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The sphere of dental forensics: Components and the obligations of the dental professional

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The sphere of dental forensics: Components and the obligations of the dental professional

Educational objectives

At the conclusion of this course, the dental health professional will be able to:

1. Identify areas of forensic dentistry and the legal and ethical obligations for participation
2. Demonstrate knowledge of the organization and mechanisms of a multiple fatality team
3. Identify legal aspects and signs of human abuse
4. Identify pathways to further knowledge and opportunities for involvement in forensic dentistry

Abstract

Forensic dentistry/odontology is not an official specialty as defined by the American Dental Association (ADA). It is an enhancement of the dental profession that requires dental professionals to use knowledge, experience, and judgment to collaborate with legal systems. Within this field, dentists, dental hygienists, dental assistants, and others play vital roles in several areas. They will often be affiliated with coroners, medical examiners, and law enforcement agencies in the United States and worldwide. The roles forensic dental professionals play involve work in human identification, human abuse, expert witness testimony, bite mark analysis, age estimation, and contribution to the creation of forensic dental standards.



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Introduction

When facts, experience, and knowledge of dentistry are applied to legal matters, we call it forensic dentistry, or forensic odontology. This field exists to aid the legal community in its search for facts.

Today, the science of forensic dentistry relies on evidence-based methods and techniques to ensure accuracy. All dental professionals have some familiarity with forensic dentistry, beginning in the preparatory years of study and continuing into practice and research. There is also formal education available for those in the dental field who wish to pursue the study of forensic odontology. Seminars, conferences, and continuing education programs are available and presented by experienced professionals. There are local, state, national, and international organizations that offer membership, education, and avenues to garner expertise.

Forensic dentistry has been divided into sections according to where dental professionals' services are needed. These sections include physical abuse, expert witness testimony, identification, bite mark analysis, and age assessment. As in any professional field, forensic dentistry commands the ethical treatment of persons and evidence without personal bias. Forensic professionals abide by oaths and obligations of practice whenever dealing with victims, the accused, and in their documentation and gathering of evidence.

Ethical and legal obligations

Professional organizations adopt codes of ethics for their members. All are expected to practice by these codes. They include guidance on protecting the dignity of the public, our profession, and ourselves. The American Dental Hygienists' Association (ADHA) notes we are compelled to engage in generally accepted actions. Responsibility is central to our ethics and is synonymous to obligation. These obligations apply to us as individuals and as professionals to family, friends, clients, colleagues, employers, employees, the dental hygiene profession, the community, society, and to scientific investigations.¹

Medical history and dental records as forensic resources

One's medical history and dental record create an intersection of the legal and health-care worlds. These are not just a memory aid, but a means of communication between professionals. Anyone can easily see what has been done and what is pending. We can be apprised of the extent of disease and synthesize data for treatment. These records are written not only for others in the dental arena, but for other interested parties. They may include physicians, patients, insurers, third-party payers, public health officials, lawyers, risk managers, consultants, and law enforcement agencies. They will seek this information for further treatment, research, litigation, and reimbursement issues. In a malpractice action, chart documentations can be the provider's best defense.²

Numerous forms exist for the collection of a patient's medical history. Likewise, many forms are available for recording past, present, and future dental records. These documents are a repository of information, and valuable forensic resources. They have the potential to be expanded to further contribute critical information if and when the legal system calls for an investigation. Professionals should review the forms used. Recorders can ask patients if they have tattoos or piercings that may not be obvious. All visible skin markings should be documented. Research shows that 75% of physical abuse occurs in the head and neck area.³ This information may be the critical evidence utilized in making an abuse interception or legal identification.

Standards of practice for forensic odontology

The Organization of Scientific Area Committees for Forensic Science (OSAC) is administered by the National Institute of Standards and Technology (NIST). It publishes standards that define minimum requirements, best practices, standard protocols, and other guidance to help ensure that the results of forensic analysis are reliable and reproducible. Its odontology subcommittee has created and is currently working on standards for forensic odontology informatics terminology, human age assessment by dental analysis,

dental forensic biometrics and informatics on human identification by comparative dental analysis, and forensic dental data set. These have been or will be entered into the approved Standards and Guidelines Registry. In the future, there will be human abuse recognition and documentation, dental terminology, and recognition and documentation of suspected patterns of dental origin as part of the registry. Though not a regulatory body, NIST encourages compliance.⁴

The International Organization for Standardization (ISO) is a worldwide federation of national standards bodies that work to prepare standards via technical committees.

Domestic violence/human abuse

Domestic violence encompasses child abuse and neglect, intimate partner abuse, elder abuse, and neglect and abuse of the disabled. Any form of abuse can result in death. Dental professionals can help identify all forms of domestic violence through awareness and recognition of the overt and covert signs and symptoms. An intervention can begin on behalf of a victim both as a professional responsibility and as an ethical citizen. With a better understanding of the definitions, strategies can be implemented for use by the dental team to address and reduce the incidence of both abuse and neglect.⁵

We are now becoming more aware of the crime of human trafficking. Adults and children alike are victims of human trafficking in the sex and labor trades. Dental professionals can complete online training to spot, report, and prevent trafficking through the OnWatch website (iamonwatch.org). "OnWatch is a survivor-led training designed to empower you to spot, report, and prevent sex trafficking where you live, work, and play."⁶

Child abuse: There is an enormous obligation on the part of all professionals to protect children. We aim to ensure all children remain unharmed as they are often victims of abuse and neglect. The recent extended school absence of children due to the pandemic has resulted in less reporting from teachers and school administrators.⁷ These constitute a majority of documented reports. Cases of abuse

and neglect and the issues that surround them will never go away and cannot be fixed overnight, but we must continue to do our part to keep children safe.

OSAC plans to publish a standard titled “Human Abuse Recognition and Documentation by Dental Professionals.” It will include terms and definitions for all types of abuse and neglect and characteristics of injuries. Guidelines will include the examination, including the physical characteristics of injuries, and the interview of the patient and/or caregiver and its documentation and reporting. Finally, it will offer links and phone numbers for abuse resources.

We are obligated to report child abuse in every state. This is often referred to as mandated reporting. When there is reason to suspect nonaccidental trauma or neglect, we must report. Some states name dentists and dental hygienists as mandatory reporters.⁸ Some states mention health-care providers and/or all citizens. With a better understanding, dental professionals can impact the incidence of child abuse and neglect by increased reporting and public education. We lose an average of five children every day to abuse and neglect, and the United States has one of the worst child abuse statistics among developed nations.^{9,10}

Dentistry has not been a substantial contributor to reporting, and all oral health-care providers need to improve their reporting rate.³ Dental professionals should identify signs such as bruises, broken bones, burns, pattern injuries, injuries at various stages of healing (figures 1, 2), injuries inconsistent with the history given, and emotional and developmental problems. Further questions should be asked when a child presents with any burns, fractures of the jaw or teeth (figure 3), torn frenum, injuries appearing to be bites, multiple bruises in different stages of healing, or any other injuries (figure 4).

Intimate partner abuse: Another form of domestic violence is the nonaccidental trauma inflicted upon a family member or within an intimate relationship. The physical signs and symptoms mirror those of child and elder abuse. Mandatory reporting laws differ from state to state. They generally fall into four categories: states that require reporting



FIGURE 1. Healing bite wound



FIGURE 2. Bruised palate



FIGURE 3. Fractured tooth



FIGURE 4. Hair pulling

of injuries caused by weapons; states that mandate reporting for injuries caused in violation of criminal laws as a result of violence or through nonaccidental means; states that specifically address reporting in domestic violence cases; and states that have no general mandatory reporting laws.¹¹

With the increasing awareness of domestic violence as a health-care issue, attention has turned to how health-care providers can best assist their patients through routine documentation, intervention, and referral. By helping to connect patients to community domestic violence advocates, safety can be enhanced, especially in states where reporting is not mandated. Suspicions or revelations of intimate partner violence should prompt dental practitioners to have the victim seek help through coalitions of advocates via hotlines and organization offices. An excellent resource on intimate partner

violence is Futures Without Violence: National Health Resource Center on Domestic Violence, which also offers a toolkit for health-care providers.¹²

The Centers for Disease Control and Prevention's National Center for Injury Prevention and Control launched the National Intimate Partner and Sexual Violence Survey (NISVS) (https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2147574), which reveals data on the incidence and consequences of intimate partner violence.¹³

Elder abuse: The National Council on Aging reports that one in 14 elders in the US is a victim of abuse.¹⁴ The US Senate Special Committee on Aging reports that more than two million adults over 60 are victims.¹⁵ This obviously connotes an enormous number of unreported cases. Elder abuse encompasses physical abuse, emotional abuse, sexual abuse, financial abuse, neglect, and abandonment.

Signs and symptoms to watch for include bruises, broken bones, bite marks, burns, and other obvious lesions (figure 5). Also, there



FIGURE 5. Wound caused by cutting

may be unexplained changes in behavior, sudden changes in financial situation, and tense relationships including frequent arguments. Again, as in other domestic violence categories, mandated reporting is regulated by individual states. Domestic violence awareness, documenting, reporting, and referring are aspects of forensic dentistry for which each health professional must play a role every day.

Abuse of the disabled: Individuals with disabilities can live on their own, with caregivers, within families, or in public and privately run housing facilities. They are usually dependent on additional help from others, which can contribute to their vulnerability to every kind of abuse. People with disabilities experience the same forms of physical and sexual abuse and neglect as the general population; however, they experience abuse at much higher rates. The rate of violent victimization against persons with disabilities is 26% of all nonfatal crimes. This accounts for 12% of the population.¹⁶

Dental professionals should educate themselves on state laws and guidelines to ensure the safety and well-being of those with disabilities. Any abuse should be reported through the designated channels in your state or jurisdiction. Please refer to Table 1 at the end of this course and be cognizant of abuse.

Age assessment

Forensic odontology is increasingly involved in the area of age assessment. Determining the age of a deceased individual is sometimes necessary for identification. Today, the world is seeing an unprecedented influx of refugees as well as crimes of human trafficking; thus, age assessment is also applicable to the living. Legal entities are calling on forensic odontologists to add to the evidence to be considered. Even though all relevant information is considered, it is not likely that one form of assessment will give a 100% accurate determination of a person's age. But, an estimation can aid authorities with management of the individual.

The United Nations has issued guidelines for policies and procedures in dealing with unaccompanied children and on the protective care of refugee children.

Determining the age of majority is crucial in these instances. Emerging research is giving this community new methods and technologies to apply. An estimated chronological age is based on the primary means of eruption and emergence, crown and root formation, and postdevelopmental changes.

Dental criteria to be applied to the skeletons of children include tooth mineralization, and to adults, they include amounts of aspartic acid, racemization of dentin, and growth layers of cementum. Several methods should be used in combination to increase accuracy. The American Board of Forensic Odontology (ABFO) states that events can be divided into stages and compared with the growth and development of similar people. This forms the basis for many dental flow and chronological charts commonly used in dental literature. In addition, other tools for assessment are utilized. They include, but are not limited to, formation and growth techniques for children and adolescents and postformation in adults.¹⁷ These dental methods work well and provide good evidence, but are only part of the overall picture.

Human bite marks

A common definition of a human bite mark is an alteration in or on a medium that is caused by the contact of teeth. It represents a pattern left in an object or tissue by the dental structures.

Teeth are often used as weapons. This can occur when one person attacks another or when a victim tries to ward off an assailant. The forensic odontologist first must determine that the mark in question is, in fact, a bite mark, and then whether or not it is a human bite, based



FIGURE 6. Bite mark



FIGURE 7. Cusp of Carabelli



FIGURE 8. Multiple crenulations

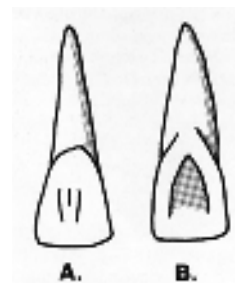


FIGURE 9. Shovel-shaped incisors

on the anatomical characteristics of teeth. Human bites are usually an elliptical or circular injury (figure 6). The bite may have two U-shaped arches separated by an open space.

Anthropological characteristics may assist in evaluation, due to commonalities in a given ethnicity. These commonalities serve as indicators that a “more likely” probability exists. The cusp of Carabelli on the mesiolingual cusp of the maxillary first molar implies European ancestry (figure 7). Multicusps, multiple premolars, multiple crenulations (figure 8), and maxillary diastemas may imply African ancestry; and shovel-shaped incisors (figure 9), incisor rotations, and buccal pits may indicate Asian ancestry.¹⁸

Bite marks may be found anywhere on the body. A bite mark with good forensic value will have distinctive traits. Incisors produce rectangular injuries, canines produce triangular ones, and premolars display double triangles. Special characteristics that are visible also raise the forensic value, such as missing teeth, fractures, rotations, attrition, and congenital malformations.

A common procedure for bite mark analysis involves taking photographs of the injury with a universal measurement scale. It also includes taking impressions using dental impression material to make a model of the injury and one of the dentition of a suspect. Resection of tissue is an option on deceased victims. The most common technique for comparison has been making transparent overlays from the model to compare with the bite mark photo (figure 10). Currently, computer technology is employed to more accurately trace the incisal edges for comparisons (figure 11).

After bite mark analysis, the forensic odontologist recommends conclusions for the injury and suspect from the ABFO:¹⁹

- The dentition is excluded
- The dentition is not excluded
- Inconclusive; there is insufficient evidence to relate the bite mark to the suspected biter
- The comparisons done by bite mark analysis may be more useful to exclude someone than to implicate someone

Expert witness

Courts of law frequently call on experts to testify in their area of expertise for either the prosecution or the defense. An expert witness testifies without prejudice and gives an opinion based on their experience in the field. Dental professionals may be called upon to relate knowledge on standards of care and in matters of practice and professional liability. They also testify in matters of abuse, bite mark analysis, and age assessment. Under the Federal Rules of Evidence, a witness may qualify as an expert on the basis of knowledge, skill, experience, training, or education.²

The expert should prove a generally accepted method is scientifically valid. This is done by establishing the facts, interpreting the facts, and commenting on an opposing expert's testimony. They should recognize the obligation to describe the professional standards in the area and render an impartial opinion regardless of which side retained the services.

Identification

Forensic dental professionals are invaluable in the area of identification. They are



FIGURE 10. Incisal and occlusal tracing



FIGURE 11. Computer tracing

involved in the everyday operations of a morgue and in instances of multiple fatalities. Identification is important in consideration of families; for estate, insurance, and legal settlements; and in criminal investigations. Because of the survivability of teeth, dental identification can be a very fast method.

Many jurisdictions have a team in place with sections that operate to accomplish this task, particularly in multiple-fatality incidents. There may be a "go" section, comprised of experienced and contracted dentists who go to an incident site to ensure valuable dental forensic evidence is collected. The antemortem (before death) section is composed of those members who request, receive, and record prior dental records of victims. They use software created for identification and enter information such as notes, charting, and radiographs. The postmortem (after death) section conducts dental autopsy examinations. They may disarticulate the jaws,

x-ray the remains, or do dental charting and then enter it into the software. Finally, the comparison section uses both antemortem and postmortem records to make comparisons with the ultimate goal of identification. The data compared is based on the written records and supporting radiographs. Additional information such as open-mouth photographs, models, removable prostheses, and other emerging technologies can be used as needed.

Further study and organizations

Education in dentistry, dental hygiene, and dental assisting gives professionals a sound basis for participation and progress in the field of forensic dentistry. In a forensic dentistry course in a dental hygiene program, students were asked to complete a statement about what they thought forensic dentistry was before the course, and then again after completing the course. Most of the students revealed a significant addition to their knowledge after the course and had a newfound understanding to take with them and implement in their careers.

Forensic dental professionals present courses at seminars wherein one can gain additional knowledge. Conferences and symposiums are presented in hours or days and can include hands-on lab exercises. International, national, and local organizations exist to educate and advance the work of forensic dentistry.

The American Society of Forensic Odontology (ASFO) promotes education and research, publishes the *Manual of Forensic Odontology*, and welcomes anyone interested in the science (asfo.org). The American Academy of Forensic Sciences (AAFS) is a multidiscipline, professional organization that provides leadership to advance science and its application to the legal system. It has approximately 7,000 members from 50 states and 71 countries. It recognizes 12 distinct disciplines: odontology, toxicology, digital and multimedia sciences, jurisprudence, pathology/biology, psychiatry/behavioral sciences, engineering and applied sciences, anthropology, criminalists, questioned documents, nursing, and a general section including educators, animal specialists, consultants, and others.²⁰ This provides vast

networking opportunities. Each section acknowledges an obligation to learn from the others. The odontology section limits its members to dentists. There is a membership category titled “professional affiliate,” which welcomes forensic field

dentistry, and most of them get involved as volunteers. The work in this field serves as an enormous, crucial, and rewarding enhancement to one’s dental career. Even if you never get the opportunity to be part of an identification team, con-

Table 1: Hotline and web information

Suspect abuse? Report it here:

- National Domestic Violence Hotline: (800) 799-SAFE (7233); website with online, 24-hour chat: thehotline.org
- National Child Abuse Hotline: (800) 422-4453; childhelp.org
- Human Services Learning Center/Abuse Training: hslcnys.org
- State-specific information: capsli.org/reporting-abuse/individual-state-hotlines
- National Center on Elder Abuse: (800) 677-1116; ncea.acl.gov/resources/state.html
- Human trafficking hotline: (888) 373-7888; humantraffickinghotline.org
- OnWatch Human Trafficking Training: iamonwatch.org

Check your individual state protective services for more specific information and guides.

occupations not offered in the named specialties. These may include paralegals, laboratory technicians, dental hygienists, and others involved in forensic work.

The United States has a forensic team called Disaster Mortuary Operational Response Team (DMORT) (phe.gov/preparedness/responders/ndms/ndms-teams/pages/dmort.aspx). These members are deployed wherever help is requested. There are formal trainings and practices that members must complete. DMORT teams are organized in US regions and take applications through their websites. The national and local teams welcome all members of the dental profession to participate.²¹

Dental hygienists participate in forensic dentistry activities.²² They serve on teams, are organization leaders, act as consultants, do forensic photography, are appointed to DMORT regions, teach, present, and do research alongside dentists and dental assistants with education, training, and experience. The field is open to those interested, but efforts should be made to be active in organizations, and finding a mentor can be crucial to further involvement.

Conclusion

Forensic dentistry has established itself as an important and indispensable service in legal and medical matters. Many dental professionals are interested in forensic

duct research, testify in court, or do bite mark or age assessments, all dental professionals have an obligation to contribute to forensic science every day by keeping thorough, accurate, up-to-date records.

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QUESTIONS

1. According to the American Dental Association, which is not a recognized dental specialty?
 - A. Oral and maxillofacial pathology
 - B. Prosthodontics
 - C. Dental public health
 - D. Forensic dentistry
2. Most dental forensic experts are gainfully employed:
 - A. In the field of forensic dentistry
 - B. In the field of forensic dental hygiene
 - C. Outside the field of forensic dentistry
 - D. In the field of forensic pathology
3. In cases of suspected child abuse, the following statement is true:
 - A. Dental hygienists are mandated or obligated in all states to report child abuse.
 - B. Two states exclude dental hygienists as mandated reporters.
 - C. Mandated reporters must have proof that abuse occurred.
 - D. Reporters must have radiographs and photographs on file.
4. In cases of elder abuse, the following statement is true:
 - A. Dental hygienists are mandated in all states to report elder abuse.
 - B. Many states mandate dental professionals to report.
 - C. Only elders in housing facilities must be reported.
 - D. Financial abuse is not considered when reporting.
5. In the US, dental professionals have been a significant source of reporting. Medical professionals and school personnel have the highest report rate.
 - A. The first statement is true; the second statement is false.
 - B. Both statements are true.
 - C. Both statements are false.
 - D. The first statement is false; the second statement is true.
6. Because there are several formulas that can be used for age assessment, it is likely to result in 100% accuracy. The influx of refugees without documentation has caused increased use of forensic dentistry methods of assessment.
 - A. Both statements are true.
 - B. Both statements are false.
 - C. The first statement is true; the second statement is false.
 - D. The first statement is false; the second statement is true.
7. Which of the following should be pursued to be further involved in forensic dentistry?
 - A. Formal training and society membership
 - B. Conference attendance and mentorship
 - C. Attendance of continuing education presentations
 - D. All of the above
8. Dental professionals are obligated to record in patient notes any visible markings, piercings, and alterations on or in the body. This information should be reviewed at each encounter.
 - A. Both statements are false.
 - B. Both statements are true.
 - C. The first statement is true; the second statement is false.
 - D. The first statement is false; the second statement is true.
9. Mandated reporters are required to report:
 - A. When certain that physical abuse has occurred
 - B. After photographs are taken of the evidence
 - C. When any abuse is suspected
 - D. After getting approval from their employer
10. Forms of elder abuse include:
 - A. Physical and sexual
 - B. Financial
 - C. Neglect
 - D. All of the above
11. What percentage of physical abuse is said to occur in the head and neck area?
 - A. 50%
 - B. 10%
 - C. 35%
 - D. 75%
12. Age estimation is performed on both the living and the deceased. Reasons for age estimation include:
 - A. Refugee asylum
 - B. Identification
 - C. Criminal proceedings
 - D. All of the above
13. When analyzing the skeleton of a child, the following are considered:
 - A. Aspartic acid and racemization of dentin
 - B. Tooth mineralization status and eruption patterns
 - C. Aspartic acid and eruption patterns
 - D. Racemization of dentin and growth layers of cementum
14. Dental age assessment is considered to have 100% accuracy. Several chart guidelines are available to assess dental age.
 - A. The first statement is true; the second statement is false.
 - B. Both statements are true.
 - C. The first statement is false; the second statement is true.
 - D. Both statements are false.
15. Which procedures usually succeed each other in bite mark analysis?
 - A. Cutting the tissue around the bite mark to get accurate photographs
 - B. Impressions, tracing, overlays, photographs
 - C. Resection of tissue around the bite to get accurate impressions
 - D. Photographs, impressions, tracing, overlays

Use this page to review questions and answers. Visit dentalacademyofce.com and sign in. If you have not previously purchased the course, select it from the Online Courses listing and complete your online purchase. Once purchased, the exam will be added to your Archives page, where a Take Exam link will be provided. Click on the Take Exam link, complete all the program questions, and submit your answers. An immediate grade report will be provided. Upon receiving a grade of 70% or higher, your verification form will be provided immediately for viewing and printing. Verification forms can be viewed and printed at any time in the future by visiting the site and returning to your Archives page.

QUESTIONS

- 16. The ABFO bite mark analysis verbiage:**
- Clearly states the suspect is the biter without a doubt
 - Suggests that since all dentitions are unique, there can be no doubt of identity
 - Suggests the dentition is excluded, not excluded, or inconclusive
 - Suggests the dentition is not useful to eliminate a suspect
- 17. Which dental trait can be used to determine ethnicity?**
- Cusp of Carabelli
 - Fractures and rotations
 - Crossbite
 - Fluorosis
- 18. Expert witnesses:**
- Testify on behalf of the prosecution
 - Do not comment on other expert witness testimony
 - Testify on behalf of the defense
 - Give unbiased opinions regardless of what side retained them
- 19. Usually, the fastest method for identification is:**
- DNA analysis
 - Fingerprints
 - Dental
 - Facial recognition
- 20. Prompt identification is important because it:**
- Allows for insurance and legal settlements
 - Aids in criminal investigations
 - Fulfills the needs of the families
 - All of the above
- 21. Dental evidence is reliable because:**
- Of the characteristics and survivability of teeth
 - Anthropology and dentistry work well together
 - All people have dental records and radiographs
 - There is DNA in all teeth and teeth are unique
- 22. Which term is used to describe the before-death dental profile of a deceased victim?**
- Postmortem
 - Antemortem
 - After death records
 - Unilateral profile
- 23. When making comparisons for dental identification, which of the following are considered?**
- Natural morphology and dental restorations
 - Dental restorative materials and sites
 - Radiographs and narratives
 - All of the above
- 24. In many jurisdictions, a dental ID team has sections. These sections are:**
- Antemortem, postmortem
 - Go team, antemortem, postmortem, comparison
 - Antemortem, postmortem, comparison
 - Go team, postmortem, comparison
- 25. Which team is a United States government forensic team?**
- Chief medical examiner
 - Disaster Mortuary Operational Response Team
 - Medical Reserve Corps
 - County coroner staff
- 26. DMORT members provide technical assistance and consultation on fatality management and mortuary affairs. They may be called on to assist anywhere in the world that requests help from the United States.**
- The first statement is true; the second statement is false.
 - Both statements are false.
 - The first statement is false; the second statement is true.
 - Both statements are true.
- 27. Which of the following organizations would welcome membership of dental hygienists and others interested in forensic dentistry?**
- ABFO and ASFO
 - ASFO
 - ASFO and DMORT
 - AAFS and ABFO
- 28. Which avenues can prove successful in following a career in forensic dentistry?**
- Additional education
 - Finding a mentor in the field
 - Joining a local, state, or national organization
 - All of the above
- 29. The basis for participation in forensic dentistry comes from:**
- Dental and dental hygiene education
 - Formal forensic training
 - Master's degree in research
 - Attending continuing forensic education seminars
- 30. Each dental professional contributes to forensic science when they:**
- Learn the signs and symptoms of human abuse
 - Report suspicions of human abuse
 - Keep up-to-date and accurate patient records
 - All of the above

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EXPIRATION DATE:	JUNE 2025

ANSWER SHEET

The sphere of dental forensics: Components and the obligations of the dental professional

NAME: _____ TITLE: _____ SPECIALTY: _____

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Educational Objectives

- Identify areas of forensic dentistry and the legal and ethical obligations for participation
- Demonstrate knowledge of the organization and mechanisms of a multiple fatality team
- Identify legal aspects and signs of human abuse
- Identify pathways to further knowledge and opportunities for involvement in forensic dentistry

Course Evaluation

1. Were the individual course objectives met?

Objective #1: Yes No Objective #3: Yes No Objective #5: Yes No
 Objective #2: Yes No Objective #4: Yes No

Please evaluate this course by responding to the following statements, using a scale of Excellent = 5 to Poor = 0.

- | | | | | | | |
|---|-------|----|---|---|---|---|
| 2. To what extent were the course objectives accomplished overall? | 5 | 4 | 3 | 2 | 1 | 0 |
| 3. Please rate your personal mastery of the course objectives. | 5 | 4 | 3 | 2 | 1 | 0 |
| 4. How would you rate the objectives and educational methods? | 5 | 4 | 3 | 2 | 1 | 0 |
| 5. How do you rate the author's grasp of the topic? | 5 | 4 | 3 | 2 | 1 | 0 |
| 6. Please rate the author's effectiveness. | 5 | 4 | 3 | 2 | 1 | 0 |
| 7. Was the overall administration of the course effective? | 5 | 4 | 3 | 2 | 1 | 0 |
| 8. Please rate the usefulness and clinical applicability of this course. | 5 | 4 | 3 | 2 | 1 | 0 |
| 9. Please rate the usefulness of the references. | 5 | 4 | 3 | 2 | 1 | 0 |
| 10. Do you feel that the references were adequate? | Yes | No | | | | |
| 11. Would you take a similar course on a different topic? | Yes | No | | | | |
| 12. If any of the continuing education questions were unclear or ambiguous, please list them. | _____ | | | | | |

13. Was there any subject matter you found confusing? Please describe.

14. How long did it take you to complete this course?

15. What additional dental continuing education topics would you like to see?

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| 1. (A) (B) (C) (D) | 16. (A) (B) (C) (D) |
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| 3. (A) (B) (C) (D) | 18. (A) (B) (C) (D) |
| 4. (A) (B) (C) (D) | 19. (A) (B) (C) (D) |
| 5. (A) (B) (C) (D) | 20. (A) (B) (C) (D) |
| 6. (A) (B) (C) (D) | 21. (A) (B) (C) (D) |
| 7. (A) (B) (C) (D) | 22. (A) (B) (C) (D) |
| 8. (A) (B) (C) (D) | 23. (A) (B) (C) (D) |
| 9. (A) (B) (C) (D) | 24. (A) (B) (C) (D) |
| 10. (A) (B) (C) (D) | 25. (A) (B) (C) (D) |
| 11. (A) (B) (C) (D) | 26. (A) (B) (C) (D) |
| 12. (A) (B) (C) (D) | 27. (A) (B) (C) (D) |
| 13. (A) (B) (C) (D) | 28. (A) (B) (C) (D) |
| 14. (A) (B) (C) (D) | 29. (A) (B) (C) (D) |
| 15. (A) (B) (C) (D) | 30. (A) (B) (C) (D) |

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