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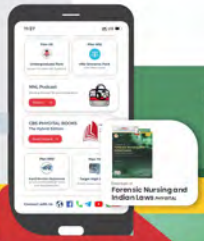

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CHAPTER 7

Forensic Team

LEARNING OBJECTIVES

After completion of this chapter, the learner will be able to:

- Understand forensic team and their responsibilities.
- Describe evidence collection and preservation.

CHAPTER OUTLINE

- Introduction
- Personnel Duties and Responsibilities
- Evidence Collection and Preservation
- Principles of Evidences in Forensic Practice

KEY TERMS

The **forensic team** includes:

- Team leader
- Photographer and photographic log recorder
- Sketch preparer
- Evidence recorder/evidence recovery personnel
- Specialists
  - Forensic toxicologist
  - Forensic pathologist

- Forensic anthropologist
- Forensic odontologist
- Forensic botanist
- Forensic biologist
- Forensic chemist
- Questioned document examiner
- DNA analyst
- Trace evidence analyst
- Medical examiner

Methods of collecting evidence:

- Combing
- Clipping
- Scraping
- Lifting
- Picking
- Vacuuming

INTRODUCTION

A forensic scientist's job duties can vary depending on the area of interest or specialization, but all of them share one thing in common: they recognize and analyze physical evidence obtained from a crime scene. In general, forensic scientists conduct their work in the forensic or crime laboratory, where they are responsible for comparing and interpreting the physical evidence obtained by investigators from the crime scene at the crime scene.

Responsibilities of forensic scientists include:

- Conducting laboratory evaluations and reviews requested by law enforcement authorities and medical examiners.
- Serving in a court of law as expert witnesses.
- Carry out the tests using scientific tools such as infrared spectroscopy, mass spectrometry and electron microscopy scanning.
- Ensuring the observance of all laboratory procedures and regulations.
- Entering data into computer programs and using specific knowledge from computer databases.
- Maintenance and calibration, supervision of laboratory equipment.
- Preparation of published reports based on review of facts.
- Coordinating activities relating to the collection, storage and transportation of crime scenes evidences.
- Acting as a link between investigators from the forensic laboratory and the crime scene investigator.
- The development, maintenance and updating of standards of work quality, standard operating procedures and similar methods and procedures.
- Coordination of work with other forensic team members and with outside agencies.

PERSONNEL DUTIES AND RESPONSIBILITIES

In every major search activity, there are certain staff, whose roles and responsibilities are required to get the evidences. Those mentioned in these guidelines focus on those that are usually important to ensuring that search operations are carried out in a coordinated and methodical manner. It is necessary to remember that having one person assigned to each duty might not be feasible. It is relatively common for one person to accomplish two or more duties. Staff preferences and behaviors are paramount considerations for all positions. Only when team members have a good mindset, their training and expertise can be used to the highest possible potential. Due to the long hours and attention to detail often expected from members, this human

side of evidence response teams is important. The major assignments, duties and responsibilities of personnel are under the following headings:

- Team leader
- Photographer and photographic log recorder
- Sketch preparer
- Evidence recorder/evidence recovery personnel
- Specialists

Team Leaders

- Takes charge—ensures the safety of staff and security at the scene.
- Ensures that staff use proper protective equipment and complies with standard guidelines to protect them from any health risk that might be presented by blood or any other human body fluid.
- Initial walk-through to perform a preliminary survey, assess possible facts and prepare a narrative summary.
- Determines search patterns for team members, and makes suitable assignments.
- Designates the location and ensures that information is shared between search and investigative personnel.
- Coordinates and ensures the maintenance of a cooperative spirit with other law enforcement agencies.
- Ensures the availability of adequate materials and equipment for staff.
- Monitor access to the scene and assign a person to log into the scene for everyone.
- Reassesses search efficiency continuously throughout the entire course of service.
- Releases the scene after it has been finished with a final survey and inventory of the facts.

Photographer and Photographic Log Recorder

The photographer and photographic log recorder have been shown in Figure 7.1.

- Photograph the whole region before entering it.
- Photograph of all victims, crowds and cars.
- Photograph the entire scene with overall, medium and close-up coverage, using the measurement scale if necessary.
- Photograph the major proof items, before they are transferred; coordinate this effort with sketch preparer, evidence recorder, and evidence recovery staff.
- Until lifting and casting are done, photograph all latent fingerprints and other impression proof.
- Prepare photo logs and drawings for photos.

Fig. 7.1: Photographer and photographic log recorder

Sketch Preparer

The sketch has been shown in Figure 7.2.

- Instant scene area diagram and orient diagram with drawing.
- Set out the key pieces of sketch proof.
- Designate and classify areas to be searched and notify the team leader and all other nomenclature search members for identified areas.

- Get adequate assistance for measurements and double inspection measurements.
- Ensure that the appropriate administrative data, such as scale disclaimer, is recorded on sketch.

Fig. 7.2: Sketch

Evidence Recorder/Custodian

- Have relevant facts photographed before collection.
- Describes proof and its place on a suitable bag or envelope.
- Sign and date proof container/maintains custody chain.
- To optimize data credibility, properly gather and package evidence.
- Maintains a log of proof.
- Using adequate protective devices and procedures to deal with potentially infectious evidence such as blood or body fluids.

Specialists

In order to support or refute hypotheses about physical evidence obtained at a crime scene, forensic science uses scientific principles. As such, forensic scientists examine information obtained or received from crime scenes and present the results of their analyses based on their conclusions. Depending on the field of forensic science being practiced, a forensic science job description can look distinctly different. This is because the field of forensic science is very broad and thus includes a variety of specialties, many of which are rooted in the natural sciences.

Therefore, a forensic team may take on one or more of the following forensic science specialists:

- **Forensic toxicologist:** Forensic toxicologists test samples of human tissue to determine if they are affected by a substance such as alcohol, drugs, poisons, metals, gases and other chemicals. They perform scientific tests on body fluids and tissue samples to identify any drugs or chemicals present in the body. Working in a laboratory, the forensic toxicologist performs tests on samples collected by forensic pathologists during an autopsy or by crime scene investigators. They typically work at law enforcement facilities, medical examiner's offices or private establishments like drug testing laboratories. Some primary duties of a forensic toxicologist include:
  - Testing tissues such as body fluids for drugs, alcohol, chemicals, gases and other substances.
  - Measuring the concentration of substances within the tissues.
  - Working with law enforcement agencies/medical examiners to determine if substances contributed to a person's death.
  - Providing expert witness testimony in court proceedings.

- **Forensic pathologist:** The forensic pathologist performs autopsies/postmortem examinations with the goal determining the cause of death as well as the possible manner of death. The forensic pathologist is specially trained:
  - To perform autopsies to determine the presence or absence of disease, injury or poisoning.
  - To evaluate historical and law-enforcement investigative information relating to manner of death.
  - To collect medical evidence such as trace evidence and secretions.
  - To document sexual assault.
  - To reconstruct how a person received injuries.
- **Forensic anthropologist:** Forensic anthropology, application of physical anthropology to legal cases, usually with a focus on the human skeleton. Forensic anthropologists deal strictly with the human remains. They can assess the age, sex and unique features of a decedent and are invaluable in documenting trauma to the body and estimating how long a corpse has been decomposing (Fig. 7.3). Duties of forensic anthropologist are as follows:
  - Assists law enforcement with the location and recovery of human remains at crime scenes.
  - Analyzes skeletal remains to establish the biological profile of the individual.
  - Interprets trauma evident on the bones to establish the type and extent of injuries.
  - Works with a forensic odontologist (dentist) to match dental records.
  - Testifies in court about the identity of the individual and/or the injuries that might be evident in the skeleton.
  - Estimates the time since death.

Fig. 7.3: Forensic anthropologist

- **Forensic odontologist:** Forensic odontologists are highly experienced, specially trained dentists who use their expertise to analyze bite marks. In death cases, the forensic odontologist attends the autopsy and takes photographs, cranial measurements, dental impressions and X-rays from the remains (Figs 7.4A and B). These samples are then compared to those of known missing individuals. If a match can be made, the remains can be identified. Also called forensic dentists, forensic odontologists are typically called in to:
  - Identify human remains that cannot be identified using face recognition, fingerprints or other means.
  - Identify bodies in mass fatalities, such as plane crashes and natural disasters.
  - Determine the source of bite mark injuries, in cases of assault or suspected abuse.
  - Estimate the age of skeletal remains.
  - Testify in cases of dental malpractice.

Figs 7.4A and B: Forensic odontologist analyzes: (A) Bite marks; (B) Dental impressions

- **Forensic botanist:** Forensic botany is the utilization of the plant sciences in matters related to law, i.e., using plants or plant products as evidence to help solve crimes such as murder, kidnapping, etc., and also to help determine the victim's cause of death. Forensic botany is an integration of botany and forensics. The application of botanical knowledge in the investigation process is based on two main principles. The first principle is Locard's exchange principle which states that any contact between two objects will result in an exchange of matter between them. Thus, it can be assumed that physical evidence such as botanical trace evidence can be used to prove a link between the scene of the crime, the victim, and the criminal. For example, the pollen grains found in a suspect's clothes or any other belonging can be compared to the pollens found at the scene of the crime to establish a link between the scene of the crime and the suspect. The second principle is related to the use of forensic botany methods in determining the distribution of plant species around the world. This is particularly useful as different species of plants would require different environmental conditions such as soil condition, temperature, water availability, etc., and the use of this knowledge would help us to easily create a link between the crime scene, the victim, and the criminal. For example, the presence of pollens on the corpse that are not found at the scene of crime suggests that the corpse has been moved from one place to another (Fig. 7.5).

Fig. 7.5: Forensic botanist

- **Forensic biologist:** Forensic biologists examine blood and other body fluids, hair, bones, insects and plant and animal remain to help identify victims and support criminal investigations. Forensic biologists collect and analyze biological evidence found on clothing, weapons and other surfaces to determine the time and cause of death (Fig. 7.6).

Fig. 7.6: Forensic biologist analyzes—biological evidence

- **Forensic chemist:** Forensic chemists analyze nonbiological trace evidence found at crime scenes in order to identify unknown materials and match samples to known substances. They also analyze drugs/controlled substances taken from scenes and people in order to identify and sometimes quantify these materials (Fig. 7.7).

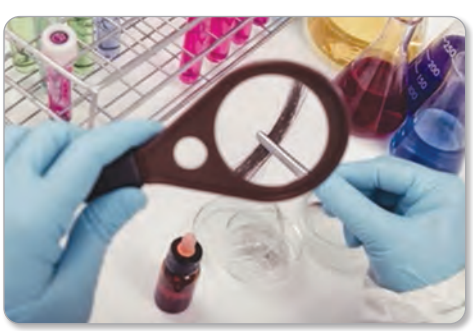


Fig. 7.7: Forensic chemist

- **Questioned document examiner:** Questioned document examination (QDE) is a forensic science discipline pertaining to documents that are potentially disputed in a court of law. The examination's primary purpose is to provide evidence about suspicious or questioned documents using a variety of scientific principles and methods. Document examination might include alterations, obliterations, paper analysis, forgery, origin, determining authenticity, or any other questions (Fig. 7.8).

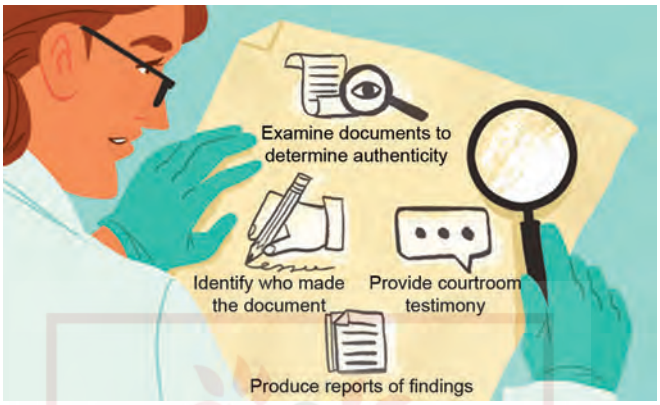


Fig. 7.8: Questioned document examiner

- **Fingerprint examiner:** Fingerprint analysts, also often referred to as forensic print analysts, latent print examiners, latent fingerprint analysts, fingerprint examiners, or fingerprint experts, are scientists who are responsible for preserving, studying and evaluating fingerprints as part of a crime scene investigation (Fig. 7.9). Fingerprint analysts may be called upon to:
  - Process various types of fingerprint samples.
  - Enhance visible prints using a variety of photographic and computer equipment.
  - Identify and label latent prints.
  - Verify the identification of latent prints to known impressions.
  - Prepare detailed reports on tests and their results.
  - Sweep crime scenes as to carefully lift fingerprints.
  - Preserve fingerprint specimens for lab analysis.
  - Load fingerprint images into state or national fingerprint databases for comparison.

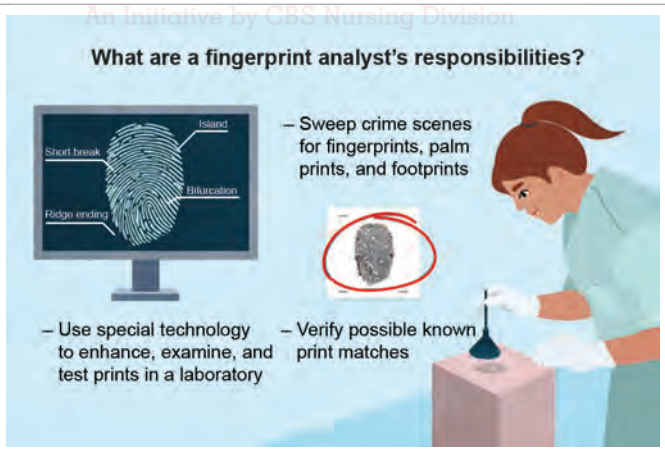


Fig. 7.9: Fingerprint examiner

- **DNA analyst:** Forensic DNA analysts are scientists who are responsible for obtaining biological information within the scope of a criminal investigation. Data derived from DNA analyses performed by forensic DNA

analysts may be used to help law enforcement identify a victim or a perpetrator. Forensic DNA analysts work in forensic crime labs, where they conduct tests on samples obtained from crime scenes.

- **Trace evidence analyst:** A trace evidence analyst, also referred to as a trace evidence examiner, is a forensic scientist who performs analyses on trace evidence that may occur as a result of physical contact between a suspect and victim during a violent crime. Trace evidence analysis includes the identification and comparison of these transferred materials using specific scientific instrumentation and methodologies. Trace evidence materials may include: fibers, primer residue, hairs, paint, duct tape, arson debris, accelerants, glasses, unknown substances.

EVIDENCE COLLECTION AND PRESERVATION

Physical proof is obtained using forensic standards such as contamination prevention and preserving the reliability of the results. The facts speak of the case being investigated and connect the victim, the suspect and the scene. Processes used in collection of forensic evidence complement those used in the practice of nursing. Nurses are taught to apply the evaluation and selection process to the gathering of information in order to develop a care plan based on the evidence that has been obtained. The nursing profession promotes evidence-based solutions like other scientific bodies.

Types of Evidence

In forensic science, many different types of evidence can be collected and analyzed (Table 7.1). Forensic evidence is collected at a crime scene, analyzed in a laboratory, and often presented in court. Each crime scene is unique, and each case presents its own challenges.

Table 7.1: Different types of evidence

Types of forensic evidence	Example
DNA	Blood, saliva, semen, skin cells, tissue
Trace	Fibers, hairs
Toxicology	Blood, urine, tissue
Pathology	Bone, tissue, blood
Digital	Photographs, digital images, internet sources
Impression and pattern	Footprint, firearms, fingerprints
Controlled substance	Narcotics, opioids
Anthropology and dental	Bite marks, skeletal remains

DNA Evidence

Samples are gathered from crime scene evidence and a suspect DNA is then extracted and analyzed for the presence of a set of specific DNA markers. Simply put, if the sample profiles do not match, the suspect did not contribute the DNA at the crime scene.

Trace Evidence

Fibers, hair, soil, wood, gunshot residue, and pollen are several examples of trace evidence that may be transferred among people, objects, or the environment during a crime. Investigators can potentially link a suspect and a victim to a mutual location through trace evidence.

Toxicology Evidence

Forensic toxicology is the analysis of biological samples for the presence of toxins, including drugs and alcohol. The toxicology report can provide key information as to the type of substances present in an individual and if the amount of those substances is consistent with a therapeutic dosage or is above an unsafe level. These results can be used to make determinations when establishing whether a substance had a potential effect on an individual's death, illness, or mental or physical impairment.

Pathology Evidence

Human remains are treated as a separate and unique type of forensic evidence and analysis. When an autopsy of the remains is completed, the cause and manner of any death that was possibly violent, unusual, or untimely can be determined. A forensic pathologist will conduct a postmortem examination of the remains and consider death scene findings. The pathologist will also review the individual's medical history to help determine if the death was natural, accidental, or criminal.

Digital Evidence

Computers are used for committing crime and fraud, and, thanks to the science of digital evidence forensics, law enforcement can now use computers to fight crime. Digital evidence is information stored or transmitted in binary form. It can be found on computer hard drives, mobile phones, CDs, DVDs, flash drives and cloud storage. Digital evidence is commonly associated with electronic crime such as child pornography or credit card fraud.

Impression and Pattern Evidence

Impression evidence is created when two objects come in contact with enough force to cause an "impression". Impression evidence is either two-dimensional, (e.g., fingerprints) or three-dimensional (e.g., marks on a bullet caused by the barrel of a firearm). Pattern evidence may be additional identifiable information found within an impression. As an example, a forensic examiner will compare shoe print evidence with several shoe sole patterns to identify a particular brand, model, or size.

Controlled Substance Evidence

Controlled substances are chemicals that have a legally recognized potential for abuse. They include "street drugs" such as heroin or ecstasy and prescription drugs such as oxycodone and other pain medications. Detecting and identifying controlled substances is a critical step in law enforcement's fight against drug-related crime and violence. Many drugs are similar in appearance and properties, creating a high degree of difficulty in distinguishing their exact identity. This is where regional poison control centers can assist law enforcement in identifying and characterizing certain drugs.

Anthropology and Dental Evidence

Bones and teeth are the most durable parts of the human body and may be the only recognizable remains in cases of decomposition, fire scenes, or mass fatalities, and they can be used to identify an individual in such cases.

Forensic anthropologists examine "skeletonized" or otherwise compromised human remains to assess age, gender, height and ancestry. Forensic anthropologists can also identify injuries and estimate time of death. Examination of these remains may give information that can help investigators identify a victim from a missing person case and/or open death investigation. Forensic dentists, or odontologists, examine the development, anatomy, and any restorative dental corrections of the teeth, such as fillings, to make a comparative identification of a person.

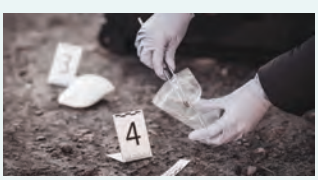
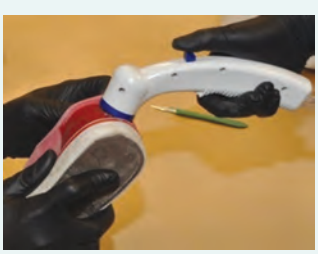
PRINCIPLES OF EVIDENCES IN FORENSIC PRACTICE

- The protection of forensic proof is one of the most important forensic concepts.
- The accuracy and purity of the preservation of forensic evidence is important, particularly in cases such as murder and sexual harassment.
- Without strict compliance with requirements for proof collection and storage, important information could be lost due to lack of knowledge and training.
- Since nurses are typically used to collecting biological samples and understanding the importance of proper handling procedures, they should be called upon to assist with collection of set of evidence samples as well.
- Evidences should be labeled so that it can be positively identified. Date, time, place, from whom and by whom it was taken or found, should be recorded.
- Evidence should be preserved in same condition it was found.
- Similar to the principles in place for biological specimen selection and the need for a sterile procedure, the mishandling of evidence that has been lost or gathered inappropriately have the significant effect on legal proceedings and patient results.
- The circumstances in which forensic evidence is obtained are not necessarily ideal, and in a hospital setting, it could be the first chance to gather evidence. For this cause, it is important that doctors and nurses in emergency room should be aware of the identification and storage of sufficient relevant forensic evidence.
- The chain of evidence must be intact and complete. The chain-of-custody records connection established between each person who handles a piece of evidence. Written documents must accompany the transfer of evidence from one person or one location to another. The end result is a paper trail recording where, on what date, the proof was and who was responsible for it from the moment it was gathered to the time it was introduced in court.
- The first step in the proper collection of proof is detailed documentation. It is best to record descriptive notes and impressions as soon as possible. As well as the health care provider may note the state in which the patient arrived in the emergency room, how and when the patient arrived. Appropriate staff should be advised, if necessary, to photograph the patient and each particular injured area before seeking medical attention.
- Film photography and digital photography are the two newly added methods to take forensic photography. Photographs of the patient should include the face, along with the injured areas. A photo log should be kept and should include pertinent information such as a patient's name, date, time, photographer's name, type and speed of film, and the specific exposure numbers.
- An anatomical chart is a useful instrument for documenting all the marks on the body. The size, shape, color, location, and characteristics of the edges around the wound must be included in the definition of each mark. Also, the presence of any foreign substance in or around the wound should be noted.
- It is important to document verbal statements made by the patient using quotations. An inventory list that includes the collected objects, the time and place of the collection, the name of the individual who collected the evidence, and the officer's name and badge number who obtained the evidence should be maintained.
- It is important to put small or loose evidence in clean, empty containers or paper packets and secured in envelopes. Large items such as clothes should be sealed in individual containers that are clean and not used. If they are objects are wet in order to preserve proof, they should be air dried and kept secure before they are retrieved by law enforcement.

Methods for Collecting Evidence

Methods for the collection of evidence may involve visual inspection, visual search by means of visual examination such as ultraviolet light, laser and magnification and collection of samples (Table 7.2). When gathering the least intrusive technique should be used and can include:

Table 7.2: Methods for collecting evidence

Combing 	To retrieve proof from body hair, a clean comb or brush is used. The collection tool is packaged with the evidence gathered.
Clipping 	Trace proof can be collected by using clean clippers or by clipping the nails or with scissors. The collection device is packaged with clippings; right- and left-hand clippings usually separately packed.
Scraping 	The debris of evidence is scraped with small spatula (such as what might be found under the fingernails) onto a clean collection surface such as paper. To prevent the loss of the sample, it is then immediately packaged with the scraping tool.
Lifting 	Backed adhesive material such as tape is tightly patted or rolled over an object to lift any trace proof where it can be preserved.
Picking 	By using forceps or other pickups, proof can be removed from an object.
Vacuuming 	To gather evidence, a special vacuum with a filter trap is used and it is used after other techniques though it is not as discriminatory and may contribute to a wide collection of other content as well.

- The purpose of storing and packaging trace evidence and similar products is to minimize damage or prevent loss or contamination. Based on the form of proof, the way of analyzing the evidence can differ. The evidence must be securely sealed to prevent loss, contamination or tampering.
- Individuals in charge of identifying and collecting the evidences should be familiar with the laws in their jurisdiction.
- Health care practitioners should be aware of the unless victims of violence require lifesaving intervention, it is vital to retain any proof may be present.
- Law enforcement should be contacted immediately. Evidence at risk should be withheld unless absolutely necessary.

Forensic Documentation

While the crime scene is not usually the health care setting, the victim or perpetrator may present at the health care setting immediately after the crime has occurred. When properly recognized, documented, and preserved, a nurse may be an important link to appropriate outcomes in the legal system when patient cases are linked to legal implications. It is of utmost importance that a nurse assesses and collects evidence whenever possible. In addition to collecting the evidence, the nurse must understand the importance of documenting properly. The first step in evidence collection is the documentation of how and when the patient arrived, and the condition in which the patient arrived. When possible, take photographs of the patient and specific injuries before the patient receives medical treatment. One should record exactly what is observed and as objectively as possible. In order to document properly, one must first be able to assess properly. Assessment has always been a key to the nursing process, which includes a head-to-toe assessment, past history of medical issues, and any previous information from other sources that are available. There is specific type assessment for forensic cases. The nurse clinician may request a forensic nurse, if available, to take over the collection of evidence when a patient presents in any department and it is suspected that patient is a victim of violence. If a forensic nurse is not available, a nurse should use his or her best judgment in collecting the evidence. Documentation includes written documentation, photo documentation, and the collection of physical evidence.

Photographic Evidence

Forensic photographs can play a pivotal role in the medical documentation of injuries in all forms of interpersonal violence and can be used in a court proceeding. The photograph is a visual representation of observed injury. Written documentation should accompany the photographs. If called to serve as a witness in the case, the nurse can testify that the photographs are true and accurate depictions of the wounds that the nurse observed the day of care. Every hospital should establish policies that provide clear guidelines for how to store and document photographs. Factors that should be taken into consideration when taking forensic photographs:

- **Lighting:** Use as much natural light as possible. Fluorescent lights can cast a green hue on photographs. Show the detail of each photograph as clearly as possible.
- **Scales:** Use a scale in the photographs to show the extent (size) of the injury.
- **Sequence:** Always begin with a full-body photograph followed by a mid-distance photograph and then by a close-up.
- **Labels:** Be sure to place identifying information on the photographs (patient name, hospital number, date of birth, date and time the photo was taken, and the name of the photographer).
- **No deletions:** Keep all photographs, even the ones that do not turn out. It is important to be able to document that no photographs were disposed of.

- **Consent:** A signed consent should be obtained for photography by the victim or by a qualified surrogate. Sometimes the victim is unable to consent, but the clinician recognizes that the injuries are/may be related to a potential forensic issue that may have to be litigated. In those cases, the clinician may take the photographs and obtain consent later.

Packaging Evidence

Evidence should be packaged in such a way that there is no question as to whether anyone has tampered with the evidence or affected it in any way. Some important things to remember when packaging evidence:

- **Clothing:** Each item of clothing should be collected and placed in a separate paper bag to avoid cross-contamination. If wet, the clothing should be dried before packaging, or placed in a plastic bag to avoid leakage and cross-contamination until the clothing can be hung and dried and then placed in a paper bag. Bacterial or mold growth can occur if items are not dried. Any patterns of stains or cuts or holes should be noted, and the patterns must be preserved for further analysis. Do not cut through any defects in the fabric.
- **Weapons:** Safety is always a concern. Whether it be a victim or a perpetrator, the nurse must document and, whenever possible, photograph weapons that are found on an incoming patient. Security measures must be taken to secure the weapon in order to protect staff and others in the facility.
- **Common errors in documentation:** Common errors in documentation may make all the difference in the outcome of the court case. Sloppy jargon, confusing abbreviations and statements, vague descriptions, and lack of clarity can make the difference in the outcome of a trial. Information as it is reported directly by the patient should be included. Do not edit the patient's statements or omit interventions provided, and record all observations in a timely fashion. Late entries can call the nurse's actions into question.
- **Chain of custody:** Documents record the handling of evidence as it moves from the location where it was collected and ultimately to the laboratory where it will be processed and then presented in court. The documents must provide a paper trail of each change of location of the evidence, dates when it is moved and by whom, and who is responsible for the evidence at each time point. This involves proper packaging and sealing of the evidence. Sexual assault evidence collection kits have a place to record the chain of custody on the box, and most hospitals have a chain of custody document that is used in their facility. The fewer people handling the evidence, the better, because the more people handling the evidence, the more mistakes can be made. This documentation is most likely to be requested at the time of trial in order to establish that no one has tampered with the evidence.

The nurse working in the hospital and community setting is not expected to be an expert in forensic care of patients. However, given the prevalence of violence in society, all clinicians must make themselves aware of warning signs that a patient may actually be a victim of violence. And at the point where they become suspicious of forensic aspects of care, each clinician should perform to the best of his or her abilities in documenting the case and collecting whatever evidence he or she is able to collect.

Summary

- Methods for the collection of evidence may involve visual inspection, visual search by means of visual examination such as ultraviolet light, laser and magnification and collection of samples.
- Forensic photographs can play a pivotal role in the medical documentation of injuries in all forms of interpersonal violence and can be used in a court proceeding.
- Evidence should be packaged in such a way that there is no question as to whether anyone has tampered with the evidence or affected it in any way.

ASSESS YOURSELF

Long Answer Questions

1. Discuss the duties and responsibilities of a forensic scientist.
2. Discuss the various duties of a leader in a forensic team.
3. Write in detail about the principles in evidence collection and preservation.

Short Answer Questions

1. What are the methods of evidence collection?
2. Write about composition of a forensic team.
3. What is evidence recorder?

Multiple Choice Questions

1. Forensic scientists' responsibilities:
a. Expert witness
b. Carrying out tests using scientific tools
c. Observer for laboratory procedures alone
d. Published reports preparation
e. All of the above

2. A forensic scientist job includes:
a. Only analysis of evidence from crime scene
b. Recognizing evidence from crime scene
c. They analyze and recognize evidence got from crime scene
d. None of the above

3. Who is a custodian?
a. Maintains custody chain
b. Describes the proof
c. Relevant facts photographed
d. All of the above

4. While bringing external specialist what things we need to remember:
a. Integrity
b. Trustworthiness
c. Experts role
d. Both a and b
e. All a, b, and c

5. Forensic science specialist:
a. Physiologist
b. Biologist
c. DNA analyst
d. Local examiner

6. What is the most important forensic concept?
a. Preservation
b. Protection of proof
c. Contamination
d. All of these

7. What is the first step collection of proof?
a. Partial documentation
b. Complete documentation
c. Recording
d. None of the above

8. Instrument used for documenting marks in body:
a. Paper
b. Pen
c. Anatomical chart
d. Scale

9. Verbal statements are documented using:
a. Citations
b. Quotations
c. Algorithms
d. Recorder

10. Methods for collecting trace proof:
a. Comb
b. Tape
c. Clippers
d. Forceps

11. Why are we storing and packaging the evidence?
a. Prevent loss
b. Prevent contamination
c. Increase damage
d. Both a and b

12. Which of the following is not one of the components of forensic documentation?
a. Photography
b. Written documentation
c. Diagrammatic documentation
d. Scanning with a Wood's lamp

Answer Key

Multiple Choice Questions

1. d	**2.** c	**3.** a	**4.** e	**5.** c	**6.** b
7. b	**8.** c	**9.** d	**10.** c	**11.** d	**12.** d

Essentials of

Forensic Nursing and Indian Laws for BSc Nursing Students

Learning Objectives given in all the chapters focus on the areas that a student will become aware after completing the chapter.

LEARNING OBJECTIVES

After completion of this chapter, the learner will be able to:

- Understand nursing and essential qualities of a nurse.
- Define the terms used in legal and ethical issues in nursing.
- Explain the ethical principles in nursing.
- Discuss the rights of patients and nurses.

Every chapter starts with a **Chapter Outline** that gives a glimpse of the content covered in the chapter.

CHAPTER OUTLINE

- Nightingale Pledge
- Nursing
- Essential Qualities of Nurses
- Legal and Ethical Issues in Nursing

Important Key Terms used in the chapter are enlisted in the beginning of every chapter.

KEY TERMS

Civil law or case law: It deals with disagreements between two people or parties.

Criminal law: It deals with crimes that are regarded to be against the public interest, such as crimes against people, property, public safety, and state security, among others.

Warrants case: A case relating to an offense punishable with death,

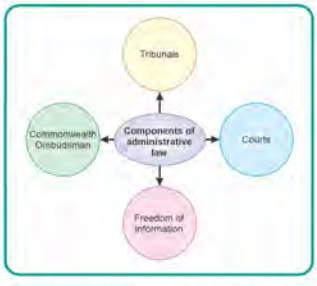
Case Studies based on different real-time cases have been summarized for better and practical overview

Case Studies

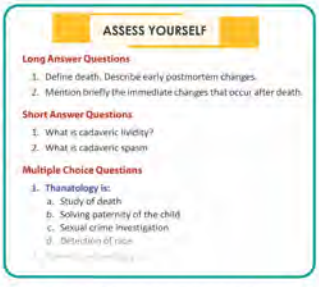
1 **Ethical Issues in Nursing**

Mr Krishna, 72-year-old, was admitted with complaints of frequent fainting episodes and drop in his blood pressure with extreme tiredness. He was diagnosed with Carcinoma prostate with metastases to the bone. He had also taken lot of medications for pain along with antiemetics for chemotherapy.

Several **Images and Diagrams** have been used at relevant places to simplify the concepts for the students.



At the end of every chapter, **Assess Yourself** section has been included to help the students in assessing their learning.


ASSESS YOURSELF

Long Answer Questions

1. Define death. Describe early postmortem changes.
2. Mention briefly the immediate changes that occur after death.

Short Answer Questions

1. What is cadaveric lividity?
2. What is cadaveric spasm

Multiple Choice Questions

1. Thanatology is:
   a. Study of death
   b. Solving paternity of the child
   c. Sexual crime investigation
   d. Detection of rape

Medicolegal autopsy	Pathological autopsy
It is also named as postmortem examination or medicolegal autopsy.	It is also named as pathological autopsy or academic autopsy.
Consent from relatives is not required.	Consent from legal guardian is mandatory.
It is conducted under legal authority and police authorization mandatory.	It is not necessary to conduct under legal authority.

Numerous **Tables** are used in text to provide you necessary data and information to supplement the text.

Critical Thinking and Clinical Judgment examples have been wrapped in between the text.

CRITICAL THINKING AND CLINICAL JUDGMENT

- Mr Brijesh, 70-year-old male, was diagnosed with lung cancer in terminal stages. He was given chemotherapy and was feeling better for two months. However, his symptoms recurred and he became very sick suffering with a lot of pain. The doctors told his wife and the family that further chemotherapy will not be successful and will not increase his life expectancy greatly. They further advised him palliative care to make him feel comfortable. Mr Brijesh experienced severe pain, but refused to take any of the pain medications as it made him feel very sleepy and he was also afraid that he might miss precious time with his family. His wife, Mrs Ranjini was very sad at his suffering and asked the nurse if she can administer pain medications without his knowledge.

If you were the nurse, what would you do?

Each and every chapter ends with **summarized one-liner** for quick glance of the chapter

Summary

- **Consumer Protection Act (CPA):** CPA is an Indian law that went into effect in 1986 and was revised in 1993. CPA's mission is to safeguard and promote consumer interests and rights.
- A code of ethics is a written declaration of an organization's ideals on certain ethical and social concerns.
- The ICN code of ethics for nurses is a statement of the ethical values, responsibilities and professional accountabilities of nurses and nursing students that define and guide ethical nursing practice within the

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