

ANSI/ASB Best Practice Recommendation 108, First Edition
2021

**Forensic Odontology in Disaster Victim Identification:
Best Practice Recommendations for the Medicolegal
Authority**



ASB
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Authority**

ASB Approved May 2021

ANSI Approved December 2021



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Colorado Springs, CO 80904

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Foreword

In a disaster victim identification (DVI) operation, the forensic odontologist employs the most appropriate forensic odontology techniques in a reliable, objective, and timely manner in order to analyze antemortem (AM) and postmortem (PM) evidence and data. This process depends on an efficient and effective collection of this AM and PM information. Established principles of dental identification comparison protocols, along with other scientific identification disciplines, are used to facilitate a positive identification of disaster victims. The odontology identification process presented and outlined primarily focuses on deceased victims of a disaster.

This document advances the scientific application of disaster victim identification (DVI) through dental analysis in a mass fatality incident. In collaboration with others in the DVI community, these best practice recommendations for scientific analysis methods, protocols, training, and research related to incidents requiring DVI by dental analysis will be defined and outlined. This document, specific to odontology, is a collection of recommendations developed by the primary disciplines engaged in victim identification in a disaster or mass fatality incident. Application of research and innovative technology applicable to DVI, and specifically odontology, is encouraged. Odontologists work in concert with anthropologists, pathologists, fingerprint and DNA analysts, and other disciplines to reconcile data to achieve accurate and efficient identifications. Best practices emphasize methods, quality assurance, quality control processes, reconciliation, and consensus review.

This document was revised, prepared, and finalized as a standard by the Disaster Victim Identification Consensus Body of the AAFS Standards Board. The draft of this standard was developed by the Disaster Victim Identification Subcommittee of the Organization of Scientific Area Committees (OSAC) for Forensic Science and originated from the Scientific Working Group on Disaster Victim Identification (SWGdVI).

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

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Forensic Odontology in Disaster Victim Identification: Best Practice Recommendations for the Medicolegal Authority

1 Scope

This document provides best practices for the deployment of a forensic odontology team in a mass fatality incident. It delineates proper protocols, equipment, hardware, and software requirements, as well as command structure for the deployment of this team as part of the entire disaster victim identification operation.

2 Normative References

The following references are indispensable for the application of the best practice recommendation. For dated references, only the edition cited applies. Annex B, Bibliography, contains informative references.

ADA Technical Report No. 1088, *Human Identification by Comparative Dental Analysis*: 2018 (Reaffirmed 2020)

ANSI/ADA Standard No. 1058—*Forensic Dental Data Set*: 2010 (Reaffirmed 2020)

ANSI/ADA Technical Report No. 1085, *Implementation Guidelines for the Secure Transmission of Protected Health Information in Dentistry*

3 Terms and Definitions

For purposes of this document, the following definitions apply. Additional terms and definitions are defined in ANSI/ADA Standard No. 1058, ISO 20888:2020, and ISO 1942:2020. For purposes of this document, teeth should be numbered utilizing the universal numbering system within the United States and the ISO numbering system internationally as prescribed by ISO 3950:2016

3.1

American Dental Association

ADA

The United States' largest dental association and the leading source of oral health-related information for dentists and their patients

3.2

Digital Imaging and Communications in Medicine

DICOM

A standard for handling, storing, printing, and transmitting information in medical imaging

3.3

electronic dental record

EDR

The complete longitudinal electronic dental history of an individual

3.4

forensic odontology

That part of dentistry, which deals with the examination, interpretation, and presentation of dental and oral evidence for legal purposes.

3.5

odontogram

A chart graphically illustrating the condition of the dentition, including but not limited to, missing teeth, restorations, and tooth orientation.

3.6

phosphor storage plates

PSP

A method used to obtain digital x-ray images consisting of a photostimulable plate.

3.7

ultraviolet

UV

Electromagnetic radiation with a wavelength from 100 nm (30 PHz) to 380 nm (750 THz), which, when used as a light source, can fluoresce dental materials for better visualization and location.

4 Forensic Odontology Personnel

4.1 General

The personnel responsible for the identification of human remains by dental means shall include trained forensic odontologists who are specially trained and experienced in dealing with fragmentary, commingled, and taphonomically-altered dental remains. This training should include familiarity with heat and fire-altered remains. In addition, all scribes and technical personnel that deal with dental remains should have familiarity with forensic odontology procedures and terminology. In addition, local and state regulations may consider forensic odontology as part of the "practice of dentistry" and limit forensic odontology personnel to those individuals' licensed to practice dentistry within the municipality. The number of team members required for each group can vary with the size of the DVI incident. In determining the appropriate number of forensic odontology team members, it is important to follow recommendations that should ensure both the physical and mental health of team members. The recommendations below, in sections 4.3 through 4.5, are the minimum number of members required for specific teams in a DVI incident.

4.2 Oversight and Team Composition

A written organizational plan, including forensic odontology's role, should be in existence prior to any response. The odontology section should be divided into teams with clear roles and responsibilities.

4.3 Antemortem Team

The antemortem (AM) team shall be staffed by a minimum of two forensically trained dentists (DDS, DMD, or equivalent degree) for quality control. Additional forensically trained dental team members including dentists, dental hygienists, and dental auxiliaries may be included as needed.

4.4 Postmortem Team

The postmortem (PM) team shall be staffed by a minimum of two forensically trained dentists (DDS, DMD, or equivalent degree). Additional forensically trained dental team members including dentists, dental hygienists, and dental auxiliaries may be included as needed. These, team members should have additional training and experience in dental autopsy procedures and photographic documentation of human remains.

4.5 Comparison Team

The comparison team shall be staffed by a minimum of two forensically trained dentists (DDS, DMD, or equivalent degree). Additional forensically trained dental team members, including dentists, dental hygienists, and dental auxiliaries, may be included as needed.

4.6 Planning

Planning for mass fatality incident (MFI) should reflect an assessment of existing forensic odontology resources (personnel and equipment) on a local, regional, and state basis, including identification of individuals qualified to lead the dental response. Dental equipment example requirements are listed in Annex A. A frequently updated list of emergency contact personnel with telephone numbers of multiple dental supply venues and other sources of equipment and supplies should be maintained.

Consideration should be given to the existence of a written organizational plan, including standardized participation agreements; job protocols and responsibilities; documentation of training participation; and agreements with governmental or non-governmental organizations that cover compensation, jurisdictional, and licensure issues.

4.7 Training

Training should promote familiarity with applicable administrative structures, including the Incident Command System (ICS), as well as the use of equipment and software used in a DVI deployment. Continued training and upgrading of skills in forensic odontology, and specifically DVI, is important. Forensic odontologists shall have continued professional development through numerous modalities, including formal postgraduate programs, organizational activities, study groups and conferences, as well as personal study. On the job or just-in-time training should also be conducted by more experienced forensic odontology team members. Standardization of communication, documentation, and adherence to all policy procedures established by the command structure in place should be strictly enforced.

5 Disaster Operations

5.1 Disaster Site Assessment

Members of the forensic odontology team should assist at disaster sites by identifying, collecting, and preserving dental evidence. The familiarity of dental team members in recognition of natural, prosthetic, and restorative dental structures will enhance the efficiency of the specimen and data recovery. However, consideration of the health risk involves the utilization of non-essential personnel in the disaster site should also be considered when assigning forensic odontology team members to an onsite collection. If team members are assigned to site assessment, they should be

properly trained to work in a contaminated environment and shall be provided with the appropriate personal protective equipment (PPE).

5.2 Antemortem Section Procedures

The dental antemortem section procures, analyzes, and consolidates dental data into a single, standardized, comprehensive antemortem dental record. Forensic odontologists shall use ADA Technical Report No. 1088, *Human Identification by Comparative Dental Analysis: 2020* for further guidance. The established antemortem profile should provide the dental status of the individual from their last known dental record. A dental record includes all the historical data, including the complete clinical, radiographic, and photographic examination of the oral cavity. Dental casts may also be procured to assist in establishing a possibly identity.

Procurement of the antemortem data begins with the establishment of a manifest, which includes potential and known victims to assist in a presumptive identification. If available, the list of presumed victims should be provided through coordination with the Victim Information Center (VIC). The VIC will provide the antemortem dental team with presumed victims of the disaster and the most accurate information to begin the acquisition of dental records. Standardized rules should be in place for the procedures and documentation of those procedures for the procurement as well as transfer of dental records. A log which includes the date and time of each individual contacted shall be kept. Guidance can be found in ANSI/ADA Technical Report No. 1085, *Implementation Guidelines for the Secure Transmission of Protected Health Information in Dentistry*. As records are obtained, the antemortem dental team may determine that other information or records may be needed. These may include but should not be limited to other providers, including other dentists, military records, specialist referrals, medical radiographs, and/or insurance companies. The dental antemortem team should use all potential sources to acquire records that provide the detail and information required by the comparison team to establish a positive dental identification or exclusion. These records may include but are not limited to photographs, narrative records, dental laboratory prescriptions, dental casts, 3-D digital dental scans, and/or medical radiographic images of the head and neck. Any and all antemortem data should be logged and documented with an assigned antemortem case number, time and date of delivery, method (physical or electronic), and individual accepting the data.

Since the quality of the antemortem radiographs will affect the ability to make a positive dental identification, it is imperative that high-quality images are obtained. If the antemortem radiographs were film based the original radiographic films should be requested from the missing person's dentist; however, a duplicate set shall be retained within the patient's record. For digital images, high-resolution individual image radiographs shall be sent as well as a composite structured display ("mounted film") image for location verification. Ideally, Data transfer should follow ADA Technical Report No. 1060, *The Secure Exchange, and Utilization of Digital Images in Dentistry: 2011*, that include utilizing DICOM composite image and structured display protocol. If DICOM protocols are not utilized, the images should be properly annotated with the appropriate demographic data (name, date of birth, date of the radiograph, etc.). A dental radiographic dot should be clearly visible on all images, and special care shall be exercised with some phosphor storage plates (PSP) imaging systems where image reversal is possible.

5.3 Postmortem Section Procedures

5.3.1 General

The Dental Postmortem Section personnel perform dental autopsies, including postmortem dental radiography and photography, and record the resulting data in a standardized format. Further guidance can be found in ADA Technical Report No. 1088, *Human Identification by Comparative Dental Analysis*: 2017. The postmortem section examinations and data entry should be performed by teams as outlined in 4.2.3.2 through 4.2.3.9.

5.3.2 Visual Examination and Charting

Dental autopsy information should be recorded either on paper forms or digitally utilizing an established forensic odontology software program. Teeth should be numbered using the locally recognized numbering system, and each team member should be informed and trained in the tooth numbering protocol. The postmortem section data entry should be performed by teams of at least two examiners. An odontogram is a graphic chart of the condition of the teeth. Typically, the charting of teeth varies with the software utilized; however when charting, most software packages require the following.

- a) Teeth present or missing with a designated number associated with the system established for the incident.
- b) Existing restorations with location (surface), configuration, and material used with the existence of root canal therapies, posts, and any notable treatments.
- c) Prosthetic treatments that are fixed, removable, or implant-based, including material composition.
- d) Occlusal relationships including orthodontic status and of the entire mouth (orthodontic class 1, 2, or 3, open bite, cross-bite) and individual teeth (rotations, angulations, cross-bite).
- e) Commentary regarding anomalies, caries patterns, fractures, plus all potential dental identifiers.

Charting of teeth and data entry shall conform to ANSI/ADA Standard No. 1058: *Forensic Dental Data Set*: 2010 (Reaffirmed 2020).

5.3.3 Radiographic Examination

A complete radiographic survey of the available craniofacial remains shall be recorded. The radiographic survey should be as complete as possible with all available dental-alveolar structures imaged. These should include edentulous areas and areas where teeth have been lost postmortem. A full mouth series consisting of eighteen images, including bitewing radiographs, should be captured on an intact adult whenever possible fragmented remains should be oriented to mimic the potential antemortem images, capturing as much detail as possible. The radiographic survey should be modified for pediatric patients. In this population the survey should include eight images, a maxillary and a mandibular anterior periapical, four posterior periapical radiographs (one in each quadrant) and two bitewings (right and left). Disassociated teeth shall also be radiographed in the orientation to mimic the potential antemortem images. Radiation settings should be reduced to account for decreased tissue density, for disassociated fragments to capture images of diagnostic

quality. Radiographic surveys on children should involve fewer images but should include as much information as deemed necessary to establish a comparative record.

For intraoral radiography, digital systems are preferred to analog or analog/digital hybrid systems. Guidance for intra-oral digital radiography can be found in ADA Technical Report No. 1094, *Quality Assurance for Digital Intra-Oral Radiographic Systems*. Whenever practical, postmortem dental radiographs should be available during visual examination of a decedent to aid in accurate postmortem dental charting. The radiographs will confirm findings based on the visual clinical examination. This capability is possible only with digital radiography systems that allow immediate viewing of the images. If film-based or delayed digital image radiography is used, the postmortem section should develop specific guidelines providing for the timely integration of the radiographic data.

5.3.4 Photographic Examination

Postmortem photography is a useful tool for dental identification. Photographs will be a visual record of the dentition and may serve as a reference to verify the documented postmortem dental condition. Photographs of anterior teeth specifically may be utilized in comparison with antemortem photographs possessing unique features. Rules regarding the photographing of human remains shall be in place. Images should be collected using digital imaging equipment, and an appropriate, photographic light source should be capable of faithfully capturing images. Survey images, which include identification tags revealing case numbers should be obtained to assure that images from a decedent are identifiable as being from that decedent. Prior to photographing, the dentition should be cleaned, and the images collected should show the facial, lingual, and occlusal surfaces of the teeth. Additional images should include anterior, right, and left lateral views, teeth in occlusion, mandibular, and maxillary arch views, as well as images of removable dental prostheses. A properly positioned scale of reference shall be included in at least one photograph of critical objects. When possible, images should be integrated into the software in use so that they are available during computer comparison processes.

5.3.5 Craniofacial Dissection

Any dental autopsy that requires a dissection for complete and accurate dental examination shall not only follow jurisdictional guidelines rules and applicable laws but shall be approved in advance by the medical examiner, coroner, or incident commander. Even if approval is obtained and the jurisdiction allows for a craniofacial dissection, it should never be performed if adequate information can be obtained without dissection.

5.3.6 Dental Casts

Postmortem dental casts may be useful to assist in the identification, especially if the only available antemortem evidence is in the form of dental casts, prostheses, retainers, mouth guards, or bleaching trays. Study casts are often a useful source of antemortem information since they allow for direct comparison of antemortem and postmortem dental anatomy as well as occlusal relationships may also serve as an extremely useful tool for comparative dental identification.

Study casts of the decedent can be made from standard dental impression material, or dentitions of the victims can be scanned and stored digitally. If the antemortem evidence is in the form of a 3D digital scan, a digital comparison with the postmortem record is possible.

5.3.7 Dental DNA

Teeth may provide a useful source tissue for DNA analysis for the forensic biologist during the identification process. The tooth or teeth selected should remain in-situ until the odontology visual and radiographic examinations have been completed. The odontologist can assist the biologist by extracting the selected tooth or teeth, appropriately documenting, labeling, and placing the sample in a designated specimen container. Should DNA analysis be deemed necessary, it shall be conducted following established procedures and protocol as outlined by the forensic biologists. The forensic biologist will advise the odontologist of the specific tooth required based on the DNA extraction technique utilized. Often the odontologist will suggest the best teeth for sampling based on the clinical and radiographic examination. Although an unrestored, pathology-free molar provides the greatest amount of dental pulp, cementum, and dentin, a uniradicular tooth may be preferred based on the DNA extraction protocol utilized. Communication between the odontologist and biologist is critical to appropriate tooth selection.

5.3.8 Age Assessment

Dental age assessment using appropriate dental age assessment techniques such as tooth formation and development can provide additional information that may be of assistance in helping identify children and young adults. Morphological or post-formation changes such as root translucency, secondary dentin, pulp volumetric studies, and wear may be of assistance for age assessment in adults. As a general rule, dental age assessment technique in the child and young adult population is more reliable than the techniques utilized for the adult population.

5.3.9 Scientific Tools to Aid in Victim Identification

The majority of odontological identifications of disaster victims will be accomplished by standard identifiers such as dental anatomy, restorative patterns, radiographs, and dental charting. However, in instances of minimal evidence or dental structures degraded by incineration, analytical technology can provide additional information that may assist in identification. Studies have demonstrated that the microstructure and composition of dental restorative materials are distinctive and specific to a manufacturer and can be used to aid in the confirmation of the victim's identity. Composite resins and other restorative materials containing ceramic filler particles are unaffected by extreme temperatures, even cremation, and therefore are particularly well suited for this analysis. This approach depends on the antemortem record containing the specific material utilized in the restoration and analyzing that material through scanning electron microscopy/energy-dispersive x-ray spectroscopy (SEM/EDS) or x-ray fluorescence (XRF). SEM/EDS and XRF can analyze a restorative material's elemental composition, and this information can be compared to known reference samples. These methods can be employed in extreme circumstances when further information and analysis is needed to establish a dental identification. In addition, visible light fluorescence can locate and delineate composite materials in the dentition during visual examination of dental evidence. Therefore, visible light fluorescence combined with a thorough clinical and radiographic exam, can often establish an accurate postmortem dental restorative profile.

6 Data Management

6.1 General

Forensic odontologists collect both the antemortem and postmortem data to establish dental identifications. Therefore, the management of this data is integral to the operation.

6.2 Computer Hardware

Consideration should be given to the equipment required, including integrated and networked computers, monitors, scanners, cameras, and radiography equipment. The principal should be to employ the least complex system that promotes efficient and accurate identifications. Generally, incidents with larger numbers of victims require more complex systems.

6.3 Computer Software

Numerous forensic odontology identification software exists to aid in dental identification. The decision to deploy the software is most commonly based on the incident command management decisions, the size, and scope of the MFI, the size and capabilities of the IT infrastructure as well as the training of the DVI team that will utilize the software. A decision to deploy specialized software should take all these factors into consideration. Computer programs do not confirm dental identifications but rather provide algorithmic rankings to be analyzed by odontologists. Forensic odontologists make dental identification recommendations utilizing their skill, experience, and judgment after employing available systems, tools, and techniques.

Most current forensic odontological software packages support only a single modality of recording the dental information, known as coding. There are various degrees of complexity in the amount of information that is recorded, and this is known as the level or amount of detail in the coding. Typically, the selection of the software determines the type of coding utilized for antemortem and postmortem dental records. Studies have shown that for small to moderate size DVI events, particularly when there is little or no fragmentation of the remains, very basic coding paired with optimized sorting algorithms can produce excellent results. If software becomes available that supports different coding formats, the parameters of the incident should dictate the appropriate coding strategy.

It is important that personnel are properly trained in the utilization of a particular forensic management software system. Although just-in-time training is often a standard component of any DVI operation, personnel shall have been given previous training in the software utilized at a DVI incident. Periodic simulation exercises utilizing the software should be included as part of an overall DVI readiness plan. Wherever possible, the use of forensic odontological charting software for daily operations should be encouraged. The deployment of forensic odontological software should be part of an overall data management plan.

6.4 Data Archiving

Procedures to ensure the integrity of data should be in place. The data should be periodically archived, which should include off-site backups.

6.5 Antemortem Data Collection

The collection of antemortem data should begin as soon as practical and continue until records of all persons believed to be part of the manifest are received. Data may be received from multiple sources as outlined in ADA Technical Report No. 1088, *Human Identification by Comparative Dental Analysis: 2020*. The forensic odontologist should be in direct communication with the Victim Information Center (VIC) and follow all leads leading to the acquisition of meaningful and accurate records providing a timely profile of the victim. Knowledge of all potential sources of antemortem data beyond conventional reporting by the immediate family should be considered following appropriate

permissions and protocols. In many instances, the immediate family members reporting to the VIC are not aware of a victim's most recent dental providers, and further questions and investigation may be required. Other sources may include military history, employer dental insurance information, or medical treatments. Data should be transcribed into the standardized format selected for the current incident, then either entered the appropriate sections of the software program or organized for manual comparison.

In incidents where a significant amount of dental information is being collected, trained forensic odontologists should be included as part of the VIC team. The ability of a trained dentist to talk with family members and asked the appropriate questions could substantially reduce the time involved in making a forensic dental identification. To assist in the collection of this information, a computer station which their capability of processing all relevant dental information should also be placed in the VIC.

To reduce the possibility of misinterpreting a written chart due to illegible information from an electronic dental record (EDR) should be utilized if it exists. In addition, ANSI/ADA Technical Report No. 1085, *Implementation Guidelines for the Secure Transmission of Protected Health Information in Dentistry*, shall be consulted to ensure that proper security protocols are followed concerning the transfer of this data.

6.6 Postmortem Data Collection

Postmortem data shall be collected during the dental autopsy as described in ADA Technical Report No. 1088, *Human Identification by Comparative Dental Analysis: 2020*. Data entry directly into the dental forensic odontology database using a computer workstation located in the autopsy area is preferred to intermediary paper form entry. Networked workstations in the morgue allow for a faster, more efficient data entry process and reduce errors that occur with repeated data transcribing. The exposure and retention of postmortem radiographs is the responsibility of the postmortem section. Digital dental radiographs acquisition and processing should be integrated with the postmortem data collection process using a network connection and software that can directly capture the image to reduce the possibility that the incorrect image importation into an incorrect record. Specific guidelines for specific systems or specific incidents may be developed by the organization or group responsible for dental disaster victim identification. A quality assurance protocol should be adopted that will ensure the reliability of the data entry process.

7 Dental Identification

7.1 General

Guidelines for the process of identifying human remains by comparative dental analysis following ADA Technical Report No. 1088, *Human Identification by Comparative Dental Analysis: 2017* shall be used in disaster incidents.

Comparative dental analysis of human remains is one of the most common and often the most expedient and efficacious biometric methods for identifying burned, decomposed, skeletonized, and fragmented remains. This method involves the comparison of antemortem dental information to postmortem dental information, typically based on radiographs but also with written records, dental casts, as well as intraoral and extra-oral photographs of the decedent.

7.2 Identification

Identification is established when the antemortem and postmortem data match in sufficient detail to establish that they are from the same individual. In addition, there are no irreconcilable discrepancies.

7.3 Exclusion

Exclusion is defined as the comparison of known (antemortem) and unknown (postmortem) evidence leading to the conclusion that irreconcilable discrepancies in concordance indicate that they cannot have come from a common origin.

7.4 Insufficient Information

Insufficient evidence is defined as the evidence and/or provenance of the evidence is insufficient to allow a conclusion of identification or exclusion to be reached. This characterization includes former levels defined in some publications referenced as "probable" or "possible" identification.

7.5 Dental Identification Panel

Dental identification recommendations shall be reviewed and approved by dental section leadership. This panel shall be composed of at least two forensically trained dentists (DDS, DMD, or equivalent degree) with experience in disaster victim identification. This quality assurance/peer review of identifications are analyzed in detail, confirming that the antemortem and postmortem dental data relate to the same individual. They may also be used to confirm that unexplainable discrepancies exist and a dental identification cannot be established. The forensic odontologists are responsible for ensuring that the putative dental identification followed the recommended standards of ADA Technical Report No. 1088, *Human Identification by Comparative Dental Analysis*: 2020. This panel should also be used as the dental representatives Incident Reconciliation Team in order the putative dental identification.

7.6 Reporting

The putative dental identification recommendations should be recorded on an approved form or linked within the software following the appropriate protocol. Dental identification conclusions established by the dental identification panel should also be recorded. Careful attention should be given to identifications of fragmented remains. Ideally, the software system utilized should have fragment management capabilities and be able to accommodate multiple identifications from multiple fragments of the same individual. In addition, protocols should be in place to allow for incomplete confirmed identification of partially collected fragments does not remove the antemortem case data from further identifications within the system. The antemortem data should be considered in subsequent searches or comparisons since additional fragments of the same individual may be later discovered and examined. Information regarding identification(s) should be released to the public or media only by the incident commander, medical examiner, coroner, or the designated public information professional.

7.7 Reconciliation

Reconciliation is the culmination of all the DVI efforts that preceded it. It is an important quality assurance mechanism of the DVI process. This consensus process should involve at least two representatives from each of the scientific identification disciplines (e.g., pathology, odontology,

friction ridge analysis, DNA, anthropology, and any other scientific identification disciplines). These individuals make up the Reconciliation Team, where which reviews the totality of the evidence is presented. This includes various discipline-specific sets of antemortem and postmortem biometric data that form the basis for the putative identification, as well as contextual, such as personal effect, and other information. Reconciliation should include the reasons for establishing a discipline-specific identification or refusal of an identification. At the conclusion of the reconciliation process, recommendations of putative identifications and the group assessments shall be presented for approval to the medicolegal authority that has the ultimate legal authority to formally accept the identifications as official and to formalize them in death certificates.

Depending on the specific circumstances of the MFI and the involvement of external entities in the identification process, the presiding medicolegal jurisdiction may elect to establish a formal Identification Board (IB) to perform a final quality assurance review and prepare an identification report for the medicolegal authority. The IB should comprise senior members of each of the disciplines involved in the identification process. Typically, various scientific identification disciplines (e.g., pathology, odontology, friction ridge analysis, DNA, anthropology, and any other scientific identification disciplines) should be represented along with search and recovery specialists and others as deemed appropriate. The IB reports to the medicolegal authority. The IB reviews all relevant case data and generates reliable assessments of identity and re-association to the medicolegal authority. If the putative identification is not confirmed or refuted, then further comparison and identification efforts shall be conducted, and quality assurance corrective actions are triggered.

8 Demobilization

8.1 General

Forensic odontology section leaders should consult the incident commander to determine when team personnel levels can be reduced or closed. Demobilization typically occurs after completion of the postmortem examinations and review and transcription of the antemortem dental records, and all reasonable attempts of dental reconciliation have been exhausted. At least one experienced forensic odontologist should remain available for analyses, comparisons, and potential dental identification recommendations.

Prior to standing down, all physical, printed, and electronic information and data should be appropriately archived and stored.

8.2 After-action Reports

The forensic odontology leader on duty, when either the section is officially closed or the incident response is terminated, should make a comprehensive report of the activities of the dental section during the incident. The report can be prepared with the assistance of the antemortem, postmortem, and comparison unit leaders and former forensic odontology section leaders. This report should be submitted to the incident commander and a copy retained by the organization or group responsible for the forensic odontology section.

8.3 Psychological Health

The leadership of the forensic odontology section should monitor the psychological well-being of forensic odontology section personnel during and after incidents. Observation of individuals'

behavior and periodic debriefing meetings during incidents plus an assessment of the attitudes and behavior of personnel after incidents can reduce the negative effects of dealing with disaster victims. Mandatory debriefing appointments for each team member are recommended and may be required by incident command.

Annex A **(informative)**

Supplies and Equipment

Consider that other agencies or teams responding to a disaster victim identification incident investigation may also have a need for similar supplies and equipment. The possibility of mutual use may exist, and the security of having backup equipment is extremely valuable when a breakdown occurs.

Postmortem Section Equipment and Supplies (Listed Alphabetically)

- autopsy twine;
- ballpoint pens;
- bard parker handles/blades; Xacto knives/blades
- batteries, x-ray generator, and camera;
- bite blocks;
- cheek retractors;
- Cyanoacrylate cement;
- dental explorers;
- dental mouth mirrors;
- digital cameras;
- digital x-ray sensors;
- extension cords;
- fans;
- felt tip markers;
- flashlights/batteries;
- floodlights and gooseneck lamps;
- folding tables/chairs;
- gauze (4x4);
- handheld or portable dental x-ray unit;

- hydrogen peroxide;
- laptop computer(s) with digital x-ray and dental comparison software, additional LCD monitors;
- large hemostats;
- large sealable plastic storage bags;
- lead aprons;
- lead gloves;
- mallet and chisel;
- modeling clay;
- molt mouth prop;
- moveable partitions;
- orange oil;
- plastic squeeze bottles;
- plastic wrap;
- postmortem dental charts;
- PPE (personal protective equipment);
- pruning shears (long handle);
- ruler (ABFO No.2);
- sensor holders (Rinn and XCP);
- stryker saw;
- surgical scrub soap and brushes;
- toilet paper and paper towels;
- tongue depressors;
- toothbrushes;
- UV light source (390 nm).

Antemortem and Comparison Section Equipment and Supplies (Listed Alphabetically)

- antemortem dental charts;
- comparison dental charts (AM/PM);
- computer(s) with dental identification, digital radiography, and image enhancement software;
- extension cords;
- high resolution fax machine;
- flatbed transparency scanner(s);
- forensic odontology textbooks and manuals;
- magnifying glass;
- millimeter rulers;
- office supplies, including large manila envelopes, paper clips, legal pads, rubber bands, labels (self-adhesive), staplers and staples, clipboards, file folders, file storage boxes;
- color printers;
- tape, cellophane, masking, and surgical;
- telephone directories and ADA membership directory;
- telephones;
- tooth development charts;
- x-ray view boxes.

Annex B (informative)

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