OSAC 2022-S-0022 Standard for Disaster Victim Identification

Disaster Victim Identification Task Group
Medicolegal Death Investigation Subcommittee
Medicine Scientific Area Committee
Organization of Scientific Area Committees (OSAC) for Forensic Science

Draft OSAC Proposed Standard

Standard for Disaster Victim Identification

Prepared by
Medicolegal Death Investigation Subcommittee
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Foreword

Accuracy of identification is a foundational principle of DVI operations. The official identifications are established through a process that involves collection of antemortem and postmortem data collection, comparison and making preliminary identifications, and formal approval of the name associations. Best practices include quality assurance, reconciliation, and consensus review. It is also a foundational principle that this process should not be short-circuited by premature release of a putative identification. The official identification, death certification, notification, and release of remains will follow the preliminary identification.

This standard is put forth by the Disaster Victim Identification (DVI) Task Group within OSAC Medicolegal Death Investigation (MDI) Subcommittee. This document is intended to be the part of a series of standards and best practices developed by the DVI Task Group. This document originated from the Scientific Working Group on Disaster Victim Identification (SWGDVI).

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Standard for Disaster Victim Identification

1 Scope

The purpose of this document is to provide a standard for medicolegal death investigation authorities, practitioners and planners to make identifications and ensure their accuracy in disaster victim identification (DVI) operations responding to mass fatality incidents (MFI). Although resource restrictions can limit the practice in a given MFI, resources are necessary to be made available to implement this standard. While the same basic process is used worldwide, this document is written from a U.S. perspective with American jurisdictions in mind.

2 Normative References

There are no normative reference documents, Annex B, Bibliography, contains informative references.

3 Terms and Definitions

3.1 Disaster Victim Identification (DVI)

The process and procedure for identifying and re-associating human remains via the application of scientific methods, as a component of mass fatality management.

3.3 Discipline-Specific Preliminary Identification

Discipline-specific preliminary identification (noun, verb), as used herein, is the tentative name association conclusion based upon a specific identification modality (i.e., ridgeology, odontology, DNA, pathology, etc.) prior to reconciliation, or the process of establishing it.

3.2 Identification

Identification (noun), as used herein, is the official final name association for the recovered remains.

3.3 Identification Board (IB)

The IB is a formal consensus body to perform a final quality assurance review and prepare an identification report for the ME/C authority.

3.4 Identification Process

The process by which an identification is made, to include antemortem and postmortem comparison.

3.5 Medicolegal Death Investigation Authority

The person or persons whose duty it is to perform medicolegal death investigations for a designated jurisdiction and ensure certification of cause and manner of death; duties vary based on local enabling statutes. The term medicolegal authority is an abbreviation for medicolegal death investigation authority, and when used in this document, shall be construed as though it were written out in full.

3.6 Putative Identification

Putative identification (noun, verb), as used herein, is the tentative name association conclusion after consideration of all information available after reconciliation, or the process of establishing it.

3.7 Reconciliation

Reconciliation, as is used herein, is the process by which all relevant information is considered to resolve any conflicts and to confirm or refute conclusions of identity. This definition is more narrowly defined than by Interpol, which uses the term broadly for antemortem and postmortem comparison.

4 Requirements

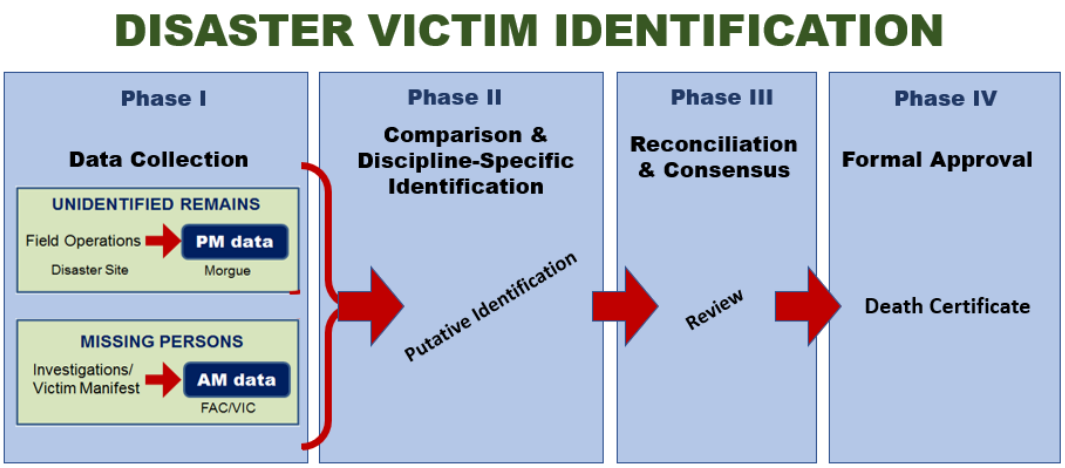
4.1 General

The DVI process is a self-contained component of MFI operations requiring highly specialized personnel and special expertise. The basic procedures have been developed over several years and have been vetted through experience in various MFIs globally. The primary goal of the operation is to accurately identify the human remains. Politicians and Incident Commanders should support, but not interfere in the reconciliation efforts of this DVI unit. It is particularly important to resist pressure to release identifications prematurely, but instead await the full reconciliation efforts. It should be recognized that an "identification" made by a fingerprint, dental, or DNA match is only a preliminary putative identification requiring review and official approval - it is only strong evidence of a would-be identification. In incidents involving fragmentation, consideration shall also be given to re-association of human remains before notice of the identification is given.

The DVI identification process seeks to uniquely identify a set of human remains to the exclusion of all other individuals in the world. The ability of the forensic sciences to achieve "discernible uniqueness" has been questioned.[1] The Department of Justice has issued Uniform Language for fingerprint examiners, which does not allow DOJ examiners to claim "individualization" nor assert "100 percent level of certainty" or even "scientific certainty", but can make an identification determination with the understanding that it is not an absolute certainty.[2] In MFIs, the DVI team can be faced with fragmentation, partial incineration, decomposition, and large numbers of matching combinatorials that can challenge the identification efforts. Mistaken identities have occurred.[3,4] Accordingly, the term "positive identification" is disfavored. Nonetheless, the DVI process shall aspire to make scientific individual identifications with as much accuracy and certainty as can be attained under the circumstance—the reconciliation process described here is an attempt to do exactly that.

Visual identification by families and friends, by itself, is insufficient for disaster victim identification, but instead the identification process shall involve scientific identification. Accordingly, at a minimum, the identification process involves antemortem (AM) and postmortem (PM) data collection, comparison of the AM and PM data, establishment of a discipline-specific preliminary identification, and approval by the medicolegal death investigation authority. The standards presented are applicable to all MFIs. Modern practice involves multiple scientific discipline modalities, quality assurance reviews, reconciliation of all identifying information, and a final consensus review.

DIAGRAM(S)



4.2 Phase 1: Data Collection

AM data is generally collected from families and friends in the Victim Information Center (VIC), a component of the Family Assistance Center (FAC), to include information about the person, photographs, dental records, fingerprints, clinical x-rays, and family DNA reference specimens, etc.. PM data collection is performed by discipline-specific expert individuals or teams (i.e., odontology, fingerprint, DNA, anthropology, pathology, etc.) within the morgue. These efforts are discussed in other ASB documents.

4.3 Phase 2: Comparison and Discipline-Specific Preliminary Identification

Discipline-specific AM and PM data are cross-compared for matching data elements to make discipline-specific preliminary identifications. Modern DVI operations involve multiple discipline-specific scientific identification efforts occurring simultaneously. This identification process (called reconciliation by Interpol) is performed by discipline-specific experts or teams. The specific identification processes required for each discipline will not be discussed in this document. It is expected that quality assurance reviews, including both technical and administrative reviews, have been conducted as a part of the discipline-specific identification process.

Several techniques can be used to target or speed identifications. Software is available that can greatly speed the matching process, but, particularly in smaller incidents, this can be performed on a whiteboard. Software generated matches will need to be checked by discipline-specific experts. Development of a list of key data or special markers can facilitate matching efforts. Similarly, categorization of collective data by useful criteria can also facilitate matching, i.e. gender and age or specifically for female children. Personal effects, visual examinations, and contextual information from the incident can also contribute to this process but are not to be relied upon as methods of identification. Non-scientific contextual information can facilitate understanding useful to the DVI process. For instance, location of the remains can provide an initial association of the remains and hence speed the identification and re-association processes.

4.4 Phase 3: Reconciliation and Consensus

All information shall be considered prior to final identification of the remains. The various discipline-specific sets of data and identification conclusions, as well as contextual and other information, shall be considered and de-conflicted in a reconciliation process. Reconciliation, as used in this document, is the

process by which all the information is considered to review, assess, and confirm the identifications. Review of putative identifications shall involve a consensus process across the various disciplines involved. Thus, reconciliation is the culmination of all the DVI efforts that preceded it. Occasionally, in reviewing this information or perhaps by data mining this information, new putative identifications can be made. Reconciliation is an important quality assurance mechanism of the DVI process. At the conclusion of the reconciliation process, recommendations of putative identifications and their assessments will be presented for approval to the medicolegal death investigation authority that has the ultimate legal authority to formally accept the identifications as official and to formalize them in Death Certificates.

4.4.1 Identification Board (IB)

Depending on the specific circumstances of the MFI and the involvement of external entities in the identification process, the presiding medicolegal jurisdiction can elect to establish a formal Identification Board to perform a final quality assurance review and prepare an identification report for the ME/C authority. The IB reviews all relevant case data and generates reliable assessments of identity and re-association to the medicolegal death investigation authority. If the putative identification is not confirmed, then further comparison and identification efforts will be conducted and quality assurance corrective actions will be triggered.

The IB shall be led by a coordinating manager; it is recommended that the manager have extensive experience in DVI response, when possible. The IB should be comprised of experienced members of each of the disciplines involved in the identification process. Typically, the various scientific disciplines (pathology, odontology, friction ridge analysis, DNA, anthropology) will be represented along with search and recovery specialists and others as deemed appropriate. The IB reports to the medicolegal death investigation authority.

The IB deliberations aim to either refute or confirm hypotheses of identity, and always involve an evaluation of evidence from each of the disciplines, for consistency as well as strength of evidence. A key component at this stage is to highlight and resolve any possible discrepancies. For example, conflicting results obtained with different methods suggest possible quality control issues in the data or sampling that need to be resolved. It can also reflect a discrepancy based on the inherent quality or usefulness of data involved, such as a method conflicting with recorded “soft” evidence (e.g. height, as reported by a family member). Of course, potential associations from one line of evidence can be rejected by other more definitive information.

Generally, the evaluation results in a determination that the putative identification is: 1) rejected, 2) inconclusive pending additional data, or 3) accepted. Category 1 is used to update the decision matrix and to refine ongoing search mechanisms. Category 2 is used to focus subsequent investigations or to seek additional data (such as additional DNA reference samples, or records from the victim's dentist) for subsequent re-categorization. Category 3 progresses the case to the final stage of reconciliation, triggering generation of a report supporting an individual identification.

Independent lines of evidence supporting the same conclusion are important from a quality assurance perspective, and thus the IB plays a fundamental role in Quality Assurance of the overall identification process. The IB shall perform technical and administrative reviews of the identification efforts, as well as conduct a higher-level assessment of the consistency of evidentiary data and conclusions from the separate disciplines.

The end work product of the IB review is an identification case report or worksheet, which describes the information needed to uniquely designate the remains and the missing person to whom they are ascribed, and summarizes the evidence supporting the identification and its evidentiary strength. The identification report shall be rigorously and systematically reviewed to ensure that the information included is correct and

complete. The discipline experts serving on the IB who sign the report shall be in a position to represent that the quality assurance mechanisms and standards associated with their discipline were adequately followed.

4.4.2 Open or Closed Population Sets

A mass fatality incident can involve an open or closed victim population set. Scientific modalities shall be utilized in the identification process. However, in a closed incident where the victims are known, the process of elimination from the universe of known victims is useful for identification when one has high confidence in the unique attributes or characteristics and demographics of the population involved in the incident. In an open incident, an elimination process cannot be used due to the possibility of a random concordance in the general population.

4.4.3 Fragmented Remains

In addition to identification of intact remains, the medicolegal authority may be confronted with the identification and re-association of commingled fragmented remains. There are a number of ways to re-associate fragmented remains (morphoscopic or molecular). Identified remains could be used as DNA reference samples to scientifically re-associate other fragmented remains. The medicolegal authority shall decide on criteria for which fragmented remains will be identified. This decision will be affected by the need to account for all victims, particularly in open populations.

4.4.4 Standard for Identification

Disaster victim identifications have traditionally been conducted without pre-defined criteria or standards set in order to make identifications. Some have argued for setting identification threshold standards for identification. If such standards are set, then the IB will use them to uphold its evaluation and reporting.

Although it is generally recognized that if statistical standards are to be set, then the standards shall be specific to the particular MFI. The magnitude and challenges of MFIs vary, as do the sensitivities of the medicolegal authority and the population served at the time of the incident, and thus the threshold criteria will change with the MFI.

If the probability of a random match in a population using an identification technique is known, then an identification standard could be developed to achieve a desired degree of certainty, i.e. a 0.9999% probability that the identification is not merely a matter of chance. Another approach might be to achieve a certain likelihood ratio, based upon the likelihood of a true identity over the likelihood of a false identity. In such a Bayesian approach, the prior probability might be considered to be 1/number of fatalities (but see Budowle, et.al.[5]).

Of course, it is easier to set identification standards for methods that result in a statistical quantitative finding, such as is done with DNA identity testing. In the case of the 9/11 World Trade Center disaster, a Kinship and DNA Analysis Panel (KADAP) was established to set a minimum statistical threshold for DNA-based identifications.[6] The International Society of Forensic Genetics (ISFG) has since issued recommendations for use of genetic testing in DVI operations and call for the use of likelihood ratios.[7,8] The forensic sciences generally have been pressed to enhance their objectivity and move towards probabilistic interpretations, as well as determine the error rates for the various disciplines.[9] While the FBI, in accordance with the aforementioned DOJ Uniform Language requirements, makes categorical interpretative statements,[2] the U.S. military's latent print unit has instead begun using probabilistic statements of identification.[10] There have been attempts to apply statistical analysis to anthropologic identifications[11-13] and odontologic identifications.[14,15]

4.4.5 Minimization of Cognitive Bias

The reconciliation process shall be conducted with an awareness of the dangers of cognitive bias which could result in erroneous identifications, and the process engineered to avoid bias wherever possible. The possibility of bias is greatest when a subjective determination of a directed comparison is made, because it is human nature to want to make the identification. Steps to be taken to combat cognitive bias can include:

- AM and PM data collection should be separated.
- Discipline-specific comparisons should initially be performed independent of other discipline-specific comparison efforts.
- Evaluation criteria and findings should be measurable or objective, wherever possible.
- Computer automation of data matching should be utilized.
- Reviews should be blinded to the extent possible.
- Sequential unmasking of domain relevant information[16,17] should be used as appropriate.

4.5 Phase 4: Formal Approval

The medicolegal authority is the legally-authorized government official empowered to approve the identification and issue a death certificate. Thus, the IB presents its case identification report to the medicolegal authority to officially declare that the identification has been made. The identification is formally recorded with the issuance of a Death Certificate. Official approval of an identification is necessary before notice is given to the next-of-kin, public announcements made, and disposition of the remains.

Annex A

(informative)

Foundational Principles

- Accurate identification of human remains is a primary goal of disaster victim identification.
- Visual identification, by itself, is insufficient for disaster victim identification.
- Identification process in a mass fatality incident shall involve multiple scientific identification methods in parallel.
- Identification processes shall incorporate quality assurance and strategies to mitigate cognitive bias.
- A review of all relevant case information and context shall be performed prior to the formal identification.
- Putative identification shall undergo a consensus review process.
- Identifications are made official through approval of the name association by the medicolegal death investigation authority and are formalized in Death Certificates.

Annex B

(informative)

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