



Guidance for Radiographers Providing Forensic Radiography Services

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Summary

Radiography for forensic purposes is a complex area of practice for the diagnostic radiographer and The Society and College of Radiographers is pleased to provide this guidance and advice document written with the Association of Forensic Radiographers. Radiographers involved in providing forensic services and their managers and employers will find this document invaluable.

1. Introduction

Produced jointly by The Society and College of Radiographers and the International Association of Forensic Radiographers.

1.1 This document is issued by The College of Radiographers to give guidance to radiographers working in the field of radiography for forensic purposes. It should be read in conjunction with the *Code of Conduct and Ethics (2008)*¹ issued by the College of Radiographers, the *Standards of Conduct, Performance and Ethics (2008)*² issued by the Health Professions Council and, if involving children, *The Child and the Law; The Roles and Responsibilities of the Radiographer (2005)*³ and any subsequent revisions to these documents.

1.2 This document replaces all previous guidance documents for forensic radiography issued by The Society and College of Radiographers.

1.3. Local protocols and policies must be produced with which all members of staff should be familiar. These guidelines may be used as a basis for the production of such local protocols but do not constitute a protocol in their own right.

1.4 Radiographers undertaking radiography for forensic purposes must have appropriate training and education in the field of forensic practice and a good working knowledge of all relevant legislation and guidelines (see References and Bibliography).

1.5 Radiographers undertaking radiography for forensic purposes must maintain clinical competence and currency of knowledge and skills through membership of an appropriate professional body such as The Society and College of Radiographers and the International Association of Forensic Radiographers.

2. Definitions

2.1 Forensic medicine refers to the application of medical knowledge and technologies in the collection of evidence to be used in a court of law. Such evidence may be collected from either living or deceased subjects with the latter presented as either whole cadavers or as pathological specimens.

2.2 Forensic radiography is the application of the science of diagnostic imaging to questions of law.

2.3 Diagnostic Imaging; For the purposes of this document, diagnostic imaging may include the following modalities:

- Radiography (digital and analogue)
- Intra-Oral Radiography
- Fluoroscopy
- Computed Tomography (CT) Scanning
- Magnetic Resonance (MR) Scanning
- Ultrasound
- Nuclear Medicine

3. Applications of Radiography for Forensic Purposes

3.1 Examples of where imaging is of value in the forensic investigation include, but are not limited to:

3.1.1 **Investigation of non-fatal injuries.** The production of evidence to support the investigation of injury to an individual or individuals. Examples include, but are not limited to:

- Non-accidental injury (NAI) of vulnerable individuals (eg, the young, elderly and disabled)
- Assault
- Road traffic incidents
- Compensation claims
- Medical negligence
- Industrial injury or disease
- Custodial injury
- Torture or systematic abuses of human rights

3.1.2 **Location of other forensic evidence.** The provision of imaging evidence to demonstrate the presence of hidden foreign bodies. Examples include, but are not limited to:

- Human narcotic packing detection (drug smuggling)
- Non-human narcotic packing detection
- Other ingested material (e.g. diamond smuggling)
- Ballistic material (shotgun pellets, bullets, shrapnel, arrowheads)
- Non-ballistic material (knife blades, needles, etc)

3.1.3 **Cause of Death.** The production of evidence to support the investigation of suspicious or unexplained death of an individual or individuals. Examples include, but are not limited to:

- Road traffic deaths

- Death following medical intervention
- Homicide
- Suicide
- Custodial death
- Discovery of decomposed remains
- Mass fatalities incident, genocide or atrocity crime.
- Sudden Unexpected Death in Infants (SUDI) and Sudden Infant Death Syndrome (SIDS)

3.1.4 Human Identification. The production of evidence to help confirm, determine or eliminate the identity of both living and deceased persons. Techniques could include, but are not limited to:

- Demonstration of dental structures to facilitate identification through comparative techniques
- Demonstration of other anatomical structures, trauma and pathological conditions, to facilitate identification through comparative techniques
- Determination of biological profile (age, stature, sex, socio-economic status etc) through evaluation of skeletal structures
- 3D multi-planar reconstruction (eg, facial reconstruction)
- Demonstration of personal effects (eg, jewellery to assist identification)
- Photo-superimposition

4. Forensic Examinations of Live Individuals

4.1. Radiographers should be aware that any radiography examination could potentially be forensic in nature.

4.2. Radiographers undertaking forensic examination of live subjects should comply with the provisions as set out in the relevant codes of professional conduct and with all relevant regulations for diagnostic imaging and the safe and efficient use of ionising and non-ionising radiation.

4.3. Radiographers undertaking forensic examinations must be aware of and comply with the local protocol for forensic imaging which must address the following specific issues:

- Authorised referrers
- Consent and Confidentiality
- Continuity of evidence
- Clinical protocols for specific examinations such as NAI
- Requirements of particular care pathways eg Care of the Elderly, Child Protection

5. Forensic Examination of Deceased Individuals and/or Pathological Specimens

5.1. It remains a requirement of *The Coroner's Act*⁴ that only *specialty qualified persons* be employed to perform a special examination of the body on behalf of the Coroner (or in Scotland; Procurator Fiscal or sheriff).

5.2. As specialty qualified persons in the field of medical imaging, forensically trained modality specialist radiographers are the most appropriate professionals to undertake forensic radiography examinations of cadavers or pathological specimens.

5.3. Radiographers undertaking forensic examination of cadavers and pathological specimens must

comply with the provisions as set out in the relevant codes of professional conduct and with all relevant regulations for diagnostic imaging and the safe and efficient use of ionising and non-ionising radiation.

5.4. Radiographers undertaking such forensic examinations must be aware of and comply with the local protocol for forensic imaging which needs to address the following specific issues:

- Authorised referrers
- Continuity of evidence
- Confidentiality
- Health and Safety (including infection control and welfare of staff)
- Cultural and religious sensitivities
- Privacy and dignity
- Out of hours service provision
- Transfer of cadavers and specimens

5.5. It should be noted that not all examinations of the deceased will be forensic examinations and/or under the jurisdiction of the Coroner, Procurator Fiscal or sheriff.

6. Departmental Forensic Protocol

6.1 Radiography for forensic purposes must be carried out in accordance with a written protocol. The protocol should be specific to the local service and should adhere to NHS Trust, Employing Authority or appropriate organisation policies for the drafting of such documents. It is recommended that the protocol is developed in consultation with all key stakeholders who may include, but are not limited to:

6.1.1 Department

- Lead forensic radiographer
- Clinical lead (radiology)
- Departmental manager/hospital governance

6.1.2. Hospital Clinical leads for:

- Pathology
- Paediatrics including Child Protection
- Accident and Emergency, Trauma
- Major Incident Planning
- Elderly Care
- Occupational health/welfare

6.1.3 External

- Coroner, Procurator Fiscal or sheriff
- Lead Forensic Pathologist
- Police forensic co-ordinator
- Child protection team
- International Association of Forensic Radiographers
- The Association of Paediatric Radiographers

6.2. The generic structure of the protocol must address the following:

- Introduction
- Statement of intent
- Implementation and review
- Scope of local service
- Referral pathways
- Roles, responsibilities and interprofessional relationships
- A list of trained radiographers willing to provide the service
- Relevant contact details
- Training/Education
- Welfare of staff
- Quality control and audit

6.3. The subsequent paragraphs provide guidance on specific issues relating to the scope of local service, referral pathways and roles and responsibilities. It is recommended that the local protocol makes reference to all of these areas.

7. Requests for Radiography for Forensic Purposes

7.1. Requests must be made by recognised, approved referral sources, which, in addition to normal clinical referrers, may include but are not limited to:

- Forensic Pathologists
- Forensic Odontologists
- Forensic Anthropologists
- Forensic Physicians
- Police and Security Services
- Customs and Excise

7.2. Requests for forensic examinations on the deceased may only be submitted when the investigation has been authorised by the Coroner, Procurator Fiscal or sheriff. This should be clearly indicated on the request form.

7.3. Requests for examinations may also arise as a result of major incident or mass fatalities. The Employing Authority's Major Incident Protocol should detail appropriate arrangements for the provision of radiography services on live individuals arising from such incidents.

7.4. The various referral pathways must be identified in advance and incorporated into the standard operating procedure in order that appropriate management arrangements can be made and implemented.

7.5. It should be noted that all mass fatalities incidents are treated as crime scenes and therefore all referrals for examination of the living or the deceased arising from such incidents should be treated as forensic radiography referrals.

8. Consent

8.1. The protocol must address the issues of consent.

8.2. The NHS Trust, Employing Authority, or appropriate organisation policies on Consent, Mental Capacity and Child Protection should inform the production of the forensic protocol.

8.3. The SCoR Guidelines on consent inform the production of the forensic protocol5.

8.4. It should be noted that all forensic requests on living subjects must be treated as non-medical referrals for the purposes of the IR (ME) Regulations 2000 and as such full informed written consent obtained. The referring clinician should explain the procedure and obtain consent. It should be noted that although the law does not actually require consent to be written, radiography for forensic purposes is an area of practice where validity of consent may be questioned and therefore to obtain written consent would be considered best practice.

8.5. The consent process will confirm that the consenting individual has been informed about and understands a range of issues that include, but are not limited to:

- Purposes of the examination
- Nature of the procedure
- Duration of the procedure
- Risks and benefits of the procedure (including clinical and radiation risk)
- Persons involved
- Withdrawal of consent
- Dignity and Privacy

8.6. There are no circumstances when implied consent is acceptable.

8.7. For individuals unable to give consent, appropriate arrangements should be made to obtain recognised third party authority. Examples include, but are not limited to:

- Parents
- Legal Guardians
- Individuals appointed by the courts

8.8. It should be noted that for children and minors, such third party consent may be in the domain of the alleged abuser. Appropriate sensitivity should be considered for obtaining such consent but the parent or guardian must be fully informed.

8.9. Third party consent cannot be given by the referrer

8.10. For individuals with language or communication issues, appropriate translation services will be used.

8.11. When consent is withheld the examination cannot be undertaken. It should be noted however that this may lead to circumstances whereby:

- Children and other vulnerable individuals may be appointed wards of court and third party consent obtained from the legal guardian
- Psychiatric patients may be sectioned under the Mental Health Act (1983) and limited powers appointed to the clinician.
- Narcotics Traffickers may develop clinical symptoms of toxicity and become clinical emergencies

9. Non-Accidental Injury (Nai)

9. Non-Accidental Injury (Nai)

9.1. All examinations for non-accidental injury are forensic examinations.

9.2. Separate protocols specific to NAI could be required to cover clinical aspects. It is recommended that any such protocol should both recognise the forensic nature of NAI imaging and cross refer to the forensic protocol.

9.3. Requests for skeletal survey examinations (NAI), secondary to the initial clinically justified examination, must be regarded as purely forensic in nature and are not clinically justified (ie, is not anticipated to affect the clinical management of the patient).

9.4. The issues of consent should be agreed with the paediatricians in advance and addressed in any separate NAI protocol. The implications of sections 8.7 and 8.11 should be noted.

9.5 RCR / British Society of Paediatric Radiology (BSPR) have published a guidance document on NAI, Sudden Unexpected Death in Infants (SUDI) and Sudden Infant Death Syndrome (SIDS) which will be published late 2008.

10. Confidentiality

10.1. Normal principles of client or relative confidentiality must be maintained in accordance with all relevant standards of professional conduct.

10.2. Forensic cases will always be regarded as sub judice (the case is currently under trial or being considered by a court of law or Coroner's court, or, in Scotland, a court of the Procurator Fiscal or sheriff) and must therefore, never be discussed outside of the court with any person not directly involved in the case until the investigation or inquest has been completed.

10.3. Furthermore, where the coroner, Procurator Fiscal or sheriff, has referred a case for consideration by a court of law, the principles of client confidentiality will continue to apply throughout the proceedings.

11. Health And Safety

11.1. The NHS Trust, Employing Authority or appropriate organisation policies on Infection Control, Care and Handling of the Deceased, COSHH and Manual Handling should inform the production of the forensic protocol.

11.2. Local Mortuary and Pathology Health and Safety Policies should inform the production of the forensic protocol.

11.3. All cadavers/remains must be treated as potentially infected and a risk to the health of the staff⁶.

11.4. The protocol should address appropriate precautions to minimise any risks of cross-infection during radiography for forensic purposes.

11.5. It is recommended that forensic radiography examinations of cadavers and/or pathological specimens should be conducted in the mortuary or a room specifically set up for that purpose where practicable.

11.6. Should it be necessary to carry out the examination within the Diagnostic Imaging department, appropriate care should be taken to minimise the risk of cross-infection and to ensure that the conduct of the examination causes minimum distress to patients and staff.

11.7. Examinations of this nature should be managed by prior agreement and a local referral pathway should be in place.

12. Welfare Of Radiographers

12.1. Employers should pay particular regard to the potentially distressing nature of some aspects of forensic practice which could lead to post traumatic stress disorder (PTSD) in the individual undertaking the examination.

12.2. Employers have a responsibility to protect the psychological and physical well-being of their employees^{7,8} and should undertake a risk assessment for forensic examinations.

12.3. The forensic protocol must include matters pertaining to the welfare of staff undertaking forensic examinations and this should include, but is not limited to, the following:

- Information regarding the symptoms and common feelings experienced with PTSD
- Basic advice on coping strategies, aetiology of PTSD, and types of treatment available
- Information relating to the availability of support mechanisms (eg, contact details for support)

12.4. The emphasis should be on primary prevention and it is recognised that training and education is an integral aspect in minimising PTSD^{9,10}. Such training includes that specific to radiography for forensic purposes (see section 22.) and also raising the awareness of the effects of PTSD.

12.5. It is recommended that operational debriefs that cover all aspects of any significant incident are undertaken. These should be facilitated by qualified personnel. Such debriefs should not focus on the traumatic incident alone and should adhere to relevant guidelines laid out by the National Institute of Health and Clinical Excellence¹⁰.

12.6. The International Association of Forensic Radiographers is available for further advice on welfare issues and can be contacted via their website: www.afr.org.uk

13. Involvement of Students

Forensic radiography in the UK is a post-registration specialist area that requires additional education and training. The involvement of any personnel with Forensic Imaging should comply with the current forensic radiography guidelines. For these reasons IAFR recommend that student radiographers should not participate in forensic radiography examinations.

IAFR recommend that student radiographers are given the opportunity to develop an understanding of forensic radiography practice during their final year of study to enable them to make an informed decision about their involvement in forensic radiography when commencing their professional career.

If students are permitted to observe specified forensic examinations, this must be done under a local agreement between the employing authority or clinical department and the university. Where observation is permitted, there MUST be robust risk assessment and governance procedure to address the safety and care of the student AND the robustness of the forensic evidence chain.

Potentially, any radiography examination could be forensic in nature and it would be unrealistic and undesirable to exclude students from imaging investigations because they might possibly become

part of a forensic examination. Where it is known and planned from the outset that the imaging examination is forensic in nature students should not participate (unless under a local agreement as described above). It should be noted that examinations for non-accidental injury are forensic examinations ([section 9.1](#)).

For other imaging examinations which may possibly be deemed forensic at some time in the future, (for example, assaults and road traffic accidents) the supervising radiographer would need to decide whether or not a student should observe or participate. In making this decision the radiographer would need to consider the rationale for excluding students as stated below.

The recommendation that student radiographers should not participate in forensic radiography examinations was developed by the Policy and Research Subcommittee of IAFR, following concerns raised in both Universities and Clinical practice regarding the involvement of undergraduates with forensic examinations.

The rationale for this recommendation is as follows:

1. Forensic radiography is not a first-post competency.
2. IAFR maintains that forensic radiography is a post-registration specialist area of practice that requires additional education and training, which concurs with current SCoR forensic radiography guidelines.
3. Forensic radiography examinations are undertaken for medico-legal purposes and it is, therefore, essential to accurately document the examination, which would include a record of the student having been present. Therefore, the student may be asked by a Coroner or court to act as a witness to the examination itself. Student radiographers who find themselves in this position would be vulnerable due to their lack of practical and professional experience. The effects of being involved in such an incident may adversely affect their studies.
4. There is no formal requirement for forensic radiography to be included within the curriculum for pre-registration programs. Forensic radiography is therefore, not a requirement or competency within their clinical practice placements.
5. It is apparent that some student radiographers are currently observing forensic radiography examinations; it has subsequently been discovered that many students had been distressed as a result. Appropriate support is not always available or given and universities may not have been notified that the student has observed a forensic radiography examination; as a consequence, they have not been in a position to offer appropriate counseling to the student.
6. Student radiographers upon qualifying may then have the opportunity to be involved in forensic radiography practice. This should be undertaken following additional education and training as per SCoR forensic radiography guidelines and new staff should be appropriately mentored through the process. However, it is recommended that student radiographers are given the opportunity to develop a theoretical awareness of forensic radiography practice during their final year of study to enable them to make an informed decision about their involvement in forensic radiography when commencing their professional career.

14. Mass Fatalities Incidents

14.1. A mass fatalities incident is defined as 'any incident where the number of fatalities is greater than normal local arrangements can manage'. Any plan for dealing with fatalities needs to be integrated with all aspects of the response to and recovery from such situations and incidents. Organisations need to work in collaboration with others on key activities and ensure their own plans are robust.

14.2. The Society of Radiographers recognises that mass fatalities incidents are likely to be dealt with by regional or national Disaster Victim Identification (DVI) teams who work with The AFR UK Forensic Radiography Response Team (UKFRRT).

14.3 UKFRRT is a national team of radiographers with accredited training and experience in radiography for forensic purposes and mass fatalities radiography. This team has the capacity to provide a co-ordinated response to mass fatalities incidents and advise national, regional and local authorities on radiography issues when planning for such incidents.

14.4 The Society of Radiographers endorses the national call-out response of UKFRRT and recommends that they are contacted in the event of a mass fatalities incident. Responsibility for emergency planning lies with the Coroner, Procurator Fiscal or sheriff and local authority and their plans should include the provision of radiography. It is recommended that service managers ascertain that this has taken place. Further information may be obtained from the International Association of Forensic Radiographers website: www.afr.org.uk

15. Out Of Hours Services

15.1. It should be recognised that in certain circumstances such as homicide, Sudden Unexpected Death in Infants (SUDI) or Sudden Infant Death Syndrome (SIDS) and for religious and legal reasons, there may be persuasive reasons for obtaining imaging as soon as possible.

15.2. Capacity, confidentiality, respect and dignity issues may result in a requirement for forensic imaging to be undertaken out of hours.

15.3. In extreme cases, deterioration and decomposition of body parts may affect the quality of imaging and its interpretation; as such there may be persuasive reasons for obtaining imaging as soon as possible.

15.4. Local written protocols should address the provision of an out-of-hours service. Further guidance on the provision of an out-of-hours local radiography for forensic purposes service can be obtained from the Association of Forensic Radiographers.

16. Medico-Legal Aspects

16.1. An understanding of the medico-legal aspects of any forensic examination is critical if the evidence provided is to be of any value to the legal process. The following areas provide basic guidance and should inform both local protocols and procedures.

17. Evidence

17.1. Cadavers and/or body parts and associated artefacts in themselves constitute evidence.

17.2. Evidence from forensic imaging may include both images and imaging reports.

17.3. Before any imaging, statement or any other information can be accepted for use in a court of law, it must be judged to be admissible as evidence.

17.4. To be admissible, the evidence must be properly authenticated and continuity of evidence must be demonstrated. The radiographer, supported by an appropriate witness should be able to attest in a court of law that any specific image was produced by them at the date and time indicated, that the image is of the identified evidence, individual or body part and has not been tampered with during, or as a result of, the image production process.

17.5. To ensure authentication and continuity of evidence for diagnostic images the following issues should be addressed.

18. Subject Identity

18.1. All subjects must have an authorised unique identification number prior to the examination and such identification used consistently throughout the process and on all documentation and images.

18.2. Where available, a name and patient identification number must be recorded but, where the identity of the individual is unknown at the time of the examination, a unique case identification such as Police evidence numbers or hospital incident numbers may be used.

18.3. Subject identifiers must be recorded on images using primary identification systems such as DICOM headers/examination data sets or light markers.

18.4. Anatomical side indicators must be physically present within the primary radiation beam.

18.5. Locality identifier and date/time of examination must be recorded on images using primary identification systems such as DICOM headers/examination data sets or light markers.

18.6. Repeat examinations will be necessary where the anatomical markers and all relevant information are not included on the original image subject to IR (ME) R 2000 and IRR 1999.

18.7. If a repeat examination is not practicable, any patient or examination identification not included on an analogue image should be added using indelible markers, countersigned by a witness and reference made to this in the witness statement. It should be noted that the adding of patient or examination identification after the original exposure should be considered atypical since good practice requires inclusion at the time of the original examination.

18.8. If a repeat examination is not practicable, any patient or examination identification not included on the digital image should be added using post processing facilities and reference made to this in the witness statement. It should be noted that the adding of patient or examination identification after the original exposure should be considered atypical since good practice requires inclusion at the time of the original examination.

19. Continuity Of Evidence

19.1. The entire imaging examination must be properly witnessed by an appropriate third party.

19.2. The purpose of the appropriate witness is to ensure that images are admissible in law as evidence and to reduce the risk that any challenge to the validity of that evidence will be successful.

19.3. The identities of the radiographer and appropriate witness to the examination must be recorded in the Radiology Management System or paper-based equivalent. The radiographer and appropriate witness will be required to initial any imaging evidence as proof of authenticity. The radiographer and appropriate witness will also be required to complete a witness statement to support their evidence.

19.4. The witness to the imaging process can be another radiographer, another healthcare worker, healthcare professional, police officer, Coroner's officer (or officer of the Procurator Fiscal or sheriff in Scotland) or social worker. This person is normally termed the 'appropriate witness'. All actions and communications should be contemporaneously documented by both the radiographer and the appropriate witness to be presented if or when necessary. All actions should be guided by written

protocol.

19.5. The appropriate witness must be present throughout the examination and accompany the radiographer during the development of the radiograph(s)/production and recording of digital images.

19.6. The radiographer and their appropriate witness must sign/appropriately authenticate all original analogue and digital hard copy images as being an accurate record of the examination.

19.7. Continuity of the primary evidence, (ie, the cadavers and/or pathological specimens) must be ensured at all times. Radiographers undertaking forensic imaging should be aware of this as they may be required to leave the primary evidence to process images. The primary evidence must be secured, formally returned to custody/care of the mortuary or left in the presence of a separate appropriate witness, who is sometimes called 'Continuity Officer' or 'Responsible Officer'.

19.8. There may be occasions when a Continuity Officer is required for living subjects undergoing forensic imaging, for example in the investigation of ingestion narcotics.

19.9. The NHS Trust, Employing Authority or appropriate organisation will be responsible for the security and continuity of all imaging evidence until formally handed over to a responsible officer who must sign to confirm that it has been received. The responsible officer may be the Coroner, Procurator Fiscal or sheriff or their representative or a member of the police investigation team. In some situations, images are transferred into the responsibility of another investigating discipline. For example, dental radiographs that are produced in the investigation of post mortem identity are handed over to the Odontologist who uses the images to develop a comparison report to present to the Identification Commission Board.

The rules of continuity still apply however, and the Odontologist will sign for the images and the Continuity Officer will be aware at all times of their presence for retrieval at a later date.

A distinction should be made between imaging which commences as a health record (see paragraph 21.1) with imaging which commences as a piece of forensic evidence. In the case of the latter, it may not be appropriate (in every case) for the NHS Trust, Employing Authority or appropriate organisation to have security and continuity of the imaging until it is handed over to a responsible officer. In those cases however, it is recommended that this Guidance is discussed with the relevant NHS Trust, Employing Authority or appropriate organisation, so that suitable arrangements can be made for the security and continuity of the evidence in accordance with the applicable rules of evidence.

19.10. Arrangements should be made for the security of original analogue images and hard copy digital images. Such images constitute evidence and may require that additional procedures are put in place to ensure the evidence is not misplaced or open to interference.

20. Digital Images

20.1. Only primary evidence is admissible in court. In the case of analogue radiographs, this will be the original hard copy image and report. In the case of digital images, the working copy, rather than the original data set will be produced to support the report. It is therefore essential that a master copy of the original raw data must be made immediately in order to demonstrate the integrity of the working copy image information.

20.2. Following legal advice, The Society of Radiographers recommends that a hard copy disc be created of the original raw data image (prior to any algorithm changes or manipulation) immediately. This should be authenticated with the initial of the radiographer and witness at the time of production and securely sealed. This will be referred to as the 'Master Copy'.

20.3 The digital image can be used as additional supportive evidence after algorithm changes and manipulation as necessary. These changes should be documented and the images should then be saved separately onto another disc which will be referred to as the 'Working Copy'.¹¹

20.4 An additional (backup) working copy should be made in cases where image data is not automatically backed up (eg, on a PACS system).

20.5 Any subsequent algorithm changes and manipulation of images to working copy images (e.g. during reporting) should be documented and the images then saved separately onto another working disk. The final working copy should reflect the reported examination. All previous working copies will be evidence of image manipulation.

20.6 Opportunities exist for the later production of hard copy images from digital data and/or the copying of digital data sets. Legal advice should be sought for the production of any such copies. For coroners cases (or in Scotland, Procurator Fiscal or sheriff) special permission from the coroner, Procurator Fiscal or sheriff is usually required. In all other cases permission from the appropriate legal representative should be sought.

20.7 All subsequent copy discs or images must be signed and witnessed by the radiographer who has produced the copies and an appropriate witness if possible; if not an appropriate alternative would be the PACS manager.

20.8 All image data on any media should be securely stored and all appropriate measures taken to prevent unauthorised access that may compromise the evidence in a court of law.

21. Copy Analogue Images

21.1 Copies are secondary evidence and are only admissible where originals can be proven as having been lost or destroyed.

21.2 Recognising the risk from the loss of an original analogue image, The Society of Radiographers recommends that a duplicate hard copy image be made at the time of all forensic examinations.

21.3 For coroner's cases (in Scotland, Procurator Fiscal or sheriff), this arrangement should be made in advance and included in the protocol. The procedure for dealing with and storing such duplicate images whilst the case is sub judice should be detailed in the written protocol.

21.4 Any requests for additional copies must be referred to the coroner, Procurator Fiscal or sheriff or the appropriate legal representative with regard to other cases.

21.5 All copies must be signed and witnessed as copies of the originals by the radiographer who has produced the copies and by a witness.

22. Records

22.1. All records must comply with all national and local guidelines with regard to maintenance and storage of confidential health records. Attention is drawn to the health service circular entitled For the Record: Managing Records in NHS Trusts and Health Authorities¹² and the Data Protection Act¹³.

22.2. Appropriate records, which must be defined in the written local protocol, must be kept of all forensic radiography examinations. Records that should be kept, include, but are not limited to, the following information:

- Identity of Radiographer
- Identity of Witness(es)
- Identity and Role of any others present and/or formally involved.
- Date/Time/Location of examination(s)
- Examination identifiers
- Number and type of projections involved
- Location of any retained evidence
- Handover details for transfer of evidence (including name and signature of recipient)
- Number and location of copies

22.3. The Society of Radiographers recommends that formal documentation be produced to incorporate the above details, support any image evidence that has been produced and facilitate any witness statement.

22.4. The Society of Radiographers recommends that all individuals involved in carrying out the imaging examination should complete their own written documentation in the event that they need to be referred to at a later date. Forensic radiographers should keep their own written documentation securely as this also forms a formal record of evidence.

22.5. To maintain continuity of evidence, the transfer of original (working copy) images for reporting must be logged and witnessed, the images must not be left unattended/unsecured at any time.

22.6. The reporting radiologist/radiographer/pathologist should be satisfied as to the continuity of evidence prior to reporting.

23. Education And Training

23.1. Radiographers who undertake radiography for forensic purposes must be educated and trained in radiography for forensic practice and must receive regular updating as part of their continuing professional development (CPD).

23.2. Such radiographers must have relevant and up-to-date knowledge and experience which should be regularly documented as part of a CPD portfolio. Information should include but not be limited to:

- Appropriate imaging techniques to meet the requirements of radiography for forensic purposes
- Specialist modality imaging such as paediatric NAI radiography as recommended by British Society of Paediatric Radiology (BSPR)
- Medico-legal issues relating to the admissibility of evidence
- National and local health and safety regulations, particularly with regard to the handling of deceased subjects
- Different cultural and religious ethics associated with the deceased and their relatives
- Appropriate communication skills for dealing with subjects who have undergone a traumatic experience
- Statutory legislation, government, professional and local guidelines related to radiography for forensic purposes

23.3. The Association of Forensic Radiographers and the Society of Radiographers provide annual study events to update practitioners of current developments in this area.

23.4. Information on other postgraduate and training programmes is available from the Association of Forensic Radiographers' website: www.afr.org.uk

24. Image Reporting

24.1. It is essential that any person carrying out interpretation or reporting of forensic images must be trained, competent and authorised.¹⁴

24.2. Radiographers may be asked to provide a professional opinion on the images that they produce. It is imperative that the radiographer practices within the scope of their competence.

25. Advice To Employers

25.1. Employers are advised to ensure that any forensic imaging work is undertaken using the guidance of a formal local protocol.

25.2. Due to the potentially distressing nature of the work, The Society of Radiographers recommends that each department which undertakes radiography for forensic purposes identifies sufficient radiographers who are willing to undertake such examinations and should ensure that they are appropriately educated and trained for that purpose.

25.3 Individual radiographers should never be coerced into participating in the provision of the forensic radiography service.

25.4. It is the policy of The Society of Radiographers that inclusion on the list of radiographers available to undertake radiography for forensic purposes should be voluntary and individual radiographers have the right to subsequently decline to participate in such duties at any time.

25.5. Radiographers undertaking forensic work as additional duties should be remunerated accordingly.

26. Payment

26.1. Decisions on additional payment to radiographers are a local matter and should be based upon:

- Any entitlement to additional payments for distressing or unpleasant work
- The funding stream and any extant Service Level Agreement (SLA)
- Issues of contractual and extra contractual work and payments
- The individual radiographer's job description (where applicable)

26.2 Where a forensic request can clearly be distinguished from the routine clinical workload, performed under existing financial and contractual arrangements, the NHS Trust, Employing Authority or appropriate organisation and the separate referring source should negotiate and agree appropriate mechanisms for payment with respect to the use of imaging facilities for forensic work. Examples of such forensic requests include, but are not limited to the following

- Coroner's Requests (In Scotland; Procurator Fiscal or sheriff)
- Customs and Excise Requests
- Police Requests
- Research Requests

26.3. It is the view of The Society of Radiographers that the individual radiographer is providing an expert service on an extra-contractual basis for all forensic radiographic work regardless of referral source. The radiographers fee should be included in the arrangements made between the NHS Trust, Employing Authority or appropriate organisation and the referring sources for payment for forensic work and should be passed on to the radiographer by the employers through payroll. There are separate fees for cases done in normal working and out of hours service.

26.4. Contracted radiographers, and those not employed by the NHS Trust, Employing Authority or appropriate organisation need to agree separate arrangements between themselves, the Employing Authority and the referrer.

26.5. Guidelines relating to appropriate fees for the provision of forensic radiography services are available from www.sor.org and www.afr.org.uk.

The Association of Forensic Radiographers is available for further advice on this matter and can be contacted via www.afr.org.uk.

Glossary

IAFR

International Association of Forensic Radiographers (www.afr.org.uk).

Appropriate Witness

The witness to the imaging process can be another radiographer, another healthcare worker, healthcare professional, police officer, Coroner's officer (or in Scotland, officer of Procurator Fiscal or sheriff) or social worker.

DVI

Disaster Victim Identification. The process for the identification of the deceased as part of the investigation of mass fatalities/incidents.

UKFRRT

The United Kingdom Forensic Radiography Response Team. A mechanism for co-ordinated response

to national and international forensic incidents. For further information contact www.afr.org.uk.

Continuity of Evidence

Continuity of Evidence must be ensured at all times. Radiographers undertaking forensic imaging should be aware of this as they may be required to leave the primary evidence to process images. The primary evidence must be secured, formally returned to custody/care of the mortuary or left in the presence of a separate appropriate witness, who is sometimes called 'Continuity Officer' or 'Responsible Officer'.

Mass fatalities incident

Any incident where the number of fatalities is greater than normal local arrangements can manage.

Forensic medicine

Forensic medicine refers to the application of medical knowledge and technologies in the collection of evidence to be used in a court of law. Such evidence may be collected from either living or deceased subjects with the latter presented as either whole cadavers or as pathological specimens.

Forensic radiography

Forensic radiography is the application of the science of diagnostic imaging to questions of law.

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Useful Websites

- The Home Office www.homeoffice.gov.uk
- Scottish Law Online www.scottishlaw.org.uk
- The Royal College of Pathologists
- American crime investigation site www.crime-scene-investigator.net
- The Internet Journal of Rescue and Disaster Medicine
- University of Texas criminal and forensic library references
- BAHID (British Association for Human Identification) www.bahid.org
- AAFS (American Academy of Forensic Sciences) www.aafs.org
- Emergency Planning Society www.EmergPlanSoc.org.uk
- DMORT (USA disaster response team region 3) www.dmort3.org
- Kenyon International www.kenyoninternational.com
- Human rights watch www.hrw.org
- ICTY/ICTR/ICC: International Criminal Tribunals for the Former Yugoslavia/ Rwanda and the International Criminal Court www.un.org/icty/index.html www.un.org www.un.org/law/icc
- Physicians for human rights <http://physiciansforhumanrights.org/>
- INFORCE International Forensic Centre of Excellence Based at Bournemouth University www.inforce.org.uk
- CIFA Centre for International Forensic Assistance Based at University of Glasgow www.gla.ac.uk/departments/forensicmedicine/
- University of Hertfordshire civil emergency management centre. Forensic odontology resources
- Forensic Corner, advance magazine for imaging and radiation therapy professionals
- Radiology article, forensic radiology response to the Pentagon attack 9/11
- Victorian Institute of Forensic Medicine, Australia www.vifm.org
- Interpol forensic image analysis www.interpol.int/Public/Forensic/IFSS/meeting13/Reviews/Image.pdf
- Mass disaster identification issues: Alaska Air 261 www.forensic.to/webhome/massdisaster/ www.trauma.org
- British Society of Paediatric Radiology NAI protocols www.bspr.org.uk
- Forensic medicine for medical students www.forensicmed.co.uk
- Dr Zeno's Forensic Site www.forensic.to
- Clinic- Kent on line learning centre
- Amnesty International health professional network

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Appendix - Recommended fees for forensic radiography

Forensic radiography covers examinations both of cadavers and pathological specimens which are required for official purposes in determining disease and nature of death. It also covers live subjects undergoing radiographic examinations for forensic purposes, such as suspected non-accidental injury, gunshot wounds, Customs and Excise and Prison Service requests.

The fees for conducting forensic examinations should be paid on the following scale, dependent on:

- whether or not the examination takes place within the radiographer's normal working department;
- whether or not the examination takes place during or outside normal working hours;
- the length of the examination.

The fees have been calculated in line with the annual percentage increases to radiographers' pay since 1985 and should be index-linked to annual pay increases in future years.

The basic fee (£91.01 in the following table) is enhanced in circumstances where the radiographer is working outside the normal department or outside normal working hours. The enhancement is calculated in line with the calculation of the hourly rate for on-call/standby given in the PT'A' Whitley Council Handbook, i.e. hourly rate plus 50%.

If a single examination exceeds one hour in length, the fee becomes an hourly one.

Recommended fees for forensic examinations 2008/2009

For examination in normal working department during working time

Fee per cadaver/ per hour* £91.01

Total £91.01

For examination during normal working time in a different department

Fee per cadaver/ per hour* £136.54

Total £136.54

For examination outside normal working time - weekdays

Fee per cadaver/ per hour* £136.54

Call-out allowance (on-call allowance) £11.00

Total £147.54

For examination outside normal working time - public/statutory holidays

Fee per cadaver/ per hour* £136.54

Call-out allowance (on-call allowance) £22.07

Total £158.61

For examination outside normal working time - weekend

Fee per cadaver/ per hour* £136.54

Call-out allowance (on-call allowance) £16.44

Total £152.98

*The above rates apply to examinations lasting one hour or less. Should an examination exceed one hour in length, the rate becomes an hourly rate. This rate should be increased in line with radiographers' annual increases in pay.

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