Personal Identification

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1 INTRODUCTION

This document describes procedures for the comparison of antemortem and postmortem skeletal information and assessing other skeletal features that may support or provide lead value for a personal identification.

2 SCOPE

This document applies to Anthropology Examiners in the Trace Evidence Unit (TEU).

3 EQUIPMENT

- General laboratory supplies
- Digital radiography unit (NorthStar X-5000 x-radiography unit, Kubtek radiography unit, or equivalent)
- Personal protective equipment (e.g., lab coat, gloves, eye protection)
- Light box

4 PROCEDURE

A. ANTHRO-300: Forensic Anthropological Examinations will be followed.
B. Personal identification examinations may involve the comparison of antemortem and postmortem skeletal information and looking for consistencies and inconsistencies that support or refute whether they could have originated from the same source.
C. Personal identification examinations may also involve assessment the skeleton for features that may provide lead value or support a personal identification. One or more of the following approaches may be used.

4.1 Identification Comparison

A. An identification comparison is the direct comparison of antemortem skeletal information, typically in the form of radiologic images (e.g., radiographs, computed tomography scans, other medical imaging modalities) with postmortem information (typically radiologic images) obtained from the skeletal remains.
B. When antemortem images are provided for comparison, postmortem images will be produced that simulate the antemortem radiographs in scope and projection following the Chemistry Unit, Metallurgy Digital Radiography Procedure or other instrument-specific procedure.
C. The antemortem and postmortem images will be compared, looking for consistencies and inconsistencies in bone morphology, trabecular patterns, frontal sinuses, dental features, etc.
D. Depending on whether the submitted antemortem images are film or digital, the comparison may be performed using a computer screen or light box.
E. Identification comparisons must be verified.
F. Identification comparisons may result in one of the following conclusions.

4.1.1 Inclusion (i.e., included)

A. 'Inclusion' is an examiner's conclusion that the questioned skeletal information could have originated from the same source as the known skeletal information, or from another source with the same skeletal features.
B. The basis for an 'inclusion' conclusion is an examiner's opinion that there is sufficient agreement between the features of the questioned and known skeletal information, with no unexplainable differences, to conclude that the skeletal information could have originated from the same source or from another source with the same skeletal features.
C. The strength of the agreement, based on relevant databases or published frequencies of shared skeletal feature(s), shall be reported, if known. If the frequency of the shared feature(s) is not known, the examiner shall disclose that the number of sources who may also share the feature(s) is unknown

4.1.2 Exclusion (i.e., excluded)

A. 'Exclusion' is an examiner's conclusion that the questioned and known skeletal information could not have originated from the same source.
B. The basis for an 'exclusion' conclusion is an examiner's opinion that the questioned and known skeletal information exhibit sufficient differences in skeletal features such that the questioned skeletal information could not have originated from the same source as the known skeletal information.

4.1.3 Inconclusive

A. 'Inconclusive' is an examiner's conclusion that no determination can be reached as to whether the questioned and known skeletal information could have originated from the same source.
B. The basis for an 'inconclusive' conclusion is an examiner's opinion that there is insufficient quantity and/or quality of skeletal features in the known and/or questioned skeletal information to determine whether the skeletal information could have originated from the same source or from another source with the same skeletal features.

4.2 Skeletal Information That May Support an Identification

A. Other information obtained from the skeleton may provide lead value or support an identification, but does not involve the direct comparison of antemortem and postmortem skeletal information.
B. This information will be recorded in the notes and reported as appropriate.

4.2.1 Surgical Devices

A. When surgical devices (e.g., surgical implants, implements, artifacts, appliances) are present with or within the remains, any available information on the device (e.g., lot number, serial number, manufacturer stamp/symbol) will be documented.
B. The information from these devices can be compared with industry repositories or historical records to determine the likely location and/or time period of use.

C. In cases where the device appears in radiologic images, the device may be included as part of an identification comparison.

4.2.2 Biological Profile

A. Biological information estimated from the skeletal remains such as age, sex, population affinity, and stature (see ANTHRO-304: Biological Profile Estimation) may be assessed to determine whether it is consistent or inconsistent with recorded information or databases of missing persons.

4.2.3 Charts and Notes

A. Written or charted medical and/or dental records that contain recorded features or patterns may be assessed to determine whether they are consistent or inconsistent with the skeletal remains.

4.2.4 Injuries, Anomalies, Pathological Conditions, and Lesions

A. When injuries, anomalies or pathological conditions are identified on the skeletal remains, they may be assessed to determine whether they are consistent or inconsistent with antemortem records or information.
B. In cases where the condition is documented/captured in radiologic images, it may be included as part of an identification comparison.

4.2.5 Repetitive Mechanical Stress

A. Stresses and strain on an area of the skeleton from repetitive mechanical stress over time may leave affect the skeleton in the form of, for example:
    - highly-developed tubercles, crests, processes, and fossae
    - bowing or other changes in the diaphyses or articular facets
    - degenerative changes
    - or lesions
    - asymmetries in robusticity, length, and density of paired bones
B. Overexposure to some chemicals may leave marks on bone (e.g., spurring at the bone tendon interface as a result of fluorine toxicity or fluorosis).
C. Facets, grooves, notches, fractures, premature wear, and lesions from repetitive mechanical stress may be apparent in the dentition.

4.3 Verification

A. Identification comparisons involving known (antemortem) and questioned (postmortem) skeletal information will be submitted for verification by a second qualified Anthropology Examiner.
B. The verification will be recorded in Forensic Advantage (FA).

5 LIMITATIONS

A. The conclusion regarding identification (i.e., associating the skeletal remains to a known individual) is ultimately made by the relevant medicolegal authority.

B. The conclusions that can be reached from anthropological examinations are dependent on the condition and completeness of the remains, and the availability and quality of antemortem data. Results based on fragmentary or poorly preserved material may be inconclusive.

6 SAFETY

- While working with physical evidence, laboratory personnel will wear at least the minimum appropriate protective attire (e.g., laboratory coat, eye protection, protective gloves).
- Universal precautions will be followed.
- Exposure to biological and radiological hazards may be associated with the examination techniques performed. Safety procedures related to specific instruments or equipment will be followed. Refer to the FBI Laboratory Safety Manual for guidance.

7 REFERENCES

ANSI/ASB Standard 134. Standard for Analyzing Pathological Conditions and Anomalies in Forensic Anthropology (current version)

ANTHRO-300: Forensic Anthropological Examinations (current version)

ANTHRO-304: Biological Profile Estimation (current version)

Department of Justice Uniform Language for Testimony and Reports for the Forensic Anthropology Discipline (current version)

Digital Radiography, Chemistry Unit-Metallurgy (current version)

FBI Laboratory Safety Manual (current version)

8 REVISION HISTORY

Revision	Issued	Changes
06	04/01/2022	Reformatted Section 5 Limitations so it doesn't fall under Verification. Updated references within document to reflect new naming format.
07	03/15/2024	Language revised to reflect language in ANSI-ASB Standard 132 (Population Affinity Estimation).