will then be bound and labeled, in order to collect all traces of evidence. Upon arrival (e.g., when a patient is transported by ambulance), an attempt to locate all items of clothing must be made. Emergency transport personnel should be able to account for these, but in their absence, the forensic team should determine where articles were left and should also note tears or cuts to clothing made during treatment. Clothing removed in the emergency department must be recovered. The clothing sexual assault victims were wearing during the attack (especially underwear) should be retrieved by law enforcement. If patients have changed clothing, the fresh clothing nearest the attack site (generally underwear or other undergarments) should be examined and collected as evidence, as fluids will often drain onto the clean garment.

It is critical that the patient's skin remain unwashed until documentation/collection is completed, because the skin holds some of the most vital evidence for medical-forensic examination. Wounds should not be used as drainage sites. Contamination of evidence and collection swabs can be avoided by wearing appropriate protective equipment, handling as little as possible, and avoiding sneezing and/or coughing over samples. It is recommended that forensic examiners wear surgical masks during evidence collection and that gloves be changed frequently.

In cases of food, beverage, and drug poisoning or tampering, vomitus is considered evidence and should not be discarded. In fact, whenever a forensic patient is vomiting, a sample should be collected and retained to determine if he or she has been the victim of poisoning or drugging. In certain instances, stool and urine samples must also be collected. It is important to remember that even if the patient is not necessarily the victim of assault (e.g., workplace accidents), an employer or business owner may need the truth about the patient's state and possible intoxication to be revealed as protection from legal action.

PHYSICAL EXAMINATION AND INTERVIEW OF THE FORENSIC PATIENT

Examination of the forensic patient is conducted in a thorough head-to-toe or toe-to-head manner, with the intent of documenting every indication of injury related to the incident (no matter how insignificant and involving every part of the body) using a body-map or wound chart. The entire body surface should be palpated to identify areas of bruising that may not yet be visible. Documentation and collection of evidence typically occurs at the same time as the physical exam—as evidence is detected it should be collected [9]. During the exam, vital signs should be taken and any urgent medical needs should be addressed.

Information gathered from transport personnel or during an interview regarding the type of attack can help to identify areas requiring particular detail, but this should not distract from conducting a thorough exam. An important component of the physical examination/interview is the patient's general appearance and demeanor upon presentation [9].

This should be recorded as objectively and with as much description as possible in a few sentences. The ability of the patient to remember details of the incident and to cooperate with the exam should be noted [9]. Those seeking information about the assault should work collaboratively to create an information-gathering process that is as respectful to patients as possible and minimizes repetition of questions. However, jurisdictions should consider the implications of the evolving law on hearsay exceptions when determining the level and nature of coordination. In the interest of providing culturally responsive care, the patient should receive information about the procedures used during the exam before the examination begins and in a language the patient understands [8]. Nurses should be aware of cultural issues pertaining to specific populations and strive to respect and accommodate the needs of the patient. These include having a friend or relative present during the exam, gender preferences of medical/forensic personnel, and addressing the patient's physical comfort and safety.

SEXUAL ASSAULT

In the case of sex crimes, it should be determined if the examination was initiated by law enforcement or if the assault has yet to be reported. Healthcare professionals have the duty to report cases of assault/abuse to officials. If law enforcement has already been involved, certain questions that would cause undue stress should not be asked during the exam if they have already been asked by investigators (e.g., description of the suspect), but obviously, certain questions that pertain to the medical-forensic exam must be addressed. Questions that will be asked by investigators include [1]:

- When the attack occurred (date and time)
- Where the attack occurred and how it was initiated
- What the suspect(s) said during the attack (e.g., threats)
- Whether any items were stolen after the attack
- How many individuals were involved in the attack
- Description of the suspect(s), including age, height, weight, race, tattoos, scars, and other defects
- If alcohol or drug use (or suspected "drugging") occurred before, during, or after the attack
- How the patient was restrained during the attack (e.g., rope, belt, hands, feet)
- Use of weapons by suspect and/or victim
- Use of powders, lubricants, or other chemicals during the attack
- Means (e.g., penis, fingers, sex toys, other objects) and areas (e.g., mouth, vagina, anus) of penetration and/or contact
- All injuries sustained during the attack (e.g., hitting, kicking, biting, spitting, stabbing, strangulation, ligature marks)

Questions pertaining to the medical-forensic exam include the last six on this list, as these can help to focus the search. If ejaculation took place, this location should be identified; however, other fluids, such as blood and saliva, are also useful for DNA collection. If more than one individual was involved in the attack, the patient should identify which perpetrator committed which act(s). The account should include all violence performed and/or threatened and should conclude by asking if there were any other acts performed that were not already covered.

Recent consensual sexual activity should be identified, along with information about what the patient did after the attack. Many women wipe their vulva with towels or toilet paper, and some may douche; this information should be noted so these items can be recovered for DNA testing. Tampons removed or inserted post-assault should also be recovered.

Sexual assaults are particularly difficult to discuss, but it is necessary to ask as many questions as possible in order to gain a full understanding of the assault. This will help to both collect forensic evidence and to eventually prosecute the suspect(s) for each violation. For example, a perpetrator can be convicted of attempted sodomy even if the act did not result in actual penetration. Therefore, a comprehensive list of possible sexual/violent acts should be discussed, each with its own specific question. There are four answers to every question: yes, no, attempted, and unsure [10]. Sample questions would read as follows:

- “Did the suspect put his/her finger(s) in your mouth?”
- “Did the suspect put an object in your mouth?”
- “Did the suspect put his penis in your mouth?”

Or, conversely:

- “Did the suspect put his/her finger(s) in your mouth?”
- “Did the suspect put his/her finger(s) in your vagina?”
- “Did the suspect put his/her finger(s) in your anus?”

This line of questioning should continue until a very detailed description of the assault is documented; many jurisdictions use a locally standardized form for this task. Questions that require multiple answers (e.g., “What did the perpetrator put in your mouth?”) should not be used unless they are to ascertain if any information is missing. This style of questioning often leads to an incomplete account. It is important to remember that a consent form must be signed by the patient (or parent/legal guardian, where applicable). A provision for consent may be included in the forensic report paperwork. The U.S. Department of Defense Sexual Assault Forensic Examination (SAFE) Report is a good example of a federally standardized, complete form that incorporates a consent provision. It may be accessed at https://www.sapr.mil/public/docs/miscellaneous/toolkit/dd2911__Sept_2015.pdf [10].

COLLECTION AND DOCUMENTATION OF EVIDENCE

Evidence collection kits may be created from materials on-hand or may be obtained as prepackaged units. Either type functions effectively if it contains all the items necessary for evidence collection and documentation and includes a sturdy box for transportation and storage. Collection kits are not standardized on a state or federal level but should be on a jurisdictional basis. Every hospital should have a standard forensic protocol developed in accordance with, or in union with, the jurisdictional crime lab that must be followed in all forensic cases.

Forensic documentation includes a written component, a diagrammatic component, and a photographic component. Each should accurately inform the other. The written component must be detailed, accurate, and objective; the diagrammatic component must be thorough and legible; and the photographic component must include a measurement scale, be representative of the evidence, and remain objective.

PHOTOGRAPHIC DOCUMENTATION

In many cases of abuse and assault, the body is the only “crime scene.” It is the duty of the medical-forensic examiner to accurately and diligently record the details of the injuries and the evidence present on the victim and/or perpetrator. The somewhat special skills once required by a forensic photographer shooting with a roll-film camera have been superseded by the widespread use of digital photography. Digital documentation simplifies many aspects of forensics, including ease of use, the number of images that can be recorded at very low cost, ability to review images and reshoot if needed, better control of the evidence chain of custody, and later ease of distribution during legal proceedings.

Photo documentation will typically proceed along with the physical examination and the collection of evidence. When an injury or other evidence (e.g., fluids, fibers) is found, it should be photographed.

It is considered good practice to capture four images of each finding [9]. One should be an overall shot of the body and should include a clear anatomical reference (e.g., arm, hand, leg, foot), another should be a medium shot, and there should be two detailed shots of the finding. The wide and medium shots can be used to document multiple findings. Detailed shots of each finding should be taken before evidence collection, during manipulation, and after the evidence is swabbed or removed. If a lifesaving measure may disturb evidence, it is ideal to photograph the site/finding beforehand, if possible.

A measurement scale, such as the American Board of Forensic Odontology Number 2 (ABFO No. 2) scale, should be included in the two detailed shots. The finding should appear in the center of the frame, should be shot straight on (i.e., the body surface plane and the camera lens plane should be parallel), and the background should be as neutral as possible. This will help to minimize confusion. Examples of extreme errors in photo documentation include [9]:

- Out-of-focus images
- Having the finding in the corner of the image
- Taking no close-ups
- Taking only close-ups
- Perspective errors (i.e., shooting from an angle)
- Not using a measurement scale
- Scale perspective errors (i.e., not placing the scale flat on the surface near the injury/evidence)
- Not following the four images rule

BLUNT AND SHARP TRAUMA

Much of the trauma associated with workplace injuries and assault/abuse involves contact with blunt or sharp surfaces, tools, weapons, or other objects. Injuries or wounds created with objects will often leave a distinctive pattern that can be interpreted (e.g., a clothes iron, a woven belt or rope). When pattern injuries are found on patients (especially children), abuse should be strongly suspected. These types of injuries should be documented to clearly show that particular objects were used. An attempt to recover fiber remnants should be made where ligature marks are found.

Blunt injuries create fractures, lacerations, abrasions, and contusions and should be noted as such. Bruises associated with contusions should be photographed in color and accurately documented with regard to size, shape, and color, but their age must not be guessed. Injuries or wounds created with sharp objects should be described with particular detail with regard to differentiating between cuts, stabs, punctures, slices, or slashes. It should be determined if the trauma was caused as a defensive injury.

Special Considerations for Gunshot Wounds

Bullets (or bullet fragments) are a vital piece of evidence in cases of gun violence. It is recommended that when these are removed from victims, they should be extracted with plastic-shielded forceps and handled as little as possible [1]. After they are removed, they should be immediately wrapped in gauze, placed in an evidence envelope, and the envelope marked with contents, name of person who extracted bullet, date and time of extraction, and name of the patient. Additionally, when documenting gunshot wounds, healthcare professionals should not attempt to identify entrance or exit wounds unless recording the patient's statement [1]. The caliber of the bullet should also not be guessed, as this can create a disagreement between the medical-forensic report and the law enforcement report.

As always, documentation should remain factual, recording the appearance of the wound(s) (e.g., size, shape, color, age). Nurses should observe signs of gunshot powder residue, photograph residue before collecting, scrape residue with clean paper into a collection envelope, and label the envelope with the same information as for a bullet. The appearance of any marks made by the actual gun should be noted.

SEXUAL ASSAULT TRAUMA

The skin surface is typically the first to be examined in cases of sexual assault. Search areas, identified in the interview and history of the attack, should first be scanned with visible light and then with an ultraviolet Wood's lamp to help visualize dried semen. Areas of fluid should first be photographically documented and then swabbed completely until all material is removed from the skin [9]. The entire skin surface must be scanned for fluids. Control swabs should be taken from areas of the patient's skin not containing visible or fluorescent stains. Ideally, there should be a provision in place for drying collection swabs, and the drier should be sterilized (e.g., with a 10% bleach solution) prior to evidence collection.

Every body surface, including the scalp, ear canals, nostrils, skin folds, armpits, spaces between fingers and toes, and behind the ears, must be scanned. Foreign hairs and fibers should be collected, and reference hairs should be selected for culling. Fingernail scrapings or cuttings should also be collected.

The nurse examiner should then move to the oral cavity and carefully observe every surface for injury from forced entry, a hand or gag over the mouth, or other insult. Two swabs each are usually taken from the tongue, the tonsillar fossae, behind the buccal sulci, and behind the upper incisors when indicated by forcible oral copulation (or its attempt) or uncertain patient history (e.g., if the patient was drugged or unconscious) [9].

Examination of the genital region is often the main component of the female sexual assault exam. As with the recovery of clothing, a drop sheet should be placed underneath the patient (separate from the clean paper sheet covering the table) to collect evidence that falls during the exam. The patient's pubic hair should be combed after the other steps of the external exam are completed, and the drop sheet should be folded and labeled with pertinent information for inspection by the criminalistics lab.

During the exam, crusted secretions or other attached material should be clipped out of the pubic hair and placed into evidence. Approximately 20 to 30 samples of the patient's own pubic hair should be plucked and kept separate as a control. A Wood's lamp should be used in the collection of semen samples from the external genital area, and again, enough swabs should be used to completely remove all visible traces. Following collection, a magnification device should be employed to further examine the area for microtrauma. A gynecologic colposcope is recommended for its sufficient lighting, magnification, and photographic capability [9]. The labia minora, posterior fourchette, and fossa navicularis typically sustain the most injury during an assault involving penile penetration only, while assaults involving digital penetration cause damage to the aforementioned sites and the vaginal walls, the cervix, and perineum (due to fingernails).

The vagina and cervix are able to be visualized using a speculum that should preferably be inserted using only water as a lubricant. A colposcope may also be used to examine the internal genitalia for microtrauma. Though trauma from penile penetration alone is uncommon in women of childbearing age, significant vaginal or cervical trauma can be caused by penetration with objects [9]. Adolescent and postmenopausal women typically sustain more injury during sexual assaults than other women. Any items found inside the vagina should be removed and placed into evidence bags. Next, four swabs

should be placed in the posterior fornix to absorb secretions. A dry mount and wet mount slide should be prepared from two swabs, while the remaining two are placed into evidence [9]. The wet mount slide should be viewed within 10 minutes to identify motile sperm, and the slide examiner's name should be documented.

The perineum and anus should always be examined for trauma. If the patient is uncertain of anal penetration, if there was anal penetration with a foreign object, or if there is any bleeding or pain, the rectum should be examined with an anoscope and swabbed as per the technique discussed for vaginal swabbing. Secretions present on the anus are not considered conclusive evidence of anal penetration, as fluids may have leaked from the vagina.

BITE MARKS

Bite marks are a feature in many types of crimes, including assaults, homicides, and child abuse. They are typically found on the arms, breasts, and neck in cases of sexual assault; on the arms, legs, and breasts in cases of homicide; and over many body surfaces in child abuse cases [9]. Although the science behind bite mark analysis (for perpetrator identification) is dubious, the presence of bite marks is particularly useful for guiding saliva collection, which can be used to both tie the victim to the suspect (self-defense biting) and the suspect to the victim (attack biting) [11]. Therefore, bite injuries should be given special attention and, whenever possible, should be examined by a forensic odontologist.

Bite marks should be very thoroughly photographically documented using an ABFO No. 2 scale. The location, size, shape, color, depth, and any other characteristics should be recorded. The area of the bite mark should then be double-swabbed for saliva, first using a swab wetted with distilled water and then immediately with a dry swab on the same area. The collection procedure involves rolling the swab while moving it in a circular pattern for 10 seconds [9]. Both swabs should be air dried for at least 30 minutes or placed in a drier unit. The samples can then be sent for polymerase chain reaction amplification within six hours of collection if the swabs are kept at room temperature. The samples should be refrigerated (not frozen) if this time frame is not realistic.

CONCLUSION

Although the preservation, examination, collection, and documentation process for forensic patients is time consuming, it is vitally important for the health and well-being of patients, as well as for maintaining a sense of trust, security, and justice for society as a whole. Whereas healthcare professionals were once not considered part of the investigative team, the forensic nursing specialty has helped to bridge the gap between the medical and legal arenas. It is hoped that each nurse working in the clinical setting will gain knowledge of medical forensics, far beyond the information contained in this course, so as to bring the realization of truth and justice to every forensic case.

RESOURCES

**Attorney General of Texas
Sexual Assault Nurse Examiner
(SANE) Program**

<https://www2.texasattorneygeneral.gov/cvs/sexual-assault-prevention-and-crisis-services>

International Association of Forensic Nurses
<https://www.forensicnurses.org>

**U.S. Department of Defense
Forensic Medical Report:
Sexual Assault Examination**
https://cdn.ymaws.com/www.safeta.org/resource/resmgr/Forms_Library/Dod%20Exam%20form.pdf

**U.S. Department of Justice
A National Protocol for Sexual Assault
Medical Forensic Examinations of
Adults/Adolescents**
<https://www.ncjrs.gov/pdffiles1/ovw/241903.pdf>

Implicit Bias in Health Care

The role of implicit biases on healthcare outcomes has become a concern, as there is some evidence that implicit biases contribute to health disparities, professionals' attitudes toward and interactions with patients, quality of care, diagnoses, and treatment decisions. This may produce differences in help-seeking, diagnoses, and ultimately treatments and interventions. Implicit biases may also unwittingly produce professional behaviors, attitudes, and interactions that reduce patients' trust and comfort with their provider, leading to earlier termination of visits and/or reduced adherence and follow-up. Disadvantaged groups are marginalized in the healthcare system and vulnerable on multiple levels; health professionals' implicit biases can further exacerbate these existing disadvantages.

Interventions or strategies designed to reduce implicit bias may be categorized as change-based or control-based. Change-based interventions focus on reducing or changing cognitive associations underlying implicit biases. These interventions might include challenging stereotypes. Conversely, control-based interventions involve reducing the effects of the implicit bias on the individual's behaviors. These strategies include increasing awareness of biased thoughts and responses. The two types of interventions are not mutually exclusive and may be used synergistically.

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Evidence-Based Practice Recommendations Citation

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