OSAC PROPOSED STANDARD 2023-N-0025
Standard for Required Topics to Be Included in Forensic Odontology Education and Training Curriculum

Forensic Odontology
Medicine Scientific Area Committee (SAC)
Organization of Scientific Area Committees (OSAC) for Forensic Science



OSAC Proposed Standard

OSAC 2023-N-0025 Standard for Required Topics to Be Included in Forensic Odontology Education and Training Curriculum

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Insert Subcommittee
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Foreword

This document is a draft of a standard developed by the Forensic Odontology Subcommittee of the Organization of Scientific Area Committees (OSAC) for Forensic Science.

Forensic odontology is a discipline of dentistry that involves the following: maintenance and management of dental information pertaining to all aspects of the *forensic odontology* casework; identification of human remains by source comparison of antemortem and postmortem dental information; assessment, collection, and documentation of evidence for oral and perioral manifestations of human abuse; dental age assessment of an individual; and serving as an expert witness for these subject matters.

The American Dental Association's Commission on Dental Accreditation (CODA) develops and implements accreditation standards for dental education programs. CODA has not established specific guidelines for *forensic odontology*, and there are no mandatory educational requirements for practicing it.

Because of the scarcity of graduate programs in *forensic odontology*, advanced education or development of skills is acquired through various channels, including service, training, and experience. This document specifies the essential educational topics and prerequisites necessary for practitioners to attain the baseline knowledge essential for successful practice in *forensic odontology*.

The following applies to this document:

The term **'shall'** indicates that a provision is mandatory and can be audited for compliance.

The term **'should'** indicates that a provision is not mandatory but recommended as good practice.

All hyperlinks and web addresses shown in this document are current as of the publication date of this standard.

Keywords: forensic odontology, training, education

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1 Scope

This document specifies the essential topics that must be included in a training and educational program for forensic odontology. It does not provide lesson plans, practical exercises, or performance measures for successfully completing this training and education program.

This document does not define legal requirements, best practices, implementation, certification, or proficiency testing in forensic odontology. In addition, the inclusion of any topic within this standard is not an endorsement of its scientific basis.

2 Normative References

There are no normative references.

3 Terms and Definitions

For purposes of this document, the following terms and definitions apply.

3.1 dentist
person *licensed* by a regulatory body to practice dentistry (ISO 1942:2020).

3.2 education
process by which an individual or group of people conveys, transfers, or obtains knowledge about a subject or concept (ISO 30422:2022).

Note 1 to entry: Education generally refers to an academic form of learning that is distinct from *training*, which generally refers to work-related learning processes.

3.3 experience
knowledge or skill acquired over time through practical contact with and observation of facts or events (ISO/TS 10303-1243:2004).

3.4 forensic odontologist, US
d*entist* in the United States that can practice *forensic odontology.*

3.5 forensic odontology
part of dentistry which deals with the examination, interpretation, and presentation of dental and oral evidence for legal purposes (ISO 1942:2020).

3.6 knowledge
understanding and awareness acquired through learning, *experience*, or information.

3.7 license

permission or proof of permission granted to a system participant by a competent authority to exercise a right which would otherwise be disallowed or unlawful (ISO 19132:2007).

3.8 sentinel injury
minor injury in a young or developmentally immature child that may be the result of physical abuse

3.9 training
development of skills and/or understanding through procedurally defined learning activities focused on a specific application (ISO/IEC 2382-36:2008).

4 Education and Training in Forensic Odontology

The training and education program shall include instruction on the topics in Sections 4.1 through

4.1 FOUNDATIONAL SKILLS OF FORENSIC ODONTOLOGY

Knowledge of:
4.1.1 foundational skills in general dentistry
4.1.2 the scope and history of forensic odontology
4.1.3 current standards and guidelines in forensic odontology
4.1.4 other forensic science disciplines
4.1.5 the legal system
4.1.6 electronic resources (internet, databases, etc.)
4.1.7 photographic techniques
4.1.8 statistics and data science
4.1.9 human factors that can affect an expert's analysis

4.2 PROTOCOLS FOR USING FORENSIC ODONTOLOGY EQUIPMENT:

Knowledge of:
4.2.1 dental radiography
4.2.2 dental photography
4.2.3 dental and forensic odontology computer hardware and software
4.2.4 cybersecurity protocols and secure messaging techniques

4.3 CRANIOFACIAL ANATOMY, ANTHROPOLOGY, AND PATHOLOGY:

Knowledge of:
4.3.1 craniofacial anatomy, anthropology, and pathology
4.3.2 cultural, socioeconomic, and environmental influences on orofacial structures
4.3.3 biological profile (identification of human remains based on age, sex, ancestry, stature, and skeletal features) techniques and methods

4.4 GATHERING, DOCUMENTING, AND MAINTAINING FORENSIC ODONTOLOGY EVIDENCE:

Knowledge of:

4.4.1 maintaining a chain of custody
4.4.2 recognizing and managing forensic evidence
4.4.3 recording case documentation
4.4.4 writing a forensic odontology case report

4.5 HUMAN IDENTIFICATION BY COMPARATIVE DENTAL ANALYSIS:

Knowledge of:

4.5.1 craniofacial identification techniques
4.5.2 antemortem and postmortem data collection and dental autopsy techniques
4.5.3 dental numbering, charting, and coding systems
4.5.4 dental identification software and matching algorithms
4.5.5 evaluating, assessing, and reporting of dental source conclusions

4.6 PARTICIPATING IN MASS FATALITY INCIDENT MANAGEMENT PROTOCOLS:

Knowledge of:

4.6.1 mass fatality identification team structure and Incident Command System (ICS)
4.6.2 inter-agency interaction
4.6.3 scene protocols and organization of tasks

4.7 SUSPECTED PATTERN OF DENTAL ORIGIN:

Note: The inclusion of this knowledge requirement is to ensure that the odontologist is aware of failures concerning bitemarks. This requirement is not an endorsement of the practice but rather to provide context for the discipline of forensic odontology.

Knowledge of:

4.7.1 suspected pattern(s) of dental origin terminology
4.7.2 historical methods assessing the alleged pattern of dental origin data and understanding its limitations and failures
4.7.3 DNA collection protocols
4.7.4 documenting, imaging, and assessing the suspected pattern of dental origin characteristics protocols
4.7.5 documenting substrate information
4.7.6 assessing and documenting the presence of class characteristics
4.7.6.1 assessing and documenting the presence of individual characteristics for non-comparative purposes
4.7.6.2 current scientific concerns regarding the foundational validity of bitemark recognition, comparison, and source conclusion

4.8 HUMAN AGE ASSESSMENT BY DENTAL ANALYSIS:

Note: The inclusion of this knowledge requirement is neither an endorsement nor a repudiation of the practice. It is simply a requirement that the forensic odontologist understands the theory and techniques involved to assess the usefulness and limitations of the procedures and, if applicable, their conclusions.

Knowledge of:

4.8.1 human age assessment by dental analysis
4.8.2 the differences between age estimation and age assessment
4.8.3 the use of dental staging charts with respective published reference studies
4.8.4 the recognized differences between identifiable human groups and dental age estimation techniques
4.8.5 the ability to demonstrate age estimation techniques as well as their limitations
4.8.6 the use of multiple techniques for age estimation, when available
4.8.7 non-dental age assessment techniques
4.8.8 the appropriate reporting of human age assessment by dental analysis

4.9 HUMAN ABUSE:

Knowledge of:

4.9.1 oral and perioral manifestations of abuse and neglect, including sentinel injuries
4.9.2 how to evaluate, assess, and report oral and perioral manifestations of abuse and neglect

4.10 FUNCTIONS OF AN EXPERT WITNESS:

Note: This section is included for expert witness testimony on topics that fall within the scope of this document, namely identification of human remains by source comparison of antemortem and postmortem dental information, oral and perioral manifestations of human abuse, and dental age assessment of an individual.

Knowledge of:

4.10.1 expert witness qualification under Rule 702 of the Federal Rules of Evidence or the expert witness rules in the case's jurisdiction
4.10.2 legal proceedings and how the legal system generally functions, both in court and out of court, and what is expected of an expert witness
4.10.3 recognition and familiarity with documents produced for or during legal proceedings as well as dental charts
4.10.4 identifying, evaluating, and calculating damages
4.10.5 assisting lawyers in their evaluations of legal claims and theories that rely on facts in the field of forensic odontology
4.10.6 expert's role in the legal system including aiding the fact finder through trial testimony

4.11 PROFESSIONAL, ETHICAL, AND LEGAL RESPONSIBILITIES:

Note: Forensic Science Service Providers shall not take it upon themselves to determine the correct interpretation of rules of evidence and case law. Instead, they should rely on legal experts to determine the content of this training.

Knowledge of:

4.11.1 civil litigation case procedures
4.11.2 criminal litigation case procedures
4.11.3 expert's roles and responsibilities
4.11.4 rules of evidence and case law (e.g., Daubert, Frye)
4.11.5 disclosure requirements in the legal system
4.11.6 specific criminal case requirements stemming from the United States Supreme Court's holding in *Brady v. Maryland,(1963), Kyles v. Whitley, (1995),* and subsequent cases
4.11.7 proper methods when creating court exhibits
4.11.8 professional ethics
4.11.9 proper sworn testimony and the ethical limitations of allowable testimony
4.11.10 professional media interaction and how that might be limited for legal proceedings
4.11.11 the importance of confidentiality
4.11.12 the importance of continuing professional education
4.11.13 standard of care issues