BABAO
Code of Practice

Last updated 2019

Contents

1. Preamble

As its name implies, the British Association for Biological Anthropology and Osteoarchaeology (BABAO) is concerned with the disciplines of biological anthropology and osteoarchaeology. The Association's area of interest is defined as follows: "Physical anthropology is the study of human biology within the framework of evolution and with an emphasis on the interaction between biology and culture. This subdiscipline is also referred to as biological anthropology, and you'll find the terms used interchangeably." (Jurmain et al. 2009: 8). In Britain, professionals and students who study archaeologically derived human remains often apply the terms, 'osteoarchaeologist' or 'bioarchaeologist' to describe themselves and their professional activities (Buikstra 1977; Knüsel 2010; Roberts 2018, 2010). Osteoarchaeology is regarded as the study of human remains from archaeological contexts, but the term is also applied to research using archaeologically derived faunal remains (Reitz and Wing 1999: 3; Roberts 2018; Sofaer 2006: xi). BABAO seeks to advance our understanding of human and non-human primates past and present,[1] and views the generation, dissemination, and use of this knowledge as a valuable goal that should be undertaken in an ethical manner.

Since the study of biological anthropology and osteoarchaeology is multidisciplinary by its very nature (Turner 2004), BABAO members have interests and backgrounds that range broadly within the natural and social sciences. The researchers, teachers, and practitioners that make-up the BABAO membership are often members of different communities, each with its own moral rules or codes of ethics, and BABAO members often have moral obligations as members of these other groups (e.g., family, religion, and community) as well as to the profession.

In an area of such complex relationships and responsibilities, it is unavoidable that misunderstandings, conflicts, and the need to make choices among apparently incompatible values will arise. It is a BABAO member's responsibility to deal with such challenges and explore avenues to resolve them. The codes will provide BABAO members with tools to engage in developing and maintaining an ethical framework for their work.

Members should recognise that the activities they engage in may be subject to more than one code of professional activity (e.g., Chartered Institute for Archaeologists (CIfaA)), and they should aim to familiarise themselves with those affecting their particular working practices. The purpose of this Code is to foster discussion and provide guidance for conducting work in an ethical and professional manner. BABAO does not and will not adjudicate claims for unethical or unprofessional behaviour.

[1] BABAO recognises that the professional activity of its members also extends to fossil and forensic material.

2. Introduction

The practice of archaeology, human osteology and biological anthropology in the UK is now governed by a diverse series of legislation and governance, with CIfA and other bodies playing a leading role in this documentation. The shift to digital publication means that for many aspects of our professional practice, particularly regarding excavation, these statements or information need not be repeated here, and instead links are provided to the source. Where information is disparately sourced or lacks specialist publication, we have taken the opportunity to collate it here.

BABAO members should be fully conversant with all aspects of relevant legislation and professional standards in the area of the world in which they conduct biological anthropological or osteoarchaeological work. As BABAO is a British association and the majority of its members work in the United Kingdom,[2] this section will provide an overview of relevant legislation and standards (Table 1). BABAO subscribes to the standards of professional conduct outlined in documents identified in Table 2.

Table 1. Legislation and standards specific to human remains in the United Kingdom.

Location	Title/Action	Authority	Web address
England	Guidance for the best practice for the treatment of human remains excavated from Christian burial grounds in England. 2nd ed.	Advisory Panel on the Archaeology of Burials in England Historic England The Church of England	https://apabe.archaeologyuk.org/pdf/APABE_ToHREfCBG_FINAL_WEB.pdf
England, Wales and Northern Ireland	Guidance for the care of human remains in museums	Department for Culture, Media and Sport	https://www.britishmuseum.org/sites/default/files/2019-11/Regarding-the-Dead_02102015.pdf
	Human Tissue Act (2004)	Human Tissue Authority	https://www.legislation.gov.uk/ukpga/2004/30/contents
England and Wales	Burial licence: Authority to exhume buried human remains for archaeological purposes	Ministry of Justice	https://www.gov.uk/apply-for-an-exhumation-licence
Northern Ireland	Archaeological excavation licence	Northern Ireland Environment Agency	https://www.gov.uk/licence-to-excavate-for-archaeological-purposes-northern-ireland

[2] Statement based on membership information. Great Britain: England, Scotland and Wales; United Kingdom: Great Britain, Northern Ireland and its dependencies, the Channel Islands and Isle of Man.

Scotland	Human Tissue Act (2006)	Human Tissue Authority	https://www.legislation.gov.uk//asp/2006/4
	Excavation of human remains	Judiciary of Scotland	https://www.gov.scot/publications/management-burial-grounds-application-burial-exhumation-private-burial-restoration-lairs-regulation-scotland/pages/8/ See guidance in https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=02e7320f-4fb2-4c4a-8aba-a58e00e3f22c

Table 2. Professional conduct documents endorsed by BABAO.

Title	Author(s)	Date	Web address
CIfA regulations, standards and guidelines	Chartered Institute for Archaeologists (CIfA)	Various	https://www.archaeologists.net/codes/cifa
Toolkit for selecting archaeological archives	CIfA and Historic England	No date	http://cifa.heritech.net/selection-toolkit
Excavation and post-excavation treatment of cremated and inhumed human remains	McKinley and Roberts	1993	https://www.archaeologists.net/public ations/papers
Human Remains in Archaeology (Ireland)	O'Sullivan and Killgore	2003	https://www.heritagecouncil.ie/content/files/human_remains_in_irish_arc haeology_2003_2mb.pdf
The Treatment of Human Remains: Technical Paper for Archaeologists (Ireland)	Institute of Archaeologist of Ireland (IAI) – Buckley, Murphy and Ó Donnabháin	2004	http://www.iai.ie/wp-content/uploads/2016/03/The-Treatment-of-Human-Remains.pdf
(Updated) Guidelines to the Standards for Recording Human Remains	BABAO and CIfA	2017	Brickley and McKinley (2004) and Brickley and Mitchell (2017) https://babao.org.uk/resources/ethics-standards/
Code for Treatment of Human Remains (Ireland)	IAI	2006	http://www.iai.ie/wp-content/uploads/2016/03/IAI-Code-of-Conduct-for-the-Archaeological-Treatment-of-Human-Remains.pdf

The treatment of human remains in archaeology (Scotland)	Historic Scotland	2006	https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=02e7320f-4fb2-4c4a-8aba-a58e00e3f22c
Archaeology and Burial Vaults A guidance note for churches	Association of Diocesan and Cathedral Archaeologists	2010	https://apabe.archaeologyuk.org/pdf/ADCA_Guidance_Note2.pdf
Science and the Dead	APABE	2013	https://apabe.archaeologyuk.org/pdf/Science_and_the_Dead.pdf
Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives	CIfA	2014	https://www.archaeologists.net/sites/default/files/CIFAS&GArchives_2.pdf
Large burial grounds: guidance on sampling in archaeological fieldwork projects	APABE	2015	https://archaeologyuk.org/apabe/pdf/Large_Burial_Grounds.pdf
CIfA accreditation for human osteology	BABAO and CIfA	2016	https://www.archaeologists.net/matrices
Guidance for Best Practice for Treatment of Human Remains Excavated from Christian Burial Grounds in England	APABE	2017	https://archaeologyuk.org/apabe/pdf/APABE_ToHREfCBG_FINAL_WEB.pdf
The role of the human osteologist in an archaeological fieldwork project	Historic England	2018	https://historicengland.org.uk/images-books/publications/role-of-human-osteologist-in-archaeological-fieldwork-project/

3. Health and Safety

It is a legal requirement to comply with the health and safety policies and standards set forth by the institution in which you work. As the legislation and guidance in this area changes frequently, BABAO has identified sources of information in Table 3 which should be consulted in addition to the following statements:

- UK policies should be in accordance with the Health and Safety at Work Act (1974), which requires employers of more than five (5) people to hold an up-to-date written health and safety policy statement.
- In accordance with The Management of Health and Safety at Work Regulations (1999), no work with human remains, whether indoors or outdoors, should take place without an appropriate health and safety risk assessment. Where generic risk assessments already

exist, they should be checked and revised with reference to the particular work being undertaken.

- The Manual Handling Operations Regulations (1992) should be observed when conducting indoor and outdoor work with human remains.
- Those working on construction sites require a CSCS card.
- In some cases (for example, a post-medieval cemetery excavation), a risk assessment from the local environmental health officer will be required before excavating human remains.
- Anyone working in the field should make sure they are up to date with tetanus injections.
- Archaeological skeletal remains pose little or no risk as far as infection hazards are concerned, because harmful micro- organisms do not survive beyond a few months following death. However, individuals working with human remains should be aware of the circumstances under which they may be encountered and, to this end, should be familiar with relevant guidelines.[3]
- It is advisable for excavation directors to advise staff to check whether they have any allergies to medicines such as Penicillin if they are working in burial contexts that could present an infection hazard (HSE 2018).
- Archaeological burials with soft tissue, or the archaeological excavation of burials associated with traumatic events still within living memory, may lead to post traumatic stress disorder (PTSD). It is recommended that relevant guidelines (National Health Service 1995; Wright 2010) are consulted, followed, and covered in a risk assessment.
- Anyone working with human remains in a confined space should have appropriate training. Confined spaces are spaces that are substantially enclosed (although not always entirely) and where serious injury can occur from hazardous substances or conditions within the space or nearby (e.g., lack of oxygen). Deep, narrow excavations and crypts are examples.

Table 3. Quick guide to sources of information and help.

Source	**Web address**
CIfA	https://www.archaeologists.net/sites/default/files/Health%20and%20Safety%20Checklist_2.docx
Construction Skills Certification Scheme (CSCS)	https://www.archaeologists.net/cscs https://www.cscs.uk.com/
Federation of Archaeological Managers and Employers Ltd (FAME)	https://famearchaeology.co.uk/what-we-do/health-and-safety/
Health and Safety Executive	https://www.hse.gov.uk Managing infection risks when handling the deceased (HSE 2018)

[3] Health and Safety Executive (2018)

4. Excavation

As CIfA and Historic England/APABE have published extensively on the excavation of human remains, and future publications on this topic are expected, BABAO has only identified sources of information in Table 4 which should be consulted in addition to the following statements:

- BABAO recommends that members wishing to be involved in excavations seek accreditation through CIfA.
- Osteoarchaeologists should be involved in all stages of an excavation, from planning, field work, and throughout the post-excavation process.
- Excavation does not normally proceed until a strategy has been discussed and agreed with relevant curators (e.g., county/city archaeologists, diocesan archaeological advisers and Historic England advisors). This usually requires an archaeological brief, prepared by the curator and often (although not always) a 'Written Scheme of Investigation' or 'Project Design', prepared by those undertaking the excavation.
- Excavation should be undertaken in accordance CIfA and Historic England/APABE guidelines.
- Following current guidelines, excavations where human remains are encountered should be screened from public view at all times.[4]
- For crypts and post-medieval burials, the recommendations set out by CIfA (Cox 2001) and the guidance set out by the Institute of Burial and Cremation Administration (Inc.) (1998) and the Association of Diocesan and Cathedral Archaeologists Guidance (2013) are also relevant.
- Unless suitably qualified, excavators should not excavate or remove modern burials (less than 100 years since burial), nor remove or open sealed lead coffins; human remains should not be excavated without a relevant licence/faculty.
- Exhumed human remains should be placed in containers and labelled according to skeletal region. They should be carefully packed into suitable containers before being transported to a suitable storage location. Any associated coffins and coffin fittings should be contained with the human remains (but in separate receptacles) wherever possible.
- It is recommended that the excavation of human remains is undertaken under the direction of an accredited ostearchaeologist or field archaeologist who is experienced in the excavation, recording, and recovery of human remains.
- Throughout the duration of the project, the client's position should be respected and acknowledged, especially when the project is active and/or not fully in the public domain.
- Excavators should seek to deposit an archive of their work in a public repository in order to ensure their work is available for future study (see Table 2).

[4] Although we are aware of exceptions to this guidance, such as at Oakington (Cambridgeshire) https://www.boneswithoutbarriers.org/oakington

Table 4. Quick reference to excavation standards.

Title	Author(s)	Date	Web address
Standards and guidance for: • Commissioning work/providing consultancy advice • Desk-based assessment • Archaeological excavation • Archaeological field evaluation • Archaeological watching brief	CIfA	Various	https://www.archaeologists.net/codes/cifa
Excavation and post-excavation treatment of cremated and inhumed human remains	McKinley & Roberts	1993	
Non-human funerary remains	Reeve and Adams	1993	https://archaeologydataservice.ac.uk/archives/view/cba_rr/rr85.cfm
	Mytum	2000	
Excavation of cremated remains	McKinley	1998, 2000, 2004	https://archaeologydataservice.ac.uk/library/browse/personDetails.xhtml?personId=512
The Treatment of Human Remains: Technical Paper for Archaeologists	IAI – Buckley, Murphy and Ó Donnabháin	2004	http://www.iai.ie/wp-content/uploads/2016/03/The-Treatment-of-Human-Remains.pdf
(Updated) Guidelines to the Standards for Recording Human Remains	BABAO and CIfA	2017	Brickley and McKinley (2004) and Brickley and Mitchell (2017) https://babao.org.uk/resources/ethics-standards/
Guidance for Best Practice for Treatment of Human Remains Excavated from Christian Burial Grounds in England	APABE	2017	https://archaeologyuk.org/apabe/pdf/APABE_ToHREfCBG_FINAL_WEB.pdf
Piling and Archaeology. Guidance and good practice	Historic England	2019	https://historicengland.org.uk/images-books/publications/piling-and-archaeology/
Commonwealth War Graves Commission	-	-	https://www.cwgc.org

5. Curation

BABAO considers that the extensive collections of human and non-human primate remains curated throughout the Britain (and the world) form a unique repository of information, whose existence allows us to understand our shared past. Our ability to ensure that this resource is available for the long-term has been repeatedly demonstrated by its continuing ability to provide

data about our ancestors and contribute to developments in a wide range of fields and subjects: palaeopathology, human evolution, adaptation to and impact of past environments on humans, genetics and clinical medicine (see Roberts and Mays 2011).

The statements below are a guide to best practice for dry, skeletonised biological material and samples taken from this material. With respect to mummified and fossilised material, specialist advice should be sought from the outset.[5] Although, the statements were written taking into account the many disparate working environments of BABAO members, and they focus on human skeletonised material, as this is the most frequently encountered type in Britain, they also acknowledge the ever-present constraints of time and financial resources. Members should be aware that, for the most part, the archiving institution will issue guidelines and provide advice for the packing of material. BABAO also recognizes that the policies issued by many institutions represent the views of other stakeholders, such as conservators and collection care specialists.

Members should be aware that ensuring the long-term survival of collections is a dynamic process, which seeks to promote collection integrity. This approach "stresses the natural unaltered state of the collection as the preferred condition" (Cassman and Odegaard 2007a, 77). Members should familiarise themselves with curatorial best practice, as these strategies cannot be separated from their professional activities.

Table 5. Quick reference to curation standards and information.

Title	Author(s)	Date	Web address
Arts Council accreditation standards	Arts Council for England	-	https://www.artscouncil.org.uk/supporting-arts-museums-and-libraries/uk-museum-accreditation-scheme
Spectrum	Collections Trust	-	https://collectionstrust.org.uk/spectrum/
Toolkit for selecting archaeological archives	CIfa and Historic England	-	https://www.archaeologists.net/sites/default/files/downloads/selection-toolkit/SelectionToolkit_Full_v2.pdf
Guidance for the care of human remains in museums	Department for Culture, Media and Sport	2005	https://www.britishmuseum.org/sites/default/files/2019-11/Regarding-the-Dead_02102015.pdf
Human remains. Guide for museums, and academic institutions	Cassman et al.	2007	

[5] The curation of fossilised material should be undertaken following best practice guidelines published by that discipline, for example, http://www.geocurator.org/pubs/Guidelines.pdf. The care of mummified material should follow best practice guidelines and advice published by specialists in that discipline. For example, Aufderheide, A.C. 2003. The scientific study of mummies. Cambridge: Cambridge University Press; http://www.scielo.cl/scielo.php?script=sci_arttext&pid=S0717-73562001000100013

Curating human remains. Caring for the dead in the United Kingdom	Giesen	2013	
Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives	CIfA	2014	https://www.archaeologists.net/sites/default/files/CIFAS&GArchives_2.pdf
Regarding the Dead: human remains in the British Museum	Fletcher et al.	2014	https://www.britishmuseum.org/sites/default/files/2019-11/Regarding-the-Dead_02102015.pdf
Human remains in archaeology. A handbook. Practical handbooks in archaeology	Roberts	2018	
The practice and ethics of skeletal conservation	Advances in Archaeological Practice 7.1	2019	https://www.cambridge.org/core/journals/advances-in-archaeological-practice/issue/practice-and-ethics-of-skeletal-conservation/1E67B6EC0EF8054BEFDF7573B8FBF2F8

5.1 Management

Members should be aware that ensuring the long-term survival of collections is a dynamic process which seeks to promote collection integrity. Members should familiarise themselves with curatorial best practice, as these strategies cannot be separated from their professional activities.

This section is relevant to any organisation with long-term responsibilities for collection management, i.e., a museum, research laboratory, university and government agency. The statements are strongly recommended for archaeological contractors organisations that have short-term responsibility for biological remains.[6]

- Produce and make publicly accessible a mission statement, ethics and policy documents, an inventory of the collections held, and a research register.
- Establish and follow a management plan that would include topics such as: environmental standards, security, access, pest control, housekeeping, condition assessments, emergencies, destructive analysis and deaccessioning/repatriation.
- The curation of soft-tissue (e.g., hair, nails or fibrous tissue) remains requires help from conservators in this specific field (e.g., anatomy or pathology collections) in order to ensure that they remain stable.

[6] In this document the phrase 'biological remains' is used to encompass living human and non-human primates, human and non-human primate skeletons, and other body tissue (i.e., hair).

- Containers should be inert and acid-free, packed to limit damage, with the identification information given on the box, and in each bag used to hold the remains.
- Conservation interventions (e.g., use of HMG Paraloid B-72 reversible adhesive) should be documented.
- aDNA samples should be kept frozen at -80°C for long-term survival; -20°C is tolerable for less than a year.
- Human bone can be marked[7] using an indelible marker pen or Indian ink,[8] avoiding areas of significance (e.g., pathology or a landmark).
- Images of biological remains should not be published without consultation with the curating institution or relevant stakeholder (see BABAO Recommendations).
- Remains should be kept in dedicated secure locations with controlled access.
- Where appropriate, descendants[9] should be consulted with regarding the management of remains.
- Where appropriate (i.e., an exhibition) BABAO supports the display of biological remains in institutions in a holistic and respectful manner.[10]

6. Research and teaching

Information and advice about the practical issues of research and teaching can be found in Table 5.

- BABAO strongly recommends that collections are open for study by *bona fide* researchers and students, and access should be supported by a covering letter from their institution of study.
- Access should be considered and documented using an application form which, as a minimum, records: the researcher's contact details, the collections studied, methods used in the study, a copyright agreement for images, and an agreement that a copy of the study is deposited with the curating institution. If destructive sampling takes place, the recommendations described in this code should be documented.

[7] If material is included in an exhibition or chosen as a loan, it should be marked. Note that Indian ink is not reversible when directly applied to bone (Cassman and Odegaard 2007c, 113).
[8] To make a reversible marking, first put on a barrier of HMG Paraloid B-72. A less favourable alternative is clear nail polish.
[9] As defined by DCMS (2005, 26-27) for descendants who make a request for a return.
[10] See DCMS (2005, 20). The display of human remains is supported by public surveys (see, https://historicengland.org.uk/content/docs/research/opinion-survey-results-pdf/).

- Research space should conform to health and safety legislation,[11] and individuals working in the space should be familiar with risk assessments and provided with the institution/stakeholders' ethics and policy documents.[12]
- Research facilities should aim to be as comprehensive as possible to ensure that sufficient equipment and resources are provided.
- In the preparation and carrying-out of research, members should be clear and open about the purpose and projected outcomes of the study with the stakeholders involved in/or affected by the research (e.g., host institutions/ communities, sponsors, funding bodies).[13] All efforts should be made to ensure that safety, dignity and privacy of the stakeholders is not compromised. This can be achieved by obtaining consent in advance, and operating within the legislative directives of a given locale, and ensuring that the stakeholders are not exploited by the project.
- The outcomes of the research should be disseminated to and deposited with the stakeholders and other relevant parties (i.e., funding bodies, host institutions/communities, peers) within reasonable time.
- BABAO urges its members to consider applications for access to their research information, particularly if there is a hiatus between the project being completed and the archive being deposited at an institution.
- Members should uphold the policies and legislative frameworks governing professional conduct at their respective institutions.
- Professionals who are responsible for and/or use collections curated by their institution should endeavour to ensure its long-term survival and uphold best practice curatorial strategies.
- BABAO strongly recommends that the teaching biological anthropology and osteoarchaeology should be undertaken using actual skeletal materials, as these are the only means by which normal and abnormal variation can be identified in a population and effectively taught. Plastic/replica material is not a substitute for this resource, but may be helpful for the most basic of classes where anatomy is being taught.
- Individuals responsible for teaching/research should mentally and physically prepare students for working with biological material.
- Individuals responsible for teaching/research space should issue guidelines on acceptable behaviour, health and safety practices, and complete a risk assessment.[14]
- Teaching/research facilities should aim to be as comprehensive as possible, to ensure that sufficient equipment and resources are provided.

[11] Members are responsible for identifying the legislative requirements in their locale.
[12] As described in DCMS (2005, 20-21). Working-spaces should be covered with a protective layer (preferably plastazote foam) and fragile items should be supported by plastazote/microfoam cut to form a skull ring or a bean-bag made from polypropylene pellets.
[13] Members should endeavour to identify potential ethical difficulties when designing projects and determine how these can best be resolved.
[14] Members are responsible for identifying the legislative requirements in their locale.

7. Non-human primates

A number of professional organisations[15] concerned with the study of non-human primates exist, and BABAO summarises their main guiding statements here, but we expect members working in this field to:

- To support the conservation of the animals under study (https://www.asab.org/ethics).
- Accept responsibility for the stewardship for nonhuman primates (https://www.asp.org/society/resolutions/EthicalTreatmentOfNonHumanPrimates.cf).
- To follow the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) https://www.cites.org/eng/disc/text.php
- Potential benefits of research should be evaluated against the potential risks to the nonhuman primate subjects (https://www.asp.org/society/resolutions/EthicalTreatmentOfNonHumanPrimates.cf)
- To follow the three guiding principles of Replacement, Reduction and Refinement in research (Animal Behaviour 2018).
- Researchers are responsible and accountable for the care and wellbeing of the animals used in their research and teaching activities (Animal Behaviour 2018).
- Abide by spirit and letter of legislation in the location where the research is taking-place (see Radford 2001).
- Fieldwork concerned with free-living animals should take precautions to minimise the imposition of fear, distress or lasting harm (Animal Behaviour 2018).
- Fieldwork should minimise impact upon the wider population and ecosystem (Animal Behaviour 2018).
- To undertake due diligence (see 5.1) where the remains of non-human primates are loaned or transferred between institutions.

8. Living individuals

A number of professional organisations[16] concerned with the study of living individuals and populations exist, and BABAO summarises their main guiding statements here but we expect members involved in research or other activities involving living individuals, including validation tests of reliability, repeatability and accuracy (e.g. interobserver error tests) should adhere to the following:

- Members should ensure any activities involving living participants complies with all ethical and legal requirements regarding biological remains within institutions and countries where the activity is conducted (e.g., Human Tissue Act 2004, 2006). This includes

[15] For example, the Primate Society of Great Britain and International Primatology Society.
[16] For example, the Society for the Study of Human Biology and the Royal Society of Biology.

professional practice guidelines from relevant professional (e.g., Royal Anthropological Institute and CIfA) and funding bodies (e.g., Wellcome Trust).

- In accordance with the Declaration of Helsinki (2013) all studies involving living individuals must treat those individuals with dignity and respect.
- No harm must come to the individual, either physically or psychologically.
- Appropriate health and safety precautions must be taken to ensure the safety and well-being of the researcher and those being researched. A risk assessment should be completed before research commences.
- All individuals should be informed and provide informed consent to the nature of the study, what they are being asked to do, how the data will be used (reports, publications, conferences), how it will be stored and for how long.
- Members should ensure the confidentiality and security of personal data relating to living participants in research.
- All individuals should be informed of the purpose of the research, potential impacts and source(s) of support (e.g., funding bodies).
- Researchers should ensure they are fully informed of, and respect, all local or national cultural or religious influences, laws and regulations that may cause ethical or practical limitations to the research when working with individuals and communities.
- Members should maintain objectivity and integrity when conducting research interviews and analysis and ensure they are fully informed of any situations that may lead to a misuse of knowledge.
- The professional activities of BABAO members include 'forensic material'. When developing methodologies and working with living individuals in research proposed to have a forensic anthropology application, it is paramount that the requirements of the expert witness and the guidelines to determine research and evidence is admissible in court are understood and followed (e.g., Criminal Procedure Rules part 19, http://www.justice.gov.uk/courts/procedure-rules/family/parts/part_19).

9. Destructive and invasive sampling

This section has been written to work alongside the 'Science and the Dead' (2013) document published by APABE to address any type of analysis which results in or causes the destruction of human remains.

Members must understand that these techniques (e.g., light stable isotope and ancient DNA analyses) have the potential to provide highly sensitive personal information about the individual, their ancestors, and potentially living descendants. We recommend the Medical Research Council 'Human Tissue and Biological Samples for Use in Research: Operational and Ethical Guidelines' when taking dental, bone, dental calculus, or soft tissue samples from

individuals who died within the last 100 years.[17] These guidelines are also helpful for managing the analysis of named individuals whose death date makes them exempt from the Human Tissue Act (2004, 2006) but recognise that samples and their constituent parts regardless of their method of transformation (e.g., collagen, dental enamel, DNA extract, etc.) remain part of the individual from which they were taken.

9.1 Non-archaeological/historical material

Taking samples from living and deceased human and non-human primates, less than one hundred (100) years old, are subject to legislative requirements of their resident country. Therefore, we advise that our members familiarise themselves with these before undertaking any project where the collection of these data are necessary.

- In England, Wales and Northern Ireland: Human Tissue Authority (Human Tissue Act 2004) (http://www.hta.gov.uk/legislationpoliciesandcodesofpractice/legislation.cfm).
- Medical Research Council (https://mrc.ukri.org/publications/browse/human-tissue- and-biological-samples-for-use-in-research/).

In Scotland, there is no equivalent of the Human Tissue Authority and no licences are needed for the storage and use of human tissue. The Scottish Human Tissue Act (2006) is restricted to tissue from the deceased (http://www.legislation.gov.uk/asp/2006/4/contents).

9.2 Archaeological human remains

Archaeologically derived human remains are a finite repository of information about past communities and environments, and are subject to the ethical and practical considerations about retention and repatriation, many of which are unforeseen. Consequently, this guidance has been written with these fundamental tenets in mind.

9.2.1 Governing principles

- Biological remains should not be repeatedly sampled for the same study.

[17] The Human Tissue Act consent requirements do not apply to existing holdings where the analysis is to 'obtain scientific or medical information about a living or deceased person which may be relevant to any other person'. This is how the HTA consider aDNA research, even of named individuals. Consequently, the HTA refer such enquiries to the Medical Research Council, because their codes of ethics include the consent of relatives etc. This is because an aDNA sampling request reverts to being an ethical rather than a legal question. Existing holdings are those which are under 100 years old but which were present in a collection prior to the Act coming into force in 2006.

- The temporal, national, regional, palaeopathological and archaeological/historical significance of the biological remains should be established by the holding institution (permanent and/or temporary) before sampling is considered, and judgments should be made based on these assessments.
- If biological remains are being sampled for analysis outside the country of their excavation and/or curation, the person undertaking the project should make themselves aware of, and comply with, the relevant legislation and import/export conditions, and ensure the transport of the material is undertaken in such a way as to safe-guard the sample.
- If the biological remains are destined for curation at an institution, but are being held in the interim by other stakeholders (e.g., an archaeological contractor), the stakeholder should liaise with the institution to ensure that the sampling is undertaken in a manner which does not conflict with their conservation and policies in order to ensure the long-term curation of the material.
- Consider if the sampling is necessary to answer the research question and if it is undertaken, ensure that the results justify the sacrifice, and consider what other methods of analysis are prevented by sampling.
- Understand that permission and consent are not inter-changeable or synonymous terms. Stakeholders and curating institutions can, in practice, grant permission for sampling, but in an ethical sense are, to a certain extent, also providing consent on behalf of the once living person. Please note that whoever has legal title of the site archive to which the remains belong may be regarded as having 'ownership' of the samples (e.g., as per the International Ancient Egyptian Mummy Tissue Bank) (Lambert-Zazulak 2000).
- Be mindful when considering consent for destructive and invasive analysis that current legislation and professional frameworks do not address this issue for the sampling of archaeologically derived individuals (particularly those from the 18th and 19th centuries AD), despite many having established identities (e.g., The St Bride's crypt population).[18] This is particularly concerning for ancient DNA (aDNA) work, where the potential to sequence an individual's genome exists. The closest analogy for decision-making is 'proxy consent', which may be defined as, 'the process by which people with the legal right to consent to medical treatment for themselves or for a minor or a ward delegate that right to another person' (biotech.law.lsu.edu/books/lbb/x302.htm).
- Include living genealogical descendants in any decision-making process, wherever possible and appropriate, following the guidance published by DCMS (2005, 26-27) and be mindful of Data Protection legislation. We also recommend the Medical Research Council 'Human Tissue and Biological Samples for Use in Research: Operational and Ethical Guidelines'[19] during this process (see also further reading).

[18] Numerous studies have demonstrated that a wealth of primary source information can be found for named archaeologically derived individuals. At the time of writing, management of these data (including their name) is exempt from General Data Protection Regulation (http://www.europarl.europa.eu/doceo/document/E-8-2017- 007611-ASW_EN.html and (https://ico.org.uk/for-organisations/guide-to-data-protection/).

[19] https://mrc.ukri.org/publications/browse/human-tissue-and-biological-samples-for-use-in-research/

- Consider any implications for living individuals, as we expect the trend for ancestry research and genetic testing to rise.[20] Be mindful that although descendants may not be identified or make themselves known at the time of excavation, they may do in years to come, and any decision-making must be documented and archived. An 'Open Data' approach means the generated data have a life beyond the project, and are placed in the public domain, which has potentially serious and significant implications for living individuals (i.e., inherited diseases).
- Seek advice and help from independent specialist bodies (e.g., APABE or Historic England) for clarification on the robusticity of any proposed study and whether the methods to be used will potentially answer the questions proposed (see Hofman and Warinner 2019).

9.2.2 For researchers

It is the responsibility of researchers to ensure they follow the guidelines below, and those issued by the institutions curating the human remains. Researchers should:

- Check with the curating institution that the human tissue to be sampled has been recorded to a high level and photographed (see above).
- Endeavour to ensure that sampling is undertaken in such a manner to allow, wherever possible, for multiple analyses to proceed. For example, a tooth being used for both aDNA and light stable isotope analyses.
- Ensure that the curating institution is provided with the unique databank identifiers of the resulting data when aDNA analysis is being undertaken. Do not rely on the content of the publication to share this knowledge.
- Provide copies of light isotope raw data values to the curating institution.[21]
- Acknowledge the curating institution in all resulting outputs, and provide copies of the outputs to that institution.
- Return all extant samples (including extracts and libraries) to the curating institution. If the institution is unable to support retention of the extant material, a memorandum of understanding should be created to manage where and how the extant samples will be stored long-term. Note that continued storage by an external researcher/institution does not confer sole access to the sample or grant permission to use the extant sample again without permission from the original curating institution, which has legal title to the human remains
- Endeavour to take the minimum quantity of material required to produce meaningful results (see Terrell 2018).

[20] For example, the open letter submitted to *BuzzFeed News* by 67 scientists and researchers (https://www.buzzfeednews.com/article/bfopinion/race-genetics-david-reich#.jqQ6X6057b).
[21] This is because the calculations used to interpret the values have changed over time.

- Be prepared to micro- or sub- sample a skeleton or preserved body to demonstrate the viability of their proposed technique on a particular set of human remains before moving to a full sampling strategy commensurate with their research proposal.

9.2.3 Curating institutions

It is recognised that many institutions will have their own policies and procedures for the curation of human remains and destructive sampling. We recommend the following guidelines as examples of best practice. Institutions should:

- Have an application process for sampling that is transparent, fair and unbiased, guided by clear instructions and supported by policy documentation.
- Ensure that human remains identified for sampling have been recorded to a high level (Table 4) before destructive techniques are applied.
- Take into account the following information when considering applications for destructive sampling:
    - Where the samples will be processed, analysed and stored.
    - Whether the applicant has provided a full, detailed and comprehensive methodological statement which includes information about the processing of the samples and the equipment to be used.
    - That the name and URL of the databank which will be used to store the resulting information has been provided.
    - Whether residual sample material, resulting extracts and library preparations are to be returned, and how they will be curated.
    - Note if the proposed technique has already been carried out on the material requested and, if unsuccessful, why subsequent analysis is more likely to succeed.
    - Ensure that the human remains and specific site identified for sampling are photographed before and after any destructive techniques are applied. Photographs must show the element(s) to be sampled clearly (i.e., they must be in focus and appropriately exposed), and multiple views of the element(s) should be taken if necessary. An institution can request copies of the photographs to ensure they are of adequate quality before granting permission for the sampling process to continue. If appropriate, further recording using imaging techniques, such as plain film radiography or CT scanning should also be undertaken.
    - Consider the impact on future study of the material when deciding whether to approve a sampling application. This should include:
        - Whether the proposed sampling affects any morphologically important areas, such as anatomical landmarks or pathological changes.
        - Whether the proposed sampling will use all, or most of, the material that will ever be available for a particular technique (e.g., if the proposed technique will

significantly destroy or compromise the sole surviving tooth or bone belonging to an individual).

- Ensure that when dental crowns are to be sampled, impressions or moulds of the crown (and root where accessible) are taken using appropriate materials. If possible, a replica could be made, such as through 3D printing.
- Keep clear records of the sampling done on any individual set of remains or site/collection for future reference so that subsequent research applications are not approved if the analysis has already been conducted.

10. Public engagement

This is an important part of sharing knowledge, and has been recognised as a sub-field within archaeological practice. There is now a variety of publications dealing with this topic (e.g. Sayer and Sayer 2016; Williams et al. 2019; Williams and Richardson 2018), and it has been recognised by CIfA (2018) as playing an important role in excavations.

- DCMS (2005, 20) guidelines offer advice about the use of human remains in public engagement.
- BABAO suggests that any such activities are designed and sign-posted in such a way as to ensure that the public has a choice whether or not to view or engage with remains.
- BABAO strongly recommends that any public engagement involving remains is overseen and supervised by an experienced osteologist/biological anthropologist.
- Advice about the handling of remains can be found in Cassman and Odegaard (2007d). BABAO suggests that casts/replicas can be helpful in facilitating engagement and for use in activities, particularly where high visitor numbers are expected.

11. Transport, shipping and handling

- It is advised that a condition report is made before they are packed and moved.[22] At a minimum, it should document completeness and existing areas of damage and breakage, and where possible, be supported by photographs.
- BABAO strongly recommends that remains are only transferred or shipped between locations using a courier or in-house services.[23]
- The remains must be packed in such a way as to ensure that any potential for breakage or damage is minimised (see, http://sharemuseumseast.org.uk/wp-content/uploads/2013/08/How-To-Guides-Packing-Museum-Objects.pdf).

[22] It is envisaged that this advice is more suitable for post-excavation activity, such as deposition of a site with an archive or for an exhibition loan. See, http://sharemuseumseast.org.uk/wp-content/uploads/2013/12/Condition-Report-Crib-Sheet.pdf. Note, these data may be already captured by context sheets and recording forms. See also Cassman and Odegaard (2007c).
[23] Royal Mail does not allow human remains to be posted using their network.

- Documentation should be created to manage the transfer, shipping and arrival of the remains; with a view to long-term collection management, it is useful for this to be included in the site archive.

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13. Bibliography

13.1. Cited references

Animal Behaviour. 2018. Guidelines for the treatment of animals in behavioural research and teaching. *Animal Behaviour* 135, I-X.

APABE. 2013. Science and the dead. A guideline for the destructive sampling of archaeological human remains for scientific analysis. English Heritage and APABE http://www.archaeologyuk.org/apabe/pdf/Science_and_the_Dead.pdf

APABE. 2017. *Guidance for best practice for treatment of human remains excavated from Christian burial grounds in England*. London: English Heritage.

Association of Diocesan and Cathedral Archaeologists Guidance. 2013. Archaeological requirements for works affecting cathedrals, churches, precincts and churchyards. Guidance Note 1. http://churcharchaeology.org/ADCA/ADCAguidancenote1.pdf

Aufderheide, A.C. 2003. *The scientific study of mummies*. Cambridge: Cambridge University Press.

BABAO. 2010. Survey of BABAO member's opinions 2008.

Bowron, E. 2003. A new approach to the storage of human skeletal remains. *The Conservator* 27: 25-106.

Brickley, M.B. and McKinley, J.I. (eds.) 2004. *Guidelines to the standards for recording human remains*. BABAO and Reading: IFA Paper No. 7. https://www.archaeologists.net/sites/default/files/ifa_paper_7.pdf

Buikstra, J.E. 1977. *Biocultural dimensions of archaeological study: a regional perspective. In R.L. Blakey (ed.), Biocultural adaptation in prehistoric America*. Athens, Georgia: University of Georgia Press, 67-84.

Cassman, V., Odegaard, N. and Powell, J. (eds.), 2007. *Human remains. Guide for museums, and academic institutions*. Oxford: Altamira Press.

Cassman, V. and Odegaard, N. 2007a. Treatment and invasive actions. In Cassman, V., Odegaard, N. and Powell, J. (eds.), 2007. *Human remains. Guide for museums, and academic institutions*. Oxford: Altamira Press, 77-96.

Cassman, V. and Odegaard, N. 2007b. Condition assessment of osteological collections. In Cassman, V., Odegaard, N. and Powell, J. (eds.), 2007. *Human remains. Guide for museums, and academic institutions*. Oxford: Altamira Press, 29-48.

Cassman, V. and Odegaard, N. 2007c. Storage and transport. In Cassman, V., Odegaard, N. and Powell, J. (eds.), 2007. *Human remains. Guide for museums, and academic institutions*. Oxford: Altamira Press, 103-128.

Cassman, V. and Odegaard, N. 2007d. Examination and analysis. In Cassman, V., Odegaard, N. and Powell, J. (eds.), 2007. *Human remains. Guide for museums, and academic institutions*. Oxford: Altamira Press, 49-75.

Chartered Institute for Archaeologists (CIfA). 2018. Policy statements. https://www.archaeologists.net/sites/default/files/Policy%20statements%20revised%20Aug%202018.pdf

Cox, M. 2001. *Crypt archaeology. An approach*. Institute of Field Archaeologists Technical Paper No 3.

Department for Culture, Media and Sport. 2005. *Guidance for the care of human remains in museums*. London: DCMS

Fletcher, A., Antoine, D. and Hill, J.D. (eds.), 2014. *Regarding the dead: human remains in the British Museum*. London: British Museum Press. https://www.britishmuseum.org/PDF/Regarding-the-Dead_02102015.pdf

Giesen, M. (ed.), 2013. *Curating human remains. Caring for the dead in the United Kingdom*. Woodbridge: The Boydell Press.

Health and Safety Executive. 2018. *Managing infection risks when handling the deceased. Guidance for the mortuary, post-mortem room and funeral premises, and during exhumation*. HSG283. Norwich: The Stationery Office. http://www.hse.gov.uk/pUbns/priced/hsg283.pdf

Historic Scotland. 1997. *The treatment of human remains in archaeology*. Historic Scotland Operational Policy Paper 5.

Hofman CA, Warinner C. 2019. Ancient DNA 101: An introductory guide in the era of high-throughput sequencing. *SAA Record* 19(1): 18-25.

Janaway, R., Wilson, A., Caffell, A. and Roberts, C.A. 2001. Human skeletal collections: the responsibilities of project managers, physical anthropologists, conservators and the need for standardized condition assessments. In Williams, E. (ed.), Conservation, retrieval and analysis. Proceedings of a conference held in Williamsburg, VA, Nov 7-11th 1999. Oxford: *British Archaeological Reports* S934, 199-208.

Jurmain, R., Kilgore, L., Trevathan, W., and Ciochon, R. (2009) *Introduction to physical anthropology*. 12th edition. London: Wadsworth.

Knüsel, C.J. 2010. Bioarchaeology: a synthetic approach. *Bulletins et Mémoires de la Société d'anthropologie de Paris* 22.1-2: 62-73.

Lambert-Zazulak, P. 2000. The International Ancient Egyptian Mummy Tissue Bank at the Manchester Museum. *Antiquity* 74.283, 44-48.

Mays, S. and Smith, M. J., 2009. Reburial, Repatriation and Ethical Treatment of Human Remains: A British Perspective. In Lewis, M.E. and Clegg, M. (eds.), 9th Annual Conference of the British Association for Biological Anthropology and Osteoarchaeology (BABAO): Proceedings, 14-16 September 2007, Department of Archaeology, University of Reading, England. Oxford: *BAR Archaeological Report* S1918, 107-117.

McKinley, J. 2004. Compiling a skeletal inventory: cremated human bone. In Brickley, M.B. and McKinley, J.I. (eds.) 2004. *Guidelines to the standards for recording human remains*. BABAO and Reading: IFA Paper No.7, 9-13. https://www.archaeologists.net/sites/default/files/ifa_paper_7.pdf

McKinley, J. and Roberts, C.A. 1993. *Excavation and post-excavation treatment of cremated and inhumed human remains*. Institute of Field Archaeologists Technical Paper No 13.

Mitchell, P. 1998. *The IBCA exhumation handbook*. Institute of Burial and Cremation Administration (Inc.).

Mitchell, P. and Brickley, M. (eds.), 2017. Updated guidelines to the standards for recording human remains. CIfA and BABAO. https://www.archaeologists.net/sites/default/files/14_Updated%20Guidelines%20to%20the%20Standards%20for%20Recording%20Human%20Remains%20digital_0.pdf

Mytum, H. 2000. *Recording and analysing graveyards, a handbook*. Practical handbooks in archaeology No.15. York: Council for British Archaeology.

National Health Service. 1995. *Post-traumatic stress disorder (PTSD). The management of PTSD in adults and children in primary and secondary care*. Clinical Guideline 26. http://www.nice.org.uk/CG026NICEguideline.pdf

Radford, M. 2001. *Animal welfare law in Britain: regulation and responsibility*. Oxford: Oxford University Press.

Reeve, J. and Adams, M. 1993. *The Spitalfields Project Volume 1: the archaeology – across the Styx*. York: CBA Research Report 85. https://archaeologydataservice.ac.uk/archives/view/cba_rr/rr85.cfm

Roberts, C.A. 2018. *Human remains in archaeology, a handbook*. Practical handbooks in archaeology No. 19. York: Council for British Archaeology.

Roberts, C.A. 2010. Adaptations of populations to changing environments: bioarchaeological perspectives on health for the past, present and future. *Bulletins et Mémoires de la Société d'anthropologie de Paris* 22. 1-2: 38-46.

Roberts, C.A. and Mays, S. 2011. Study and restudy of curated skeletal collections in bioarchaeology: a perspective on the UK and the implications for future curation of human remains. *International Journal of Osteoarchaeology* 21.5, 626-630.

Sayer, D and Sayer, F (2016) Bones without barriers: the social impact of digging the dead. In, Williams, H. and Giles, M. (eds*.), Archaeologists and the Dead: Mortuary Archaeology and Contemporary Society*. Oxford Universty Press, Oxford, pp. 139-167.

Terrell, J.E. 2018. Show-and-tell genetics: diagnosis and treatment. *SAA Archaeological Record* 19.1, 33-38.

Turner, T. (ed.), 2004. *Biological anthropology and ethics. From repatriation to genetic identity*. New York: SUNY Press.

Williams, E. (ed.), Conservation, retrieval and analysis. Proceedings of a conference held in Williamsburg, VA, Nov 7-11th 1999. Oxford: *British Archaeological Report* S934.

Williams, H., Wills-Eve, B. and Osborne, J. (eds.), 2019. *The public archaeology of death*. Sheffield: Equinox.

Williams, H. and Richardson, L. 2018. Death in the Contemporary World: Perspectives from Public Archaeology, *AP Online Journal of Public Archaeology* 8(2) Special Issue 3. http://dx.doi.org/10.23914/ap.v8i2

Wright, R. 2010. Where are the bodies? In the ground. *The Public Historian* 32.1: 96-107.

13.2 Other resources

In addition to the resources cited in the tables and footnotes, these were found to be helpful during the revision of the code.

American Association of Physical Anthropologists
http://physanth.org/about/committees/ethics/aapa-code-ethics-and-other-ethics-resources/

Bardill, J., Bader, A.C., Garrison, N.A., Bolnick, D.A., Raff, J.A., Walker, A., Malhi, R.S. and the Summer Internship for Indigenous Peoples in Genomics (SING) consortium. 2018. Advancing the ethics of paleogenomics. *Science* 360.6387, 384-385.

Boddington, P. (ed.), 2012. *Ethical challenges in genomic research. A guide to understanding ethics in context*. New York: Springer.

Buikstra, J.E. 2019. *Bioarchaeologists speak out. Deep time perspectives on contemporary issues*. New York: Springer.

Di Domenico, M.L. 2015. Evolving museum identities and paradoxical response strategies to identity challenges and ambiguities: changing ethical understandings in the handling of human remains. *Journal of Management Inquiry* 24.3, 300-317.

Gnecco, C. and Lippert, D. (eds.), *Ethics and archaeological praxis*. New York: Springer.

Harries, J., Fibiger, L., Adler, T., Smith, J., and Szöke, A. 2017. EXPOSURE: the ethics of making, sharing and displaying photographs of human remains. *Human Remains and Violence* 4.1, 3-24.

Kreissl Lonfat, B.M., Kaufman, I.M. and Rühli, F. 2015. A code of ethics for evidence-based research with ancient human remains. *The Anatomical Record* 298.6, 1175-1181.

Matisoo-Smith, E. and Horsburgh, K. 2012. *DNA for archaeologists*. New York: Routledge.

Márquez-Grant, N. and Fibiger, L. (eds.), 2010. *The Routledge Handbook of Archaeological Human Remains and Legislation. An international guide to laws and practice in the excavation and treatment of archaeological human remains*. London: Routledge.

Márquez-Grant, N., Webster, H., Truesdell, J. and Fibiger, L. 2016. Physical anthropology and osteoarchaeology in Europe: history, current trends and challenges. *International Journal of Osteoarchaeology* 26.6, 1078-1088.

Redfern, R.C. and Bekvalac, J. 2017. Collection care and management of human remains. In Schotsman, E.M.J., Márquez-Grant, N. and Forbes, S. (eds.), *Taphonomy of human remains. Forensic analysis of the dead and the depositional environment.* Chichester: Wiley, 369-384.

Squires, K., Errickson, D., and Márquez-Grant, N. (eds.), forthcoming. *Ethical challenges of working with human remains*. Springer.

Turner, T.R., Wagner, J.K., and Cabana, G.S. 2018. Ethics in biological anthropology. *American Journal of Physical Anthropology* 164.4