



Best Practice Review and Recommendations for the use of Anatomical Specimen in AO Educational Activities and in Digital Educational Resources

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1. Executive summary

In the context of new educational formats and especially the new digital format of online distribution and accessibility several questions arise regarding the ethically sound use of human cadaveric specimen in demonstration and training. Also, the easiness to capture and distribute material showcasing human anatomical imaging (photographs, videos) by the audience has triggered a discussion in the different associations that have issued standards for the treatment and use of human donated material.

To create a consensus and common understanding of how cadaveric material can be used in teaching sessions while maintaining ethical and professional standards a three-pronged approach is suggested, focusing on

- donor consent,
- Code of Conduct for the learners, and
- institutional probity and professionalism.

A review of existing guidelines and recommendations (including relevant research publications) was conducted to identify good practice and current gaps and shortcomings.

For the specific AO use cases the following recommendations for establishing/extending the current policies were drawn and are put forward for discussion and decision making:

Topic: Donor consent

- install a process to check whether the supplier of the specimen has secured consent on filming, taking pictures and the right to display these pictures to learners or the public.

Topic: Viewer/learner code of conduct

- for material delivered online (live or as resource) a disclaimer should be created to indicate nature of content (use of donated specimens) and about prohibition of copying and sharing.
- At events the code of conduct should be communicated clearly, with a focus on taking pictures/videos.

Topic: Institutional probity and professionalism.

- The production process of all material produced using human anatomical specimen should have a special focus on anonymization, especially in the CMF area.
- Whenever there is a possibility that staff or individuals unrelated to the educational activity are exposed to live activities, they should be informed about the fact that human tissue is used and consented to the same policies as the participants of the activity,

2. Background

The Covid-19 pandemic has forced medical educators to adapt the delivery of teaching sessions to online platforms. This raises some challenges and concerns since the distribution of cadaveric imaging and public exposure of dissection is widely considered to breach the dignity of the donor [G4].

Concerns are thus raising as to how to ensure online cadaveric teaching is as safe and secure as possible and causes no detriment to the donor, the donor's family, the wider profession, and the educational institution providing anatomical teaching.

The utilization of cadaveric imaging is not specifically regulated by the sector (eg, Human Tissue Authority [G5] or the WHO Guidelines [G1]) resulting in a wide range of practice across institutions. There is a lack of explicit guidance on sharing images with sensitive/cadaveric material for online teaching sessions (including live online streaming teaching sessions). Recommendations and guidelines have been released by several organizations including the American Association for Anatomy (AAA) [G4] and the International Federation of Associations of Anatomists (IFAA) [G3].

To create a consensus and common understanding on how cadaveric material can be shared for online teaching sessions while maintaining ethical and professional standards a three-pronged approach is suggested by the American Association of Anatomy focusing on establishing:

- donor consent,
- code of conduct for the learners, and
- institutional probity and professionalism.

A review of existing guidelines and recommendations (including relevant research publications) was conducted to identify good practice and current gaps and shortcomings and develop a proposal on application in the AO.

3. Sources reviewed

Guidelines

G1 World Health Organization. (2010). WHO guiding principles on human cell, tissue and organ transplantation. World Health Organization.
(<https://apps.who.int/iris/handle/10665/341814>)

G2 American Association for Anatomy (2023). Body Donation Policy.
(<https://www.anatomy.org/AAA/AAA/About-AAA/What-Is-Anatomy/Body-Donation-Policy.aspx>)

G3 International Federation of Associations of Anatomists IFAA. (2023). Recommendations of good practice for the donation and study of human bodies and tissues for anatomical examination. (<https://ifaa.net/recommendations/>)

G4 American Association for Anatomy (2023). Guidance for institutions/anatomists when utilizing cadaveric material for online teaching sessions. (<https://www.anatomy.org/common/Uploaded%20files/Education%20Resources/Online-Cadaveric-Guidance.pdf>)

G5 Human Tissue Authority (UK) (2023). Code of Practice and Standards – D Public Display. (<https://content.hta.gov.uk/sites/default/files/2023-06/Code%20D%20-%20Public%20Display.pdf>)

G6 American Association of Clinical Anatomists. (2023) Best Practices Guide for Donation Programs 2nd Edition. (https://clinical-anatomy.org/images/downloads/draft_aaca_bp_asc_.pdf)

G7 American Association of Clinical Anatomists. (2023) AACA Statement on the Use of Images of Body Donors. (https://clinical-anatomy.org/Anatomical_Services_Committee)

G8 Schweizerische Akademie der Medizinischen Wissenschaften. (2008). Verwendung von Leichen und Leichenteilen in der medizinischen Forschung sowie Aus-, Weiter- und Fortbildung. (<https://www.famh.ch/assets/Uploads/LeichenteileD09.pdf>)

G9 Bundesaerztekammer. (2008). Empfehlungen zum Umgang mit Präparaten aus menschlichem Gewebe in Sammlungen, Museen und öffentlichen Räumen. (<https://wissenschaftliche-sammlungen.de/files/8213/7275/6102/EmpfehlungenAeB.pdf>)

Research articles

R1 Hennessy CM, Rover DF Meyer AJ, et al. Social Media Guidelines for Anatomists. Anat Sci Educ, 2020 Jul-Aug; 13(4): 527-539. [Social Media Guidelines for Anatomists - PubMed \(nih.gov\)](#)

R2 Zealley JA, Howard D, Thiele C, et al. Human body donation: How informed are the donors? Clin Anat, 2022 Jan; 35(1): 19-25. [Human body donation: How informed are the donors? - PubMed \(nih.gov\)](#)

R3 Ghosh SK. The practice of ethics in the context of human dissection: Setting standards for future physicians. *Ann Anat* 2020 Jul 17.

[The practice of ethics in the context of human dissection: Setting standards for future physicians - PubMed \(nih.gov\)](#)

R4 Hennessey CM, Smith CF, Digital and Social Media in Anatomy Education. *Adv Exp Med Biol*, 2020; 1260:109-122.

[Digital and Social Media in Anatomy Education - PubMed \(nih.gov\)](#)

R5 Cornwall J, Callahan D, Wee R. Ethical issues surrounding the use of images from donated cadavers in the anatomical sciences. *Clin Anat*, 2016 Jan; 29(1):30-6.

[Ethical issues surrounding the use of images from donated cadavers in the anatomical sciences - PubMed \(nih.gov\)](#)

R6 Chytas D. Use of social media in anatomy education: A narrative review of the literature. 2019. *Ann Anat* 221:165-172

[Use of social media in anatomy education: A narrative review of the literature - PubMed \(nih.gov\)](#)

Examples of Donor Consent Forms

DC1 Medcure, Portland (U.S.A) – (2023) Donor Consent Form

DC2 Science Care, Phoenix (U.S.A.) – (2023) Donation and Cremation Consent

DC3 Research For Life, Phoenix / Temecula (U.S.A.) – (2023) Donation Authorization Form

DC4 RISELabs, Amsterdam (NL) – (2023) Authorization of Body Gift

DC5 Cenosura, Düren (DE) – (2023) Körperspendeerklärung

4. Donor consent

Even though best practice guides are available (eg, American Association of Clinical Anatomists; Best Practice Guide for Donation Programs, 2nd Edition [G6]) a recent study by Zeally et al. 2021 [R2] demonstrates that (in the U.S.) the level of information given to donors and families, before consenting to whole body donations, varies greatly. Many of the forms issued by educational institutions, state anatomical boards, and private body broker companies fail to include the recommendations made by professional societies.

There are some core elements of consent forms that are recommended by the AACCA [G6] that are relevant to the use of donated specimens:

- a) General information about the donation such as:
 - a. Entity receiving the donation
 - b. Donation time frame (including permanent teaching collections)
 - c. Applicable fees; if any
 - d. Serology testing/disclosure of test results
 - e. Medical records/information gathering/release practices
 - f. Results/rights to direct donation/release of information
 - g. Possibility of declining the donation during the registration process or time of death and the potential reasons for the decline

- b) Information on how and where the body may be used:
 - a. Donation purpose/uses (research/education/plastination/display/training)
 - b. End users of anatomical materials
 - c. Use location (off-campus/out of state/out of country)
 - d. Images (acquisition/use)
 - e. Preparation methodologies (recovery, disarticulation, embalming, plastination, forensic, etc.)
 - f. Efforts to protect identity

Hennesy et al [R1] suggest that it should be standard practice to obtain informed consent from donors before sharing any images of cadaveric material on social media and ensure posts include a statement stating the same.

Reviewing the donation forms of two partners also used by AO suppliers (Rimasys, Didavis, ARI) reveals the following gaps:

Science Care, Phoenix AZ (USA) [DC2]:

- Covers all the points above and is quite detailed about the use cases. Only the use outside the US is not specifically mentioned (current wording: different locations).

Medcure, Portland, OR (USA) [DC1]:

- Covers all points above excluding addressing the topic of imaging (photographs, videos) acquisition.

Research For Life, Phoenix, AZ (USA) [DC3]:

- Covers all points except for mentioning the topic of imaging acquisition.

RISELabs, Amsterdam (NL) [DC4]:

- Covers all points except for mentioning the topic of imaging acquisition.

Cenosura, Düren (DE) [DC5]:

- Covers only the definition of use (education and research). Does not specify imaging, preparation methods, end users, or location.

Approach for AO

- Whenever anatomical specimens are used (especially when capturing educational imaging at the same event/occasion) the procurement process must ensure that the supplier of the anatomical specimen sources from a reliable institution or vendor that has obtained the necessary permissions, especially if capturing of imaging is part of the use. At the same time, it should be checked if there is consent to public exposure of the material obtained.

5. (Digital) code of conduct for learners

Most education institutions (ie, Universities) have a Code of Conduct for learners receiving cadaveric education, that might even be signed before receiving the education [R3, G4]. While this may satisfy the regulatory and/or institutional requirements to comply with the code, in theory, the online environment poses unique challenges to ensure the same level of granting donor dignity and adherence to donor consent.

These challenges are related to the fact that, where the dissecting room is a closed environment with limited access, the digital learning environment can potentially be anywhere the learner is. Further, the online environment offers an easy opportunity to screen-capture and share recorded cadaveric material potentially breaching donor consent and confidentiality.

There is a global consensus on core ethical practice and rules in the educational face-to-face human dissection environment on:

- Access (access to authorized personnel only) [G2]
- Hygiene & safety regulations [R3]
 - o Clothing (eg, masks, coats)
 - o Incident management rule (eg, injuries, inhaling toxic fumes)
 - o Instrument handling
 - o Consumption of food and drinks
- Ethical practice [R3]
 - o No photography/filming
 - o Cell phone use
 - o Respect

But there is only limited information and guidance on the potential impact of digital and social media in the context of educational use of anatomical specimens.

The American Association for Anatomy recommends in addition to the "traditional" codes for face-to-face cadaveric dissection activities the establishment of a digital code of conduct [G4] covering the following topics:

1. For all activities a code of conduct should be accepted/signed by the learners that capturing and sharing of cadaveric imaging is prohibited.
2. At the start of online delivered activities users/learners should be reminded that it is not appropriate to share cadaveric images and that images should not be viewed by anyone else than themselves.
3. Learners should be advised to study online teaching containing cadaveric imaging in a private area where their screen cannot be viewed by others for non-educational purposes (ie, out of general interest) which is considered breaching the consent given by the donor.
4. Educational organizations/institutions should use a clear digital code/statement, which should precede any online session or asset containing cadaveric material.

Example of preceding statement [G4]:

The cadaveric images in this presentation must not be abused. They are for this teaching session only and must not be captured on another device for onward sharing or otherwise (e.g., taking a screenshot or photo of images, editing/saving images to your own device, screen-capturing and sharing such images on social media or elsewhere are all not permitted).

Approach for AO

For all AO-branded video material offered online or used in face-to-face events:

- A disclaimer has to be added stating that the purpose of the content is educational and using donated human tissue. An acknowledgment of the donor's consent could be added. *Text to be established.*
- Another disclaimer has to be added that capturing and sharing is not permitted. *Text to be established.*

At events with live participants/audience using anatomical specimen (including live streaming):

- For active participants in the dissection a code of conduct, including a waiver of liability in case of medical incidents should be signed. *The option of creating an introductory video for global use should be considered.*
- All participants need to be reminded of the basic standards – especially regarding taking pictures or capturing videos. *This should be reiterated in the event/course program.*

PS – In some events today the AO uses a “Waiver of liability” document to be signed by the participant for the cases of injury and potential infection.

6. Institutional probity and professionalism

Restricted access

The American Association for Anatomy in its "Body Donation Policy" [G2] recommends that all facilities where cadavers are used should be appropriate and secured from entry by unauthorized personnel.

Public display

Public display is discussed in the "Human Tissue Act" [G5] which recommends a key principle that all human bodies and materials of human origin should be treated with respect and dignity. In relation to the public display of human material, this principle applies both to those showing the material, and to those viewing it. The debate on public display of anatomical specimen is emotionally loaded, especially in the context of entertainment (use case: Gunther von Hagens "Körperwelten" exhibition).

Anonymization

The IFAA good practice guidelines recommend [G3]: The normal practice is to retain donor anonymity. Any exceptions to this should be formally agreed to beforehand by the donor and, if appropriate, the family.

Processing and disposal

The IFAA guidelines [G3] recommend that the processing (including time interval between donation reception and cremation of the dissected material) of disposal of human remains should be in accordance with the terms in the donor consent and documented.

Approach for AO

For all AO-branded video material offered online or used in face-to-face events using footage with human donated tissue:

- All available options (technical and organizational) have to be used to anonymize the donor without compromising the educational intention.

At events with participants/audience using anatomical specimens (including live streaming):

- Access to the dissection area has to be restricted to authorized participants only. If staff or support staff is required, they need to consent to the same rules as the authorized audience and they must be made aware that they will be exposed to human anatomical specimens.
- It must be ensured that the disposal process is followed on the highest level possible according to the legal regulation of the location country. Any observations demonstrating disrespect might lead to reputational damage.

These recommendations have been approved by the AO Foundation Board on January 6 and 7, 2024 by circular vote with the assignment to implement them accordingly and to communicate them to all employees and faculty involved in education.

Davos, May 2, 2024



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