

Forensic podology code of practice



Issue 1

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Version control

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Executive summary

The Forensic Podology Code of Practice establishes guidelines for forensic podologists, ensuring the reliability and integrity of forensic podology evidence in criminal investigations. Forensic podology, a subset of forensic podiatry, involves the analysis, comparison, and evaluation of features associated with the functioning foot in crime scene investigations. This may include bare or socked footprint examination and feet-in-shoes analysis, excluding ridge pattern analysis and footwear mark examination.

In 2017, the Royal College of Podiatry's Forensic Podiatry Special Advisory Group (FPSAG) collaborated with the UK Forensic Science Regulator (FSR) to develop standardised forensic practice guidelines. Following the 2019 publication of the Code of Practice for Forensic Gait Analysis, a working group from FPSAG and the Chartered Society of Forensic Sciences (CSFS) drafted this Forensic Podology Code of Practice, which has been accepted by both the FSR's representative and CSFS.

The Code of Practice aims to minimise miscarriages of justice by providing forensic podologists with guidelines on best practices, professional responsibilities, and procedural standards.

Key areas include:

- Standard operating procedures
- Validation of methods and document control
- Bias prevention measures
- Competency and peer review requirements
- Evidence presentation guidelines



Additionally, the document aligns with the FSR Code of Practice, Criminal Procedure Rules, and Criminal Practice Directions. Given that Health and Care Professions Council (HCPC) regulations alone are insufficient for ensuring forensic quality, this code provides additional oversight.

Forensic podologists working within the Criminal Justice System (CJS) of England and Wales are expected to adhere to this guidance to maintain evidentiary integrity and credibility in court proceedings. This Code of Practice document ensures forensic podology remains a robust and scientifically sound discipline within forensic science.

1. Introduction

- 1.1.1 The Royal College of Podiatry's Forensic Podiatry Special Advisory Group was tasked to write a code of practice for Forensic Podology (see section 2.1.1 for definition). Forensic Podology is not currently specified as a Forensic Science Activity within the Forensic Science Regulator's Code of Practice and therefore sits within Part E 'Infrequently Commissioned Experts' of this code. Infrequently Commissioned Experts are expected to adhere to this section of the code, and as such, this guidance document has been produced to assist those practicing within this field. Practitioners conforming to the expected standards set out by this code of practice will assure the Forensic Science Regulator that they are taking all necessary steps to provide robust evidence and reduce risk to the CJS.
- 1.1.2 The code of practice, presented here, addresses issues specifically for forensic podology and is referred to as the 'Forensic Podology Code of Practice' hereinafter. Other legal requirements omitted from this text undoubtedly apply, and all practitioners governed, registered or members of other bodies are also expected to adhere to any norms or lawful requirements specified by them also. For instance, the Health and Care Professions Council (HCPC) regulates and maintains a register of those working as, for example, chiropodists, podiatrists or physiotherapists in the United Kingdom. Practitioners registered with the HCPC are required to comply with the HCPC's standards and guidance at all times. This includes the Standards of conduct, performance and ethics; the Standards of proficiency for safe and effective practice specific to their profession; and the Standards for continuing professional development. This is in addition to the expectation that practitioners will "...act in accordance with any relevant code of practice or conduct for expert witnesses that sets appropriate requirements in respect of such matters as objectivity, the avoidance of cognitive bias and scientific validity and quality"¹. Accepting that there are other

¹ Personal communication to the Regulator from Marc Seale 2019 (Chief Executive and Registrar of the Health and Care Professions Council).

relevant regulatory bodies, for clarity in this Forensic Podology Code of Practice, the Forensic Science Regulator will be referred to as the Regulator and other regulatory bodies referred to by name.

- 1.1.3 The Regulator has adopted the term ‘Forensic Unit’ which is defined as ‘a legal entity or a defined part of a legal entity that performs any part of the forensic science process’. For the purposes of this document, ‘Forensic Unit’ will be used to refer to either a large organisation, a department within a large organisation, a small or medium-sized enterprise or a sole trader/practitioner that provides forensic podology services². The work undertaken by the Forensic Unit is not restricted to a laboratory environment.
- 1.1.4 Forensic podology casework as referred to in this document does not include footwear mark examination or the comparison of ridge detail visible within footprint evidence. Practitioners undertaking work in these fields must have the relevant training, continued competence and meet the relevant accreditation requirements.
- 1.1.5 The main body of this Forensic Podology Code of Practice is used to identify the specific measures that should be demonstrated by the Unit. Further explanation of specific terms relating to forensic podology and its provision can be found in the accompanying glossary (section 25).
- 1.1.6 Forensic Units conducting work for the CJS in England and Wales must also consult:
- a) Criminal Practice Directions 2023 (Part 7); and
 - b) Criminal Procedure Rules (Part 19).
- 1.1.7 Whilst this forensic podology code of practice is intended to be self-contained, the Forensic Unit should also consult the Forensic Science Regulator’s Code of Practice where appropriate and linked guidance documents, including those explaining:

² The term ‘practitioner’ is only used in this document when the requirement can only fall on the individual.

- a) Legal obligations
- b) Expert report content
- c) Cognitive bias effects relevant to forensic examinations
- d) Forensic science providers: validation
- e) Protocol: using casework material for validation purposes
- f) Joint statements under part 19.6 of the Criminal Procedure Rules
- g) Development of evaluative opinions
- h) Declarations of compliance and non-compliance with the code of practice.

1.1.8 This document is written with references specific to the CJS in England and Wales, although the general requirements are applicable to all UK criminal justice systems. This document does not attempt to cover every legal obligation, merely the main ones pertaining to forensic science.

1.1.9 All forensic podiatry practitioners, including those specialising in forensic podology, are required to have their own indemnity insurance as expert witnesses.³

2. Definition and scope

2.1.1 Forensic Podology is defined as the analysis, comparison and evaluation of features associated with the functioning foot to assist the investigation of crime. This may include footprint examination and/or feet-in-shoes examination. The phrase “Forensic Podology” combines the prefix ‘pod’ (meaning ‘foot’) with the suffix ‘ology’ (the scientific study of). “Forensic Podology” and “Forensic Podologist” do not imply treatment (unlike the suffixes ‘iatry’ [healing or medical treatment] and ‘iatrist’ [‘one who treats’]) but instead describes the forensic application of scientific knowledge of the foot (such as morphology, anatomy, biomechanics, physiology and pathology) in a criminal justice context.

2.1.2 This Forensic Podology Code of Practice covers forensic podology services from initial enquiry with the commissioning agency through to preparation and presentation of

³ Insurance provided by the Royal College of Podiatry does not cover expert witness indemnity insurance.

materials for court. This code of practice is split into two subsections; one section focuses on evidence associated with unshod feet (footprint examination). Here, the term 'footprint' incorporates evidence associated with one or more feet. The other section focuses on evidence associated with shod feet (feet-in-shoes examination)⁴.

Forensic Units commissioned by either the prosecution or the defence, should comply with this Forensic Podology Code of Practice in all aspects of forensic podology work undertaken.

- 2.1.3 This Forensic Podology Code of Practice does not include forensic science activities that require accreditation described in 'F1 – FSAs to which the Code applies'. The published requirements in the Regulator's statutory 'code of practice' shall be referred to should these activities be performed by the Forensic Unit.

3. Terms and definitions

- 3.1.1 Subject specific terms and definitions are given in the Glossary in section 25. General terms and definitions are in line with those described in the Regulator's Codes.

4. Implementation

- 4.1.1 This guidance is available for incorporation into a Forensic Unit's standard practice, operating procedures and quality management system from the date of publication.

5. Modification

- 5.1.1 This is the first issue of the Forensic Podology Code of Practice.

⁴ The term 'examination' in this context will refer to the full Analysis, Comparison, Evaluation and Verification (ACE-V) process unless otherwise specified.

6. Service to the commissioning agency

6.1 Confidentiality, independence, impartiality and integrity

6.1.1 The Forensic Unit shall ensure all of its practitioners adhere to the Forensic Science Regulator's 'Code of Conduct'⁵ when conducting forensic casework⁶. Practitioners acting as expert witnesses in England and Wales must adhere to the relevant parts of Criminal Procedure Rules (e.g. parts 1, 3 and 19) and Criminal Practice Directions 2023 (part 7).

6.2 Business continuity

6.2.1 To prevent interruption to, or failure of, business critical processes, the Forensic Unit shall develop procedures that enable services to be maintained or restored, which may take the form of terms of business or terms and conditions that ensure those instructing will have access to the records required in the relevant CJS.

6.3 Limitations of services

As with other forensic processes, forensic podology has limitations. The list given below is neither finite nor static and will evolve as research and practice progress. These limitations apply to both footprint examination and feet-in-shoes examination. Examples of known limitations that should be communicated to the commissioning agency prior to undertaking forensic podology casework include:

- a) Forensic podology can utilise both observational and measurable techniques. However, which technique can be used will depend on the extent of the evidence available

⁵ Part C 'standards of conduct' of the Regulator's Code of Practice.

⁶ This is to be used in conjunction with other professional standards or relevant codes (e.g. HCPC's 'Standards of conduct, performance and ethics').

- b) Features from a functioning foot in isolation have discriminatory potential but cannot currently be used to identify a person from an open population
- c) Forensic podology does not include the comparison of ridge detail, footwear mark evidence or any other method falling outside the Forensic Unit's documented role and scope of practice
- d) The quality and quantity of the questioned material
- e) The quality and quantity of the reference material
- f) Similar to other forensic disciplines, cognitive, confirmation and contextual bias cannot be entirely eliminated but all steps will be taken to minimise it (for subject-specific information see section 8. For general information refer to FSR-G-217).

6.4 Complaints

6.4.1 The Forensic Unit shall have policies and procedures for dealing with internal and external complaints.

6.4.2 The procedures shall define what constitutes a complaint in relation to the work undertaken by the Forensic Unit and shall ensure that appropriate investigations are instigated on receipt of any complaint. Complaints may be received directly from the complainant or via an alternative source (for example, another regulatory body such as the HCPC or a professional body where practitioners are registered with them). They may take various forms including telephone calls, emails, letters or an in-person verbal complaint. Records shall be retained of all complaints, their investigation and outcome. Where a complaint relating to processes and procedures of the Forensic Unit has been upheld, corrective action or other improvement processes will be implemented in line with the process for dealing with non-conforming work detailed in section 6.5.

6.4.3 The policies and procedures relating to complaints shall also indicate the escalation criteria to the commissioning agency and any relevant bodies, such as HCPC for

practitioners on their register⁷, including the individual/role holder responsible for the notification.

6.4.4 Complaint investigation shall include examination of the potential impact on work that has already been undertaken by the Forensic Unit.

6.4.5 The policy for complaint investigation shall include:

- a) The specific information that will be received by the complainant
- b) When, during the investigation, the information will be delivered
- c) The necessary details to rectify the issue if a complaint is upheld (i.e. an identified non-conformity)
- d) How the requirement to be open and honest about the issue will be addressed.

6.5 Non-conforming work

6.5.1 Non-conformity is the non-fulfilment of a requirement, either within the organisation's policies and procedures or in the specification of the commissioning agency.

6.5.2 The Forensic Unit shall have a system in place to evidence continuous process improvement. This system should manage and record the:

- a) Potential for non-conforming work to occur and the preventative action taken
- b) Non-conforming work that has occurred and the corrective action taken
- c) Recommendations that have resulted from non-conforming work and the improvement actions taken.

6.5.3 Where a non-conformity occurs, its significance in relation to the validity of forensic podology casework or conclusions shall be evaluated and its root cause identified. The commissioning agency should be informed of any non-conforming work (as well

⁷ Complaints about HCPC registrants should be emailed to ftp@hcpc-uk.org.

as any other bodies which may be affected) and the corrective action taken. This shall be completed at the earliest opportunity if it has significantly disaffected the commissioning agency such that it could attract adverse public interest or lead to miscarriages of justice.

6.5.4 Casework already reported shall be thoroughly reviewed. Where this review process identifies that a non-conformity has significantly affected results in a reported case, the commissioning agency shall be notified immediately. The report shall be recalled where possible and an additional report will be issued by the Forensic Unit.

6.5.5 Preventative, corrective and improvement actions can become apparent during internal audit (section 13). It is recommended that the Forensic Unit has mechanisms in place, in addition to internal audit, to identify areas for improvement. These may include, but are not limited to:

- a) Customer feedback
- b) Results of inter-laboratory⁸ comparisons
- c) When expected outcomes are not achieved (for example when a substantial difference in opinion occurs following peer review).

6.5.6 The effectiveness of the preventative, corrective and improvement actions shall also be monitored by the Forensic Unit.

7. Forensic Unit responsibility

7.1 Quality Manager

7.1.1 The Forensic Unit should nominate a Quality Manager to ensure all the requirements as stated in this Forensic Podology Code of Practice are met. In the case of a sole trader, the Forensic Unit and Quality Manager may be the same person.

⁸ The term inter-laboratory in this context is the equivalent of inter-Forensic Unit.

7.1.2 The Quality Manager will ensure that the effectiveness and relevance of the quality management system is regularly reviewed and improved.

7.2 Technical Manager

7.2.1 The Forensic Unit shall nominate a Technical Manager to ensure all the technical requirements relating to forensic podology are clearly documented and up to date. This may be the same individual as the Quality Manager, particularly in the case of a sole trader.

8. Cognitive bias

8.1.1 The Forensic Unit shall recognise that stages of the forensic podology process are subject to subconscious bias and is advised to consult the Regulator's publication on the topic for further information (FSR-G-217).

8.1.2 Cognition is the mental process of 'knowing' and includes awareness, perception, reasoning and judgement. It is distinct from emotion and volition. Cognitive processes include mental shortcuts, which speed up decision making. However, cognitive bias occurs when the shortcut causes inferences about other people and/or situations to be drawn in an illogical fashion. It takes on many forms, including but not limited to the following:

- a) Expectation bias, where the expectation of what an individual will find affects what is actually found
- b) Confirmation bias, whereby people test hypotheses by looking for confirming evidence rather than for potentially conflicting evidence
- c) Contextual bias, where someone has other information aside from that being considered, which influences (either consciously or subconsciously) the outcome of the consideration
- d) Motivational bias, where, for example, motivational influence on decision making results in information consistent with a favoured conclusion tending to be subject to a lower level of scrutiny than information that may support a

less favoured outcome.

- 8.1.3 As a subconscious issue it is unlikely that an individual will know either way if they are affected and therefore it is wise that all practitioners understand the issue and take appropriate steps to mitigate against it. This often requires limiting exposure to information at certain stages of the process or recusing themselves from certain stages if appropriate. There is a requirement to declare issues that might create conflicts of interest as certain business and personal arrangements may increase some of these risks, but the declaration is not in itself a mitigation of the risk.
- 8.1.4 Processes and procedures detailed in section 18 shall be implemented as they are intended to manage the risk of cognitive, confirmation and contextual bias through the management of the flow of information to the practitioner conducting the examination. Such safeguards may include but are not limited to the following:
- a) The practitioner conducting the examination should only have information about the case that is relevant to the analysis, comparison or peer review⁹
 - b) Reviewing the questioned material before the reference material. Where a forensic practitioner reviews both reference and questioned material on the same day, the time that each were analysed shall be documented
 - c) Requesting that the commissioning agency clearly distinguishes between the reference and questioned material to be submitted. For example, clearly labelling and distinguishing between footwear seized from the known person and the footwear in question
 - d) Implementing a process for blind peer review by a competent forensic practitioner who has preferably had no prior involvement with the case
 - e) Where possible, varying the combination of the peer reviewer and

⁹Controlling this information may mean a case coordinator or lead scientist receives all the case information and ensures that the practitioner receives only the information appropriate for that stage; experts in sole practice, could put the onus on the commissioning body through instruction on how to stage the disclosure to them to manage the flow of information. The expert is still likely to need the contextual or case information, it simply should be held back until certain analytical stages are complete.

reporting practitioner¹⁰.

9. Standard operating procedures

9.1.1 Whilst this Forensic Podology Code of Practice provides subject specific key requirements, each Forensic Unit shall have standard operating procedures that describe their process and procedures in sufficient detail to:

- a) Allow a competent person, such as another expert, to follow
- b) Remove ambiguity about significant elements of the method used at the time of the casework ¹¹
- c) To facilitate continuous process improvement.

10. Document control

10.1.1 This refers to documents produced by the Forensic Unit such as quality manuals, standard operating procedures, working practice guidelines and forms used as part of casework. For documents, case files and information about individuals containing personal or identifying information see 11.2.

10.1.2 The Forensic Unit will ensure that all in-house documents are:

- a) Approved for suitability by the Quality or Technical Manager prior to issue
- b) Evidenced and/or policy based where appropriate
- c) Reviewed, updated and re-approved as necessary
- d) Version controlled and/or dated
- e) Retained for a defined period when obsolete or superseded, usually for a period related to the nature of the case the records relate to¹².

10.1.3 Documents shall be retained securely.

¹⁰ In the case of the sole trader, they will need to have agreed who carries out their peer review.

¹¹ This is particularly important where there is a protracted period between the casework and the legal proceedings but is required nonetheless as there remains potential for the case to be subject to application to the appellate court.

¹² Some documents, such as standard operating procedures or validation reports, may be required for the life of the cases files. Retention periods can be 3, 7 or (in serious cases) 30 years from the last time the technique in question was used and/or reported. (NPCC Forensic Retention Guidance v1.0 <https://www.fcn.police.uk/docs/npcc-forensic-retention-guidance-v10pdf/download?attachment>) [Accessed 31/01/2024])

- 10.1.4 All documents shall be clearly identifiable and include pagination, date of issue and/or revision identification, and the Forensic Unit name if an internally generated document.
- 10.1.5 It is recommended documents shall be reviewed every two years; retention however is the same as for the casework records.

11. Records

11.1 Technical records

- 11.1.1 Technical records refer to all communications, notes and continuity details that are taken in the case.
- 11.1.2 The Forensic Unit shall have documented procedures to create, maintain and preserve confidentiality of records relating to each case (see 11.2). These procedures should also include the mechanism for investigation of suspected breaches in maintaining records securely and the escalation to appropriate bodies, including but not limited to the Regulator, HCPC and the Information Commissioner's Office (ICO).
- 11.1.3 Records shall be made at the time of the activity e.g. receipt of material, observations, comparison or as soon as practicable thereafter. As a minimum, records produced by the Forensic Unit shall include:
- a) Submission and receipt of physical material such as footprint samples, items of footwear, printed photographs or digital hardware (discs, hard drives, USB memory sticks etc.). Details should include the name, signature and date of those submitting and receiving the material. The mechanism of delivery should also be documented such as 'by hand' or 'internal courier system'. Chain of custody records that detail each person or organisation that takes possession of an item/exhibit shall be maintained from the receipt of the items/exhibits through processing to storage and where applicable to return

- to commissioning agency, or disposal
- b) The case examination strategy including any pre-assessment of probabilities of potential outcomes
 - c) Recommendations or referrals that fall outside the Forensic Unit's role and scope of practice that have come to light as part of the screening/exhibit handling process. This may include onward referral for ridge detail analysis, footwear comparison, etc.
 - d) Traceability of equipment used as part of the forensic podology process. For example, if digital measurements are taken, the details of the computer and software (including version) used to record these measurements should be documented
 - e) All communication relating to each case. This includes all communication (including email face to face, telephone, video call, etc.) relating to the initial enquiry, screening outcome, contract agreements, cancellation of work, reports, statements and points of agreement and disagreement between forensic practitioners
 - f) Observations made relating to the assessment and analysis of the questioned and reference material
 - g) Results of the comparison made between the features observed in the questioned and reference material
 - h) The forensic practitioner's rationale for arriving at the conclusions made, giving details of any data or other material on which the conclusions were based on
 - i) Traceability to the forensic practitioner who undertook each section of casework including their name, and the date that the preliminary assessment, analysis, comparison, report or peer review took place. The records shall be sufficient to provide an auditable trail
 - j) Appropriate protective marking
 - k) Definitions of technical abbreviations used in records.

- 11.1.4 The records will be contemporaneous, accurate, legible, complete and reliable for evidential and accountability purposes.
- 11.1.5 All case files, records and materials should be clearly identifiable, for example with a unique reference number. Each page of every document in the case file should be traceable to the case.
- 11.1.6 There should be a mechanism by which the integrity of the documentation is maintained, for example, it should be easy to detect if a document is added to the file at a later date or goes missing from the file.
- 11.1.7 Hard copy records generated by the Forensic Unit, used as part of the case file, should be paginated using a page numbering system that indicates the total number of pages and stored securely with access only limited to appropriate persons.
- 11.1.8 Electronic records shall be backed up securely and appropriately on a regular basis as determined by the Forensic Unit. If records are stored electronically a mechanism should be in place to prevent files/data being removed or lost with access only limited to appropriate persons. There should be a way of knowing which records are stored in which locations. Electronic equivalents of handwritten initials or signatures are acceptable if the Forensic Unit can demonstrate that the electronic initials or signature can only be applied by the individual represented by the electronic initials or signature.
- 11.1.9 All non-electronic records produced by Forensic Unit personnel shall be retained in a clearly identifiable and secure casefile system (e.g. lockable cabinet in lockable room). Records should be made in a permanent manner; for example, handwritten notes should be in permanent ink.
- 11.1.10 If records are amended, the original and amended versions shall be kept.
- 11.1.11 The records required to support conclusions shall be such that another competent practitioner could evaluate what had been performed, interpret the data and if necessary, repeat the activity.

11.1.12 The Forensic Unit's record retention policy shall comply with the legal requirements in the applicable jurisdiction(s) and any stated requirements from the commissioning agency.

11.2 Control of records

11.2.1 Retention times for records shall satisfy the requirements of legislation and the commissioning agencies of the Forensic Unit. Retention guidance typically involves various requirements, however the requirement of the CJS is normally tied to the potential period of imprisonment. Forensic Units should also be aware of any impact on retention following General Data Protection Regulation (GDPR), and their role (data controller, data processor).

11.2.2 The Forensic Unit should distinguish between records created and held by itself, and items submitted to the Unit by the commissioning agency. Items submitted may include original exhibits and/or working copies of digital images. Retention is a duty of the prosecution therefore any material supplied by the prosecution may be returned (if original material) or destroyed (if a copy) upon completion of the case by the Forensic Unit. Records created by the Forensic Unit may be needed for any subsequent judicial process, including an appeal, and therefore need to be retained for the entire typical custodial period for that crime type. Such records should therefore be retained securely for the following periods¹³, unless notified by the commissioning agency otherwise in writing:

- a) Major and serious crime - 30 years minimum
- b) Volume crime - 6 years minimum.

11.2.3 Records shall be securely stored (e.g. password protected and/or encrypted for electronic files and in a lockable cabinet in a lockable room for physical files),

¹³ See NPCC (as amended) 'Retention, Storage and Destruction of Materials and Records relating to Forensic Examination'.

Available from:

<https://www.fcn.police.uk/sites/default/files/2021/NPCC%20Forensic%20Retention%20Guidance%20v1.0.pdf>:

[Accessed 01/02/2022]

accessed by appropriate persons and subsequently disposed of (e.g. incinerated, shredded, deleted) in a manner appropriate to their sensitivity. These security arrangements should be subject to audit and the procedures should also include the mechanism for investigation of suspected breaches in maintaining records securely including the escalation to appropriate bodies (including but not limited to the Regulator, HCPC the ICO).

11.2.4 If information is lawfully required under the disclosure rules, protective marking does not provide exclusions.

12. Peer review/critical findings check

12.1.1 Critical findings are observations and results that have a significant impact on the conclusions reached and the interpretation and opinion provided. Peer review is a check of these critical findings and is required of all casework undertaken by the Forensic Unit in order to provide consistent, reproducible and reliable results. Forensic podology utilises various methods (including interpretative methods) in its approach and in reaching its critical findings. Whichever method is used, peer review should be implemented and repeated for each and every case undertaken by the Forensic Unit.

12.1.2 The Forensic Unit shall have a procedure for carrying out peer review. The procedure should include:

- a) Control of independence (e.g. cognitive bias and conflicts of interest)
- b) Competency requirements
- c) Resolution of disagreement between reporting practitioner and peer reviewer
- d) Subcontracting arrangements where applicable: including evidencing and recording compliance with the above and record security and retention arrangements.

12.1.3 Peer review should be carried out independently and blindly, with the

questioned material being viewed prior to the reference material.

- 12.1.4 Peer review should follow a structured process to enable a thorough review of the original interpretations and conclusions made. The record shall clearly indicate where each critical finding has been checked and agreed, by whom and the date the checks were performed.
- 12.1.5 Where the peer reviewer is subcontracted or working on external premises, the peer reviewer shall have met competency requirements as outlined in the Forensic Unit's policy and section 15 and 16 of the Forensic Podology Code of Practice (including but not limited to record security and retention).
- 12.1.6 A procedure should be in place for resolving instances where a disagreement exists between reporting practitioner and peer reviewer in the conclusions made. Differences in opinion in the conclusion/outcome should be noted and documented in the case file. Unresolved differences require disclosing to the commissioning agency and the court.
- 12.1.7 The critical findings check is not synonymous with the clerical check of the draft report. The role profile should specify the staff competent to carry out each procedure.

13. Internal audits

- 13.1.1 The Forensic Unit shall conduct internal audits to confirm that all aspects of the management system are implemented, reviewed, effective and conform to standard operating procedures and the Forensic Podology Code of Practice.
- 13.1.2 Internal audits can be undertaken by staff with formal audit training employed by the Forensic Unit or external to the Forensic Unit. The expectation of the Regulator and the HCPC is that individuals undertaking internal audits have formal training in this activity and receive on-going support. This should form part of their continuous professional development.

- 13.1.3 The internal audit procedure is essential for evidencing continuous improvement, non-conformances and associated corrective actions.
- 13.1.4 The Forensic Unit should develop a comprehensive internal audit schedule which includes:
- a) Planned audits for the auditing cycle (at least once every four years for each specific method in the quality management system)
 - b) Scope of the audit
 - c) Audits completed as planned
 - d) Audits that are cancelled and why
 - e) Rescheduled audits
 - f) Audits completed as scheduled
 - g) Additional audits planned and why
 - h) Additional audits completed.
- 13.1.5 Records and individual case files will be subject to internal audit. As forensic podology requires forensic practitioners to form a statement of opinion, the internal audit will include a review of the process by which these opinions are formed.
- 13.1.6 Where forensic podology is provided from a number of different operational sites, the internal audit shall cover all sites.
- 13.1.7 The internal audit shall be conducted objectively, and the results recorded accurately.
- 13.1.8 Non-conformances or other issues resulting from the internal audit shall be investigated as soon as possible with corrective action being implemented. The Forensic Unit shall then review the corrective action to ensure it has been effective (see section 6.5).

14. Health and safety, facilities and equipment

14.1 Health and safety

- 14.1.1 The Forensic Unit shall ensure there is a health and safety programme which covers work carried out in their facilities. This should include guidance on taking regular breaks when examining material over long periods.
- 14.1.2 The Forensic Unit should be aware that images may include disturbing scenes and if affected advised to seek professional mental health support through their general practitioner and/or from websites such as www.mind.org.uk. The practitioner shall be mindful not to disclose confidential, case specific information if such support is required. The preliminary assessor and/or reporting practitioner shall notify the reporting practitioner and/or peer reviewer of such disturbing scenes before accepting the role in the case.

14.2 Facilities

- 14.2.1 The Forensic Unit shall ensure that:
- a) The facilities used to conduct forensic podology casework are appropriate for the practitioner and the work being undertaken
 - b) Lighting does not adversely affect observations made
 - c) Facilities cater for the safe storage of exhibits to prevent loss, deterioration and corruption
 - d) Facilities cater for the safe storage of casefiles to maintain the integrity and identity of technical records
 - e) Interference with, or theft of exhibits is protected against
 - f) Exhibits, casefiles and confidential waste are securely disposed of after retention period is passed, if not returned to the commissioning agency
 - g) There is controlled access to exhibits and casefiles including restriction of the area where forensic podology is undertaken, with a held list of personnel permitted to enter the area that is regularly reviewed and updated.

14.3 Equipment

14.3.1 The Forensic Unit shall ensure that equipment is available and suitable for carrying out analysis and comparisons of forensic podology material (this may include an internal sizing device for footwear, calibrated scale, Brannock device, inkless footprint kit etc).

14.3.2 Records shall be maintained for each item of equipment and any software significant to the examinations/tests performed.

15. Technical requirements

15.1 Code of conduct

15.1.1 The Forensic Unit shall ensure that all permanent, temporary and contract personnel comply with the Regulator's Standards of Conduct (Part C of the Codes of Practice) as it is specific to the provision of scientific evidence.

15.1.2 The Regulator's Standards of Conduct shall be adhered to in conjunction with any other provisions or normative documents imposed by authoritative bodies for the practitioner's discipline. For example, registrants with the HCPC shall also abide by the HCPC Standards of conduct, performance and ethics.

15.2 Personnel

15.2.1 The Forensic Unit shall carry out appropriate background checks (e.g. security checks) on all candidates for employment and contractors in accordance with relevant laws, regulations and ethical requirements. These checks shall be proportional to business requirements, the classification of the information to be accessed and the perceived risks.

15.2.2 The contracts for all staff, permanent, temporary and subcontractors shall contain confidentiality agreements, their own and the Forensic Unit's responsibility for information security and details of their expected conduct.

- 15.2.3 The Forensic Unit's management system shall define each role within the unit and its scope, and specify requirements for qualifications, training, experience, continuous professional development and knowledge for the tasks assigned to each role. Having qualifications, training and experience neither guarantees practical competence nor sound judgement. Therefore, the Forensic Unit shall be able to demonstrate with objective evidence that all personnel are competent, by carrying out assessments of their knowledge and skills against defined criteria (see also section 16).
- 15.2.4 The observation, comparison and evaluation of features of the functioning foot are cognitive processes that rely upon the competence of the practitioner to perform examinations and form conclusion based upon their findings. The conclusions drawn will be made based upon their training, knowledge, skill, experience and awareness of subject limitations. However, the basis for these conclusions shall be traceable and justifiable.
- 15.2.5 Once a conclusion is reached, this should be considered to be a matter of expert opinion and not a statement of fact.

15.3 Initial/introductory training

- 15.3.1 The Forensic Unit's recruitment scheme may include an assessment of forensic podology capabilities. The training of new staff should follow a defined programme. The trainee forensic practitioner should:
- a) Develop subject specific knowledge of forensic podology (and/or its specific sub-disciplines)
 - b) Develop basic knowledge of the role and scope of other forensic disciplines (to aid appropriate onward referral and to aid recognition of when a requested task falls out of the forensic practitioner's role and scope of practice)
 - c) Develop subject specific knowledge of the functioning foot (such as its

anatomy, physiology, pathology and pathophysiology) and its dependence on the lower limb and interaction with its environment

- d) Develop subject specific knowledge of footwear structure and its reciprocal relationship with the contained foot
- e) Understand the role, scope and the expectations of an expert witness
- f) Develop knowledge specific to the processes and procedures of the Forensic Unit
- g) Include shadowing relevant personnel undertaking tasks within their role and scope
- h) Under mentorship, assist with forensic podology enquiries
- i) Complete preliminary assessments of ground truth or archived casework providing opinion of the suitability of materials
- j) Complete preliminary assessments of ground truth or archived casework providing opinion of observable features
- k) Complete comparisons between questioned and reference material using ground truth or archived casework under supervision
- l) Complete interpretations and form a statement of opinion using ground truth or archived casework under supervision
- m) Complete court room training including the presentation and cross examination of a mock case.

15.3.2 It is recognised that the training stated above may be achieved through means other than in-house training¹⁴ and the introductory training process may vary as a result. For example, sole traders may complete these levels via distance learning with a competent external Forensic Unit or educational establishment.

¹⁴ However, developing knowledge pertaining to *forensic unit* processes and procedures (15.3.1 v) shall be developed through in-house training.

15.3.3 Whilst not exhaustive, the following list of common examples may contribute to the trainee's qualifications, ability and experience:

- a) Training or experiential learning with an external Forensic Unit or mentor
- b) Completion of a relevant and continued competency scheme
- c) Completion of or working towards¹⁵ a Bachelor of Science degree that contains modules related to the anatomy and function of the feet and lower limb
- d) Completion of or working towards a Bachelor of Science degree in a forensic science related discipline
- e) Completion of or working towards postgraduate study in a forensic science or forensic podology related discipline
- f) Completion of or working towards a doctorate in a subject relevant to forensic podology
- g) Participating in research activity relevant to forensic podology
- h) Peer reviewing manuscript submissions for research relevant to forensic podology
- i) Completion of an expert witness training programme
- j) Court attendance to observe proceedings
- k) Continued professional development activity including relevant conference attendance¹⁶
- l) Workshop and short course attendance. These may include courses on shoe fitting, forensic podology, footwear mark examination, expert witness training, standards of practice, etc.

15.3.4 The individual's training programme should be tailored according to their prior expertise, specialist knowledge and experience; however, the trainee and mentor/supervisor should ensure training described in 15.3.1 is completed.

¹⁵ 'Working towards' in this context implies the trainee has relevant qualifications elsewhere and is undertaking additional study. For example, a biomechanist holds a BSc in human movement and is working towards a BSc in Forensic Science.

¹⁶ Such as the Chartered Society of Forensic Sciences' Conference; British Association for Human Identification Conference; International Association for Identification Conference; the European Network of Forensic Science Institutes Conference; Royal College of Podiatry Conference, etc.

Formative assessment of development for the trainee should take place at each level of training as defined in the Forensic Unit's training programme. Assessments may take a variety of forms, dependent on the task(s) performed, e.g. written and/or oral examinations; practical exercises; correlation of results with those obtained by other trained staff or direct observation by an appropriately qualified person. In many cases, a combination of assessment techniques will be the most appropriate approach. Timescales for assessment will be determined by the Forensic Unit and will take into account the trainee's pre-existing qualifications, level of ability and experience.

- 15.3.5 The trainee will maintain a portfolio to evidence their learning and development. The Technical Manager will determine when a trainee is suitable for assessment at a particular level of training.
- 15.3.6 Prior training does not automatically determine competence. This shall be verified¹⁷ by the Forensic Unit when employing new staff even if from another forensic podology organisation.

16. Competence

16.1 General

- 16.1.1 The Forensic Unit shall define the competence requirements for staff and have a policy that ensures that all staff undertaking forensic podology (including temporary staff and subcontractors) are competent to perform the work required.
- 16.1.2 The competency testing process shall be cyclical to evidence continued competence of the forensic practitioner.

¹⁷ E.g. through checking of qualifications, competency testing results, evidence of continued professional development, or through additional testing.

16.1.3 The Forensic Unit shall have policies and procedures for taking remedial action when competency is found to have lapsed or not achieved.

16.2 Continued professional development

16.2.1 The Forensic Unit shall have procedures for the on-going training and maintenance of competence, skills and expertise of their staff.

16.2.2 Each practitioner should maintain an up-to-date record of the training and continued professional development they have received. These records shall include academic and professional qualifications, external or internal courses attended and any relevant training (and retraining, where necessary) received whilst working for the Forensic Unit.

16.2.3 Records should be sufficiently detailed to provide evidence that each member of staff has been properly trained and that their competence to perform a task or test has been formally assessed on an ongoing basis. These records should be retained for an appropriate defined period according to the expectations of the commissioning agency and/or the legal system.

16.2.4 Forensic Units should support their staff in their continued professional development.

16.2.5 Forensic Units should seek and receive feedback on their practice. They should also support practitioners to reflect on their practice and use feedback for continuous improvement.

17. Validation of methods

17.1 General

17.1.1 Validation ensures that "...a method, process or device is fit for the specific purpose intended" (the Code of Practice). If the method is fit for the intended purpose and adhered to, the results produced can be relied upon. The same level of confidence in

the results is required whether the method is to be used routinely or infrequently. Whilst the courts can consider all possible sources of evidence, they may rule scientific results inadmissible where the validity of a method cannot be demonstrated. Even when a method is considered 'standard' or 'widespread' it still requires internal validation (verification) to be carried out by the Forensic Unit. In *Lundy v. The Queen* (New Zealand) [2013] UKPC 28, the Privy Council made the following comments:

"It is important not to assume that well established techniques which are traditionally deployed for the purpose of diagnosis can be transported, without modification or further verification, to the forensic arena where the use to which scientific evidence is put is quite different from that involved in making a clinical judgement. Put simply, evidence that can properly be used to reach a confident medical verdict may not measure up to the more stringent requirements that arise in the setting of a criminal trial."

- 17.1.2 At the time of writing, forensic podology predominantly utilises interpretative rather than measurement-based methods. Interpretative methods are used to analyse and compare observable features and shall be validated following criteria outlined in the FSR Codes of Practice (see section 17.2).
- 17.1.3 Method validation requires functional and performance criteria to be identified and tested. For interpretative methods, this is achieved by focusing on the competence to perform forensic podology casework against representative ground truth and/or archived data. Therefore, interpretative methods are validated by showing that staff can provide consistent, reproducible and reliable results that are compatible with the results of other competent staff. The Forensic Unit can meet these requirements by a combination of:
- a) Blind, independent peer review. This requirement is met during the peer review phase of live casework
 - b) Participating in inter-laboratory comparisons. This is equivalent to proficiency

testing and compares the outcomes of different Forensic Units. For sole traders, it is suggested that this is achieved using a similar resource to that used for peer review

- c) External acknowledgement with a recognised and relevant professional body
- d) Designing frequent in-house assessments using competence tests. For example, similar archived and/or ground truth casework used as part of initial training can be used for this process (see section 15.3). For sole traders, in-house assessment is not feasible. Therefore, inter-laboratory assessments are recommended as an alternative.

17.1.4 Methods used by the Forensic Unit can be acquired by:

- a) Developing a new method within the Forensic Unit
- b) Adopting a method that has been developed outside of the Forensic Unit and/or
- c) Making minor changes to a pre-existing in-house method.

17.1.5 Regardless of how the method is developed, it shall be validated for use within the Forensic Unit.

17.2 Validating a method within the Forensic Unit

17.2.1 When validating a method for use in forensic podology, the Forensic Unit shall:

- a) Determine the end-user's requirements¹⁸
- b) Determine the specification of the method¹⁹
- c) Conduct a risk assessment of the method²⁰
- d) Review the end-user requirements and specification²¹
- e) Define the acceptance criteria for the method²²

¹⁸ The requirements from the perspective of the CJS and intermediate users such as the commissioning agency.

¹⁹ What the method will do and how it will do it.

²⁰ The perceived risks to the end-user that may result from implementing the method.

²¹ Following the risk assessment, review and revise the end-user's requirements or the specification as necessary.

²² The criteria required for the method to be accepted

- f) Produce a validation plan for the method²³
- g) Detail the outcomes of the validation exercise
- h) Independently assess the validation work to ensure the method complies with the acceptance criteria for the specification²⁴
- i) Produce a validation report²⁵
- j) Produce a statement of validation completion
- k) Devise a plan for implementation and monitoring of the method.

17.2.2 Forensic Units are advised to consult the Regulator's Validation guidance document, for further detailed information on this process. For instance, such guidance recommends a literature search be conducted to review the underpinning science that the method is based on. Such a review would also draw upon podology papers in other contexts that consider factors such as validity and accuracy which may equally apply to the use forensic podology. Such studies may give an insight into the experimental design required, whether this is a novel or an existing method being adopted by the Forensic Unit.

Novel methods developed entirely within the Forensic Unit will require larger developmental validation studies than those being adopted from elsewhere which require internal validation/verification. Those intending to develop such methods should consult the Regulator's Validation guidance document. It is expected most Forensic Units will use variations of methods published in peer reviewed literature, but they shall be verified to show they meet the user requirements. For example, it is more likely that studies will exist that relate to

²³ This identifies and defines the functional and performance requirements of the method. It sets out the test to be performed and the acceptable results that should be achieved

²⁴ For sole traders, the independent reviewer could be obtained from the resource used for peer review

²⁵ This should include the end-user requirements, specification, risk assessment, validation plan and exercise, the results of the exercise, recommendations resulting from the validation exercise.

the functioning feet outside the specific context of forensic podology. These other contexts may be drawn upon provided that the results of such studies have been peer reviewed and published by the scientific community.

- 17.2.3 The efficacy of the method will be determined using the criteria listed in 17.2.1. The amount of work required to verify a method that has been developed and validated externally to the Forensic Unit depends on the following:
- a) The adequacy of the available existing validation data
 - b) The familiarity and experience the Forensic Unit has with the techniques, equipment and facilities involved.
- 17.2.4 Prior to use, an up-to-date literature search should be conducted to ensure the method is still reputable and has not been superseded by a more reliable, validated method.
- 17.2.5 The literature review underpinning the method shall be maintained. It shall be disclosed when the literature critiques the method or a range of opinion on the accuracy or applicability of the method arises. Where the literature review indicates issues with the method or that change is required for good practice, the policy should consider changing or replacing the method. Significant method changes and replacements will require a new validation (see 17.2).
- 17.3 Verifying minor changes to pre-existing in-house methods**
- 17.3.1 A full re-validation of minor changes made to an existing method used within the Forensic Unit should not be required. The impact of the proposed changes shall be risk assessed, verified against the original validation and authorised in line with other validation studies.
- 17.3.2 A revalidation is required when a proposed change is risk assessed and is shown to have a potential influence on the results obtained from using the amended method.

17.4 Validation library

17.4.1 Once a method has been approved for use within the Forensic Unit and a statement of validation completed, the standard operation procedure for the method will be retained in the validation library along with supporting scientific literature. The validation library shall include:

- a) The specification for the method approved
- b) The risk assessment for the method approved
- c) The validation plan for the method approved
- d) The validation report
- e) The record of approval
- f) The statement of validation completion.

17.4.2 If each of these sections is present in the validation report, they do not need to be added individually to the validation library.

17.4.3 Where the method relies on a reference collection or database, their nature, access and availability should be described.

17.4.4 The information in the validation library shall be disclosable. Disclosure to the courts takes precedence over intellectual property requirement.

18. Process of forensic podology

18.1 For simplicity, the process of forensic podology has been divided into two sections, one focusing on 'footprint examination' and the other on 'feet-in-shoes examination'. Whilst many of the principles overlap, there are differences that have been described separately to avoid ambiguity. Furthermore, not all forensic practitioners working in forensic podology will specialise in both sub-disciplines, which is recognised by using two distinct sub-sections:

- a) Section 19: Process of footprint examination
- b) Section 20: Process of feet-in-shoes examination

19. Process of footprint examination

Footprint examination usually involves the analysis, comparison and evaluation of features (associated with the functioning foot) observed within a bare or sock-clad footprint recovered from a scene of crime with features observed in a reference bare or sock-clad footprint collected from a known person. These ‘features’ usually involve class characteristics such as size and morphology²⁶. For the purposes of this document, the term ‘footprint’ will include both two-dimensional footprints and three-dimensional foot impressions. The term ‘footprint’ will also include instances where more than one footprint is examined.

19.1 Principles of the process

19.1.1 Prior to reviewing the materials²⁷, the Forensic Unit must establish the requirements of the commissioning agency, considering relevant circumstances pertaining to the request and the relevant facts in issue. Requests made by the commissioning agency include a:

- a) Preliminary (quality) assessment: such as an opinion formed by the practitioner relating to the suitability of the questioned and/or reference footprints for investigative or evaluative opinion
- b) Investigative opinion: for example, whether the footprint offers intelligence about the person who left it such as an estimate of their height
- c) Evaluative opinion: this is an opinion-based conclusion formed by a footprint examiner that describes the level of similarity or dissimilarity between reference and questioned footprints following their comparison and evaluation.

The commissioning agency should always submit a question or questions to be addressed by the examiner and this should be made explicit to prevent confusion in practice. When practitioners undertake footprint examinations involving evaluative opinion, the following stages will be

²⁶ ‘Morphology’ in this context refers to ‘form, shape or structure’

²⁷ ‘materials’ in this section predominantly refers to footprints and the various methods by which they might be recovered by Crime Scene Investigators at a crime scene or from known person.

undertaken in the following order.

- a) Devising a case examination strategy
- b) Preliminary assessment of the suitability of the questioned material²⁸
(section 19.3)
- c) Preliminary assessment of the suitability of the reference material (see section 19.3) (NB if the preliminary assessment will be carried out by the same practitioner who will conduct the analysis stage, the assessment and subsequent analysis of the questioned footprints must be undertaken before both the assessment and analysis of the reference footprints commences)
- d) Observation and analysis of footprint features exhibited by the questioned material (section 19.4)
- e) Observation and analysis of footprint features exhibited by the reference material (section 19.4)
- f) Comparison of the footprint features observed in the questioned and reference material (section 19.5)
- g) Consideration of the limitations known to be present in the quality and quantity of the material, the analysis and the comparison. Consideration must also be given to the existence of limitations that are not yet known. These limitations shall be incorporated into the evaluation of the strength of the findings (section 19.6)
- h) Generation of an expert report explaining the approach taken, findings and evaluative opinions (section 22)
- i) Peer review by another forensic practitioner (section 21).

19.2 Provision of footprint material

19.2.1 As this is an infrequently used technique, the commissioning agency may ask the

²⁸ Where possible, this should be a different practitioner to the main examiner. This is to assist control of contextual bias by ensuring that the main examiner is not influenced by background information supplied by the commissioning agency

practitioner for advice on what materials are required for comparison. A gold standard list is illustrated below, but all items within the list may not be available for each case. The practitioner must assess the available material on a case-by-case basis to determine if it is sufficient to undertake the casework.

- a) Life-size working copies of questioned footprints with Bureau scale positioned at the level of the footprint (in some instances, the practitioner may be required to work from the exhibit itself, such as where footprints have been recovered using adhesive/Fablon® lifts)
- b) Reference/known footprints produced in a like-with-like state. As a minimum, both dynamic²⁹ and static³⁰ footprints should be collected but consider the requirement for other states, such as socked footprints
- c) Life-size working copies of reference footprints with Bureau scale positioned at the level of the footprint
- d) Photographs of weight bearing feet³¹
- e) Photographs of non-weightbearing feet.

19.2.2 Suitable material will be provided by the commissioning agency to the Forensic Unit in a secure manner. This may include a courier system approved by the commissioning agency for physical exhibits or an agreed and established secure method for the remote digital transfer of digital images. Questioned materials should be kept in a separate digital folder to the reference materials and clearly labelled as such to reduce the likelihood of the material being viewed in the incorrect order.

19.2.3 Material submitted for preliminary assessment, investigative or evaluative opinion should, where possible, be a life-size working copy of the original. As footprints can be recovered using a variety of methods (photography, casts, gel lifts, adhesive/Fablon®

²⁹ One or more footprints made by a known person whilst moving, such as when walking.

³⁰ One or more footprints made by a known person whilst in a stationary, weightbearing position.

³¹ It is advised to obtain photographs of the person's bare feet for context and reference.

lifts), the practitioner should request the items to be submitted in their preferred format for examination. For example, the commissioning agency may be requested to photograph/scan and print a life-size image of a black gel for the footprint examiner to work from. Alternatively, the footprint examiner is more likely to work from an original cast or adhesive/Fablon® lift. All material should be clearly labelled and include calibrated measurement scales where necessary.

19.2.4 Where a sample of the material in its original format is not provided:

- a) Confirmation should be provided by the commissioning agency that the materials worked with are faithful replicas/copies and documented accordingly
- b) The method used to replicate the original (e.g. scan, photography, Adobe® Photoshop) should be provided by the commissioning agency. The footprint examiner could request further scans or photography to be undertaken if specific areas of the footprint need enhancing or the overall quality of the working copy could be improved
- c) This shall be clearly stated in the final report, together with a statement to the effect that any changes in the quality of the material that may have impacted on analysis and comparison of the footprints could not be visually assessed.

19.2.5 Where material in its original format is provided, this should be photographed using appropriate techniques and printed life-sized incorporating calibrated measurement scales. This shall be recorded in the final report.

19.2.6 If the analysis and comparison of the material is undertaken digitally, the type of software and its version number shall be recorded. The audit function of the software used should be switched on and operable.

19.2.7 Any changes to the format of the material and/or enhancements of the material made by the Forensic Unit within the scope of their expertise shall be recorded.

19.3 Preliminary assessment of the suitability of the questioned and reference

material for use in footprint examination

- 19.3.1 The preliminary assessment aims to prevent the case proceeding to evaluative opinion only to find that the material supplied is unsuitable. This expends time, resources, and incurs avoidable additional costs to the commissioning agency. Whilst this practice is recommended, it is not compulsory. However, if preliminary assessments are not undertaken as standard by the Forensic Unit, they must ensure the commissioning agency is aware that costs may be incurred for the examination of material that is concluded to be insufficient for examination.
- 19.3.2 To prevent false rejections³² of the casework during preliminary assessment, the preliminary assessment shall be undertaken by a person deemed competent in footprint examinations. However, as the person will be dealing with the commissioning agency and viewing all the material, they may be exposed to potential cognitive bias and where possible, should not be the same person who will later undertake the footprint analysis and comparison.
- 19.3.3 If the forensic unit chooses to undertake preliminary assessments, the method used shall be:
- a) Specified in the standard operating procedures and management system
 - b) Standardised to ensure that all submitted material is assessed against the same criteria
 - c) Recorded for future reference, and the information stored with other case related materials.
- 19.3.4 As part of the preliminary assessment, the forensic practitioner should expect to see factors in both questioned and reference material that will limit the comparison. The preliminary assessment is primarily concerned with factors that preclude a meaningful investigative or evaluative opinion from taking place. This may be as a result of one gross factor (such as no means of producing a life-size image of the

³² This occurs when a practitioner concludes that material is unsuitable for investigative or evaluative opinion when in fact it does offer information useful to the investigation.

questioned footprint) or multiple factors (such as multiple, overlapping, partial marks, made in a wet substance, showing such extensive movement that no footprint features can be reliably observed). The preliminary assessment shall include consideration of:

- a) The quality of features visible in the questioned and/or reference footprint
- b) The quantity of features visible in the questioned and/or reference footprint
- c) Any distortions visible in the footprint that prevent meaningful comparison or interpretation
- d) Any distortions that are a result of the method of capture that prevent meaningful comparison or interpretation.

19.3.5 Where a decision cannot be made as to the suitability of questioned and/or reference material for use in footprint examination, a second opinion may be sought from another forensic practitioner with expertise in footprint examination.

19.3.6 The commissioning agency should be informed of the outcome of the preliminary assessment of the material as soon as possible, together with feedback regarding the reasons for the outcome, and where appropriate guidance on remedial actions if possible or appropriate.

19.3.7 The outcome of the preliminary assessment should be reported in a format that includes wording that stipulates the outcome is *to be used as information only and is not intended nor suitable to be used as evidence*. Where the commissioning agency requires the outcome of the preliminary assessment to be used as evidence, they must request this in writing to the forensic unit who will form a report or statement to that effect.

19.3.8 The outcome of the preliminary assessment of the material shall be recorded and stored with other case related materials.

19.4 Analysis of the questioned and reference footprint material

- 19.4.1 For both investigative and evaluative opinion, the questioned material shall be analysed, and contemporaneous notes made, regarding observable limitations of the material. If a preliminary assessment has been carried out, the limitations observed as part of the analysis should not preclude a meaningful examination from taking place, but they may reduce the amount of reliable information available for use. Following this stage, notes will then be made regarding observable features of the footprint relative to these limitations. Where reference material is available, such as in requests for evaluative opinion, the questioned material shall be analysed before the reference material. Where both sets of material are analysed on the same day, the time that the questioned and reference material were analysed shall be documented.
- 19.4.2 Where reference material is available, the same process shall be followed as for questioned material. This shall be completed without revisiting the questioned material.
- 19.4.3 The forensic practitioner shall use all suitable material for analysis, unless otherwise specifically determined in the case examination strategy developed in liaison with the commissioning agency. The material 'used' and 'not used' for the analysis of footprints shall be documented in the contemporaneous notes. A record should be kept of the reasons why any material was not used.
- 19.4.4 The method used to analyse questioned and reference footprints shall be valid, systematic and transparent and shall be applied in the same way to all footprint material, in all casework (see section 17).
- 19.4.5 The methods used should be supported by:
- a) Documentation as outlined in 17.4.1
and/or
 - b) Peer reviewed published research.
- 19.4.6 Where research into the application of methods in the forensic context is scarce,

research can be drawn from the wider field of footprint examination or carried out by members of the Forensic Unit specifically for the case in question. The practitioner should recognise that research findings from another discipline may not be valid for the intended purpose, and further verification of the method may be required.

- 19.4.7 Where there is a range of opinion on application of the method in the literature, this shall be recorded and included in reports intended for court (see Criminal Procedure Rule 19 and Criminal Practice Directions 7.1.2h).
- 19.4.8 Where the expert provides an opinion solely based on their experience, it is important that the statement makes clear, in detail, the experience which allows the expert to proffer that opinion.
- 19.4.9 Wherever possible reference should be made to relevant peer reviewed publications that have investigated and established the reliability and limitations with which footprints can be analysed using the methods employed by the forensic practitioner.
- 19.4.10 A summary of the footprint analysis derived from the material shall be recorded in the final report.

19.5 Comparison of the questioned and reference footprints

- 19.5.1 Where reference material is available for requests of evaluative opinion, the methods used to compare the reference footprint with the questioned footprint shall be stated in the final report.
- 19.5.2 The method used shall be valid, systematic, transparent and shall be applied in the same way to all casework.
- 19.5.3 The comparison between questioned and reference footprints should consider any similarities and dissimilarities observed between the presence and/or absence of features in both questioned and reference footprints. These features include but are not limited to:
- a) Overall footprint size (as far as visible)

- b) Overall footprint shape (as far as visible)
- c) Overall footprint type (e.g. Celtic, Egyptian etc.)
- d) Toe Formulae
- e) Shape, size, position and orientation (as far as visible) of individual features (e.g. toe prints)
- f) Other notable features (e.g. foot pathology).

19.5.4 Consideration must be given to any feature present in the questioned footprint but not in the reference footprint and vice versa. The footprint examiner must determine whether these differences preclude the donor of the reference footprint from having made the questioned footprint or whether the differences can be reasonably explained.

19.6 Evaluation of the limitations of the analysis and comparison and determination of the strength of the findings

19.6.1 Where limiting factors may have affected the ability of the practitioner to compare and evaluate the questioned and reference footprints, those factors should be clearly listed in the final report. Such factors may include, but are not limited to, those described in 19.3.4 above.

19.6.2 Such factors shall be taken into consideration by the reporting practitioner when determining the strength of evidence provided by the footprint examiner.

19.6.3 A footprint or a foot pathology prevalence reference collection (local, national or international) can be used to assist in the determination of the strength of evidence by the footprint examiner; however, its admissibility may be questioned if the reference collection does not meet all of the following criteria:

- a) It is available for use by both the prosecution and defence

- a) States the size of the population used
 - b) States the appropriateness³³ to the case of the population used.
- 19.6.4 The likelihood of such reference collections being deemed admissible may be boosted if:
- a) It is also in the public domain
and/or
 - b) Has been peer reviewed and published.
- 19.6.5 If a reference collection has been used to assist in the determination of the strength of evidence provided by the footprint comparison this shall be made clear in the final report, and the reference collection identified.
- 19.6.6 In the absence of the use of a reference collection the final report shall contain a statement to the effect that the determination of the strength of evidence provided by the footprint comparison is an opinion based conclusion and is not predicated on numerical data or statistical calculation.
- 19.6.7 Where the expert provides an opinion based solely on their experience it is important that the statement makes clear, in detail, the experience which allows the expert to proffer that opinion.
- 19.6.8 The strength of evidence provided by the footprint examiner should be expressed using a published scale of verbal expressions of strength of evidence in support of one of two opposing propositions. Generally, the prosecution's proposition would take the form of 'the questioned footprint has been made by the person who made the reference footprint '. The alternative proposition is determined by the defence but in the majority of cases takes the form of 'the questioned footprint has not been made by the person who made the reference footprint'.³⁴

³³ E.g. ethnicity, sex, age.

³⁴ This proposition can also be used in cases in which the defendant provides a 'No comment' interview, although it should be made clear in any report that this is a default position for the alternative.

20. Process of feet-in-shoes examination

Feet-in-shoes examination usually involves the analysis, comparison and evaluation of features of fit and wear observed on the internal and external aspects of questioned and reference footwear (of a similar styles). These features of fit and wear are associated with the structure and function of the enclosed feet and their interaction with the footwear. Therefore, these features can include the footprint impression on the insole, wear patterns on the outsole and the wear marks (and impressions³⁵) on the internal aspect of the footwear. The requirement for this work usually occurs when the regular wearer of the footwear (that has been associated with a scene of crime) is in question, and wearer DNA examination³⁶ would not be possible, meaningful or has been unsuccessful.

Feet-in-shoes examination does not include the analysis and comparison of footwear marks left by the tread of a shoe. To practice within this field, please see the accreditation requirements as detailed in the Forensic Science Regulator Code of Practice. Whilst feet-in-shoes comparison usually involves the comparison of reference and questioned footwear, it may also include an evaluation of footwear to establish whether a person could be a wearer of the footwear in question, when only the feet are available for comparison.

20.1 Principles of the process

20.1.1 Prior to reviewing the materials³⁷, the Forensic Unit must establish the requirements of the commissioning agency, considering relevant circumstances pertaining to the request and the relevant facts in issue. Requests made by the commissioning agency

³⁵ 'mark' in this instance refers to a two-dimensional representation of a feature of interest whereas 'impression' refers to its three-dimensional aspects.

³⁶ Examining footwear for the presence of DNA, which may provide sufficient information to suggest the regular wearer of the shoes.

³⁷ 'materials' in this section predominantly refers to the questioned footwear associated with a scene of crime and reference footwear known to be worn by a particular person.

include a:

- a) Preliminary (quality) assessment: such as an opinion formed by the practitioner relating to the suitability of the questioned and/or reference footwear for investigative or evaluative opinion. For example, if either the reference or questioned footwear is new in appearance, it may have very few wear features visible to enable a meaningful comparison
- b) Investigative opinion: for example, the wear features present within the footwear may suggest that the wearer had a specific foot deformity. This information may be of value to the investigation team
- c) Evaluative opinion: this is an opinion-based conclusion that describes the level of similarity or dissimilarity between the reference and questioned footwear following their comparison and evaluation.

The commissioning agency should always submit a question or questions to be addressed by the practitioner and this should be made explicit to prevent confusion in practice. When practitioners are asked to provide an evaluative opinion, the following stages will be undertaken in the following order:

- a) Devising a case examination strategy
- b) Preliminary assessment of the suitability of the questioned material³⁸ (section 20.3)
- c) Preliminary assessment of the suitability of the reference material (see section 20.3). NB if the preliminary assessment is to be carried out by the same practitioner who will conduct the analysis stage, the preliminary assessment and subsequent analysis of the questioned footwear must be undertaken before assessment and analysis of the reference footwear commences
- d) Observation and analysis of features of fit and wear exhibited by the questioned material (section 20.4)

³⁸ This should be a different practitioner to the main examiner. This is to assist control of contextual bias by ensuring that the main examiner is not influenced by background information supplied by the commissioning agency

- e) Observation and analysis of features of fit and wear exhibited by the reference material (section 20.4)
- f) Comparison of the features observed in the questioned and reference material (section 20.5)
- g) Consideration of the limitations known to be present in the quality and quantity of the material, the analysis and the comparison (section 20.6). Consideration must also be given to the existence of limitations that are not yet known. These limitations shall be incorporated into the evaluation of the strength of the findings. NB the consideration and potential impact of limitations should not be seen as a separate, sequential stage but part of the process of d, e and f
- h) Generation of an expert report explaining the approach taken, findings and evaluative opinions (section 22)
- i) Peer review by another forensic practitioner (section 21).

20.2 Provision of material

20.2.1 As this is an infrequently used technique, the commissioning agency may ask the practitioner for advice on what materials are required for comparison. A gold standard list is illustrated below, but all items within the list may not be available for each case. The practitioner must assess the available material on a case-by-case basis to determine if it is sufficient to undertake the casework.

- a) Questioned/unknown footwear
- b) Life size working copies of questioned insoles with Bureau scale positioned at the level of the print/impression on the insole
- c) Reference/known footwear
- d) Life size working copies of reference insoles with Bureau scale positioned at the level of the print/impression on the insole
- e) Dynamic footprints³⁹

³⁹ One or more footprints made by a known person whilst moving, such as when walking.

- f) Photographs of weight bearing feet⁴⁰
- g) Photographs of non-weightbearing feet
- h) Static footprints⁴¹.

- 20.2.2 Suitable material, such as a pair of questioned and reference footwear, will be provided by the commissioning agency to the Forensic Unit in a secure manner. This may include a courier system approved by the commissioning agency for physical exhibits or an agreed and established secure method for the remote digital transfer of digital images. It is recommended to request the physical exhibits in addition to digital images of the footwear as some features can be felt but not easily seen under photography. Questioned and reference footwear should be easily identifiable as such and exhibited separately. This is also true of digital images, with questioned and reference images being kept in separate folders and clearly labelled as such to reduce the likelihood of the material being viewed in the incorrect order.
- 20.2.3 The material submitted for preliminary assessment, investigative or evaluative opinion should include the questioned and reference exhibits and where possible, life-size working copies of the insoles. All material should be clearly labelled and include calibrated measurement scales where necessary. Where possible, when the commissioning agency has photographed the material, they should provide details of the equipment, settings and lighting to the Forensic Unit.
- 20.2.4 Where the physical footwear exhibits are provided, they should be photographed using appropriate techniques and images of the insole printed life-sized incorporating calibrated measurement scales. This shall be recorded in the final report.

20.3 Preliminary assessment of the suitability of the questioned and reference material

⁴⁰ It is advised to obtain photographs of the person's feet for context and reference. It is also beneficial to compare both photographs and prints to the reference insole footprint impressions, to confirm the reliability of the reference footwear.

⁴¹ One or more footprints made by a known person whilst in a stationary, weightbearing position.

- 20.3.1 The preliminary assessment aims to prevent the case proceeding to evaluative opinion only to find that the material supplied is unsuitable. This expends time, resources, and incurs avoidable additional costs to the commissioning agency. Whilst this practice is recommended, it is not compulsory. However, if preliminary assessments are not undertaken as standard by the Forensic Unit, the Unit must ensure the commissioning agency is aware that costs may be incurred for the examination of material that is concluded to be insufficient for examination.
- 20.3.2 To prevent false rejections⁴² of the casework during preliminary assessment, the preliminary assessment shall be undertaken by a person deemed competent in feet-in-shoes examination. However, as the person will be dealing with the commissioning agency and viewing all the material, they may be exposed to potential cognitive bias and should not be the same person who will later undertake the analysis and comparison stage.
- 20.3.3 If the forensic unit chooses to undertake preliminary assessments, the method used shall be:
- a) Specified in the standard operating procedures and management system
 - b) Standardised to ensure that all submitted material is assessed against the same criteria
 - c) Recorded for future reference, and the information stored with other case related materials.
- 20.3.4 As part of the preliminary assessment process, the forensic practitioner should expect to see factors in both questioned and reference material that will *limit* the comparison, as casework is very unlikely to be devoid of any limitations. The preliminary assessment is therefore concerned with factors that *preclude* a meaningful investigative or evaluative opinion from taking place. For example, when reference footwear is submitted that does not show any features of wear. The

⁴² This occurs when a practitioner concludes that material is unsuitable for investigative or evaluative opinion when in fact it does offer information useful to the investigation.

preliminary assessment shall include consideration of:

- a) The quality of features visible in the questioned and/or reference footwear
- b) The quantity of features visible in the questioned and/or reference footwear
- c) Any visible distortions of, or damage to, the material that prevent meaningful comparison or interpretation
- d) Any distortions that are a result of the method of capture that prevent meaningful comparison or interpretation. This may delay rather than prevent the work from taking place, as in many instances the images can be retaken.

20.3.5 Where a decision cannot be made as to the suitability of questioned and/or reference material, a second opinion may be sought from another forensic practitioner with expertise in feet-in-shoes examination.

20.3.6 The commissioning agency should be informed of the outcome of the preliminary assessment of the material as soon as possible, together with feedback regarding the reasons for the outcome, and where appropriate guidance on remedial actions if possible or appropriate. For example, could an alternative pair of reference footwear be submitted and/or could dynamic footprints be taken from the person of interest.

20.3.7 The outcome of the preliminary assessment should be reported in a format that includes wording that stipulates the outcome is *to be used as information only and is not intended nor suitable to be used as evidence*. Where the commissioning agency requires the outcome of the preliminary assessment to be used as evidence, they must request this in writing to the forensic unit who will form a report or statement to that effect.

20.3.8 The outcome of the preliminary assessment of the material shall be recorded and stored with other case related materials.

20.4 Analysis of the questioned and reference material

20.4.1 For both investigative and evaluative opinion, the questioned material shall be analysed, and contemporaneous notes made, regarding observable limitations of the material. If a preliminary assessment has been carried out, and the footwear has progressed to this stage, then any limitations noted should not preclude a meaningful examination from taking place (but may reduce the amount of reliable information available for use in comparison). During the analysis, notes will be made regarding observable features of fit and wear relative to these limitations. The analysis will consider the style, structure and size of the footwear prior to considering the fit and wear features associated with the functioning feet. The style, structure and size of the footwear may have implications on findings and conclusions drawn (particularly if compared to reference footwear dissimilar in size and style), and therefore must be addressed at the first part of the analysis stage. Structure, style and size factors may include (but are not limited to) the:

- a) Make and model of footwear
- b) Style of footwear (e.g. trainer, boot, shoe etc.)
- c) Label information such as marked shoe size
- d) Internally measured shoe size
- e) Presence/absence of a fastening (e.g. lacing or other fastening)
- f) Style of lacing if present
- g) Materials of footwear (e.g. leather, fabric, suede, synthetic etc.)
- h) Footwear structure (e.g. presence of heel counter or toe cap, shape & depth of toe box, rigidity of outsole, presence of a toe spring etc.)
- i) Heel height (and block height)
- j) Presence of an insole
- k) Style of insole (removable, colour, material, texture etc).

20.4.2 The analysis will also consider features of fit and wear (associated with the functioning foot) that can be observed on the:

- a) Outsole/tread (wear pattern)
 - b) Internal aspects of the footwear (such as the interior lining around the heel counter, toes, metatarsophalangeal joints)
 - c) Insole (such as marks or impressions associated with the toes, toe stems, anterior ball of foot, medial and lateral borders, heel).
- 20.4.3 Where reference material is available, such as in requests for evaluative opinion, the questioned material shall be analysed before the reference material. Where both sets of material are analysed on the same day, the time that the questioned and reference material were analysed shall be documented.
- 20.4.4 Where reference material is available for analysis, the same process shall be followed as for questioned material. This shall be completed without revisiting the questioned material. Where dynamic and/or static footprints are submitted, they should be assessed according to section 19. If photographs of the feet are available, they should be used in conjunction with the reference footwear.
- 20.4.5 The forensic practitioner shall use all suitable material for analysis, unless otherwise specifically determined in the case examination strategy developed in liaison with the commissioning agency. The material 'used' and 'not used' shall be documented in the contemporaneous notes. A record should be kept of the reasons why any material was not used.
- 20.4.6 Where part of the analysis and comparison is undertaken digitally, the type of software and its version number shall be recorded. The audit function of the software used should be switched on and operable. (NB it is not recommended for a full feet-in-shoes comparison to be undertaken using digital material only).
- 20.4.7 The Forensic Unit will record whether it has used any enhancement techniques (such as high intensity light sources) to view and photograph the footwear or footprint impression on the insole.
- 20.4.8 The method used to analyse the questioned and reference footwear shall be valid,

systematic and transparent and shall be applied in the same way to all footwear material, in all casework (see section 17).

20.4.9 The methods used should be supported by:

- a) Documentation as outlined in 17.4.1
and/or
- b) Peer reviewed published research.

20.4.10 Where research into the application of methods in the forensic context is scarce, research can be drawn from the wider field of forensic podology. Alternatively, case specific research may be carried out by members of the Forensic Unit. The practitioner should recognise that research findings from another discipline may not be valid for the intended purpose, and further verification of the method may be required. See section 17 Validation of Methods.

20.4.11 Where there is a range of opinion on the application of the method in the literature, this shall be recorded and included in reports intended for court (see Criminal Procedure Rule 19 and Criminal Practice Directions 7.1.2.h).

20.4.12 A summary of the analysis derived from the questioned and reference material shall be recorded in the final report.

20.5 Comparison of the questioned and reference footwear

20.5.1 For requests of evaluative opinion, the methods used to compare the reference material with the questioned footwear shall be stated in the final report.

20.5.2 The method used shall be valid, systematic, transparent and shall be applied in the same way to all casework.

20.5.3 The comparison between questioned footwear and reference material should consider any similarities and dissimilarities observed between the presence and/or absence of features in both sets of material. These features include, but are not limited to, those listed in section 20.4.1 and 20.4.2 above. When comparing wear

and fit features on the insole (whether marks and/or impressions), the following should be compared where visible:

- a) Overall footprint size (see section 19 for measurement techniques)
- b) Overall footprint shape
- c) Overall footprint type (e.g. Celtic, Egyptian etc.)
- d) Toe Formulae
- e) Shape, size, position and orientation of individual features (e.g. toe prints, toe stems)
- f) Other notable features (e.g. foot pathology).

20.5.4 As part of the comparison, consideration must be given to any feature present in the questioned footwear but not visible in the reference footwear and vice versa. The practitioner must determine whether these differences preclude the owner of the reference footwear from being a wearer of the questioned footwear or whether the differences can be reasonably explained (such as by the presence or absence of any of the factors listed in 20.4.1).

20.6 Evaluation of the limitations of the analysis and comparison and determination of the strength of the findings

20.6.1 Where limiting factors may have affected the ability of the practitioner to compare and evaluate the questioned and reference material, those factors should be clearly listed in the final report. Such factors may include but are not limited to those described in 20.3.4.

20.6.2 Such factors shall be taken into consideration by the reporting practitioner when determining the strength of evidence provided by the practitioner.

20.6.3 A relevant reference collection (local, national or international) can be used to assist in the determination of the strength of evidence by the practitioner. However, its limitations must be recognised, and its admissibility may be questioned if the reference collection does not meet all of the following

criteria:

- a) It is available for use by both the prosecution and defence
- b) States the size of the population used
- c) States the appropriateness⁴³ to the case of the population used.

20.6.4 The likelihood of such reference collections being deemed admissible may be boosted if:

- a) It is also in the public domain
and/or
- b) Has been peer reviewed and published.

20.6.5 If a reference collection has been used to assist in the determination of the strength of evidence provided by the comparison this shall be made clear in the final report, and the reference collection identified.

20.6.6 In the absence of the use of a reference collection the final report shall contain a statement to the effect that the determination of the strength of evidence provided by the comparison is an opinion-based conclusion and is not predicated on numerical data or statistical calculation.

20.6.7 Where the expert provides an opinion based solely on their experience it is important that the statement make clear, in detail, the experience which allows the expert to proffer that opinion.

20.6.8 Wherever possible reference should be made to relevant peer reviewed publications that have investigated and established the reliability and limitations of methods used for feet in shoes examination.

20.6.9 The strength of evidence provided by the practitioner should be expressed using a published scale of verbal expressions of strength of evidence in support of one of two opposing propositions. Generally, the prosecution's proposition would take the form

⁴³ E.g. ethnicity, sex, age.

of 'the questioned footwear has been worn by the person who wears the reference footwear'. The alternative proposition is determined by the defence but in the majority of cases takes the form of 'the questioned footwear has not been worn by the person who wears the reference footwear'.⁴⁴

21. Peer review by another forensic practitioner

- 21.1.1 All casework shall be peer reviewed by another forensic practitioner, who is competent and experienced in the relevant discipline (either footprint and/or feet-in-shoes examination).
- 21.1.2 The role of the peer reviewer is crucial in establishing the validity of the examination. The Forensic Unit should refer to their Quality Management System and sections 15 and 16 of this document to determine who is suitable to conduct this role. For example, this may be performed by a practitioner from an external organisation.
- 21.1.3 The role of the peer reviewer is to independently verify the critical findings of the reporting practitioner (section 12) by reviewing whether:
- a) The processes used by the reporting practitioner for the analysis, comparison and evaluation are appropriate
 - b) All the meaningful information that could be used to form the final conclusion has been used
 - c) The strength of evidence determined by the reporting practitioner is justified and appropriate.
- 21.1.4 If in the opinion of the peer reviewer the three conditions listed in 21.1.3 are not met, the peer reviewer shall communicate that fact to the reporting practitioner. Discussion will then be undertaken between the peer reviewer and the reporting practitioner until agreement is reached as per the procedure. Any change of opinion during these discussions should only occur in the face of a compelling argument from

⁴⁴ This proposition can also be used in cases in which the defendant provides a 'No comment' interview, although it should be made clear in any report that this is a default position for the alternative.

the other examiner involved in the case.

- 21.1.5 Once agreement is reached between the peer reviewer and the reporting practitioner the final report shall be endorsed appropriately and dated by the reporting practitioner.
- 21.1.6 If no agreement can be reached, or there are areas of disagreement, the areas of disagreement should be documented and kept with other case related materials.
- 21.1.7 The peer reviewer may comment on other aspects of the final report, but the final report, other than the conditions listed in 21.1.3, is the sole responsibility of the reporting practitioner.

22. The report

- 22.1.1 Forensic Units in England and Wales are directed to part 19 of Criminal Procedure Rules and part 7 of the Criminal Practice Directions 2023 regarding statements of understanding and declarations of truth in expert witness reports.
- 22.1.2 Reporting practitioners who believe they comply with this standard for infrequently used methods, should insert the following in the report, in accordance with Criminal Practice Directions 2023 part 7.2.1 point 13; ‘I confirm that I have complied with the code of practice or conduct for experts of my discipline, namely [identify the code], in all respects save as identified in [schedule][annexe][x] to this report. That [schedule][annexe] gives details of the action taken to mitigate any risk of error that might arise as a result.’
- 22.1.3 Part 19.4 of the Criminal Procedure Rules ‘Content of Expert’s Report’ lists some of what an expert witness must include in their report in England and Wales.⁴⁵ There is a requirement to clearly set out any limitation or qualification to a finding or opinion given and include such information as the court may need to decide whether the

⁴⁵ These are not the only requirements; the Regulator has published additional guidance for the contents of expert reports in England and Wales currently available from: www.gov.uk/government/publications/expert-report-content-issue-4

expert's opinion is sufficiently reliable to be admissible as evidence. Departure from the requirements set out in this Code of Practice must be set out in the report; non-disclosure of any relevant information could seriously undermine the credibility of the evidence presented and the expert presenting it (see also the Criminal Procedure and Investigations Act 1996 disclosure obligations).

22.1.4 Where there is a range of opinion on the matters dealt with in the report, part 19.4(f) of the Criminal Procedure Rules requires the practitioner to summarise the range of opinion and give reasons for the expert's own opinion in their report. This includes any scientific literature at odds with the approach taken or authoritative guidance issued.

22.1.5 Likelihood ratios taken from the Association of Forensic Science Providers' verbal scale table should not be quoted in reports unless the expert is competent in the application of likelihood ratios. Where likelihood ratios are quoted, data used to support the approach should be disclosed. The approach must be admissible for the evidence type in the jurisdiction the report is intended.

23. Presentation of evidence

23.1.1 Forensic Units in England and Wales are directed to the Criminal Procedure Rules (Part 19) and the Criminal Practice Directions 2023 (Part 7), particularly in terms of admissibility of evidence.

23.1.2 Section 6.5 of FSR-C-118 'Development of Evaluative Opinion' (2021) states that *Part of role of the expert witness is to present the evidence in a way which transparently demonstrates its validity such that it can be deemed admissible to assist the court. The expert:*

- a) *Presents observations to the court;*
- b) *Provides information to assist the court in assessing the validity of those observations; and*
- c) *Provides evaluative opinion to help the court address disputed issues, with a clear*

account of the basis on which that opinion has been reached.

The document goes on to state that:

Any approach to interpretation of observations to develop an evaluative opinion must recognise that there are certain requirements and restrictions on what an expert may do:

- a) An expert shall only provide opinion within their area of expertise;*
- b) An expert shall not provide evidence of opinion in areas where such opinion is not required by the court. Put simply, the expert shall not give evidence when members of the jury are capable of dealing with the issue without assistance; and*
- c) An expert shall not comment on whether the accused is guilty or not guilty.*

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Glossary

Casefile

An electronic or physical folder that contains all records relating to a particular case.

Commissioning agency

The organisation or individual that requests and funds the forensic podology casework.

Critical findings

Observations and results that have a significant impact on the conclusions reached and the interpretation and opinion provided. They include those observations and results that could be interpreted differently by different forensic practitioners or observations and results that require the exhibit (or the original item examined as part of the initial comparison) to be accessible by the peer reviewer.

Developmental validation

The validation process that shall take place when a new method has been developed for use within the Forensic Unit.

Forensic practitioner

A practitioner that undertakes the analysis and/or comparison and/or evaluation of forensic material for the purposes of assisting the investigation of crime.

Forensic Unit

A legal entity or a defined part of a legal entity that performs any part of the forensic science process. For the purposes of this document, the term 'Forensic Unit' refers to any provider of forensic podology services whether a large organisation, a department within a large organisation, a small or medium-sized enterprise or a sole trader. The work undertaken by the Forensic Unit is not restricted to a laboratory environment.

Ground truth data

Data collected from a known source, in a controlled environment that offers accurate and reliable information that can be used to validate a method or process or inform levels of uncertainty.

Internal validation

Verifying that a method developed outside of the Forensic Unit is relevant to its intended use within the Forensic Unit and meets the end user requirements. Internal validation requires the Forensic Unit's own competent staff to perform the method at a given location.

Method validation

The process of providing objective evidence that a method or process is fit for the specific purpose intended.

Non-conformity

The non-fulfilment of a requirement, either within the organisation's policies, procedures or in the specification of the commissioning agency

Objective

Based on fact.

Peer reviewer

A forensic practitioner that undertakes an independent critical findings check of the analysis, comparison and evaluation of, and the methods used by, the reporting practitioner.

Preliminary assessment

The assessment of material that has been submitted for use in forensic podology, the purpose of which is to determine the suitability of the material as a source of information that can be used for investigative or evaluative purposes. A commissioning agency may request a report detailing the outcome of the preliminary assessment.

Preliminary assessor

A forensic practitioner that undertakes the assessment of materials, the purpose of which is to



determine the suitability of the materials as a source of information that can be used for investigative or evaluative purposes.

Proficiency testing

Tests to evaluate the competence of forensic practitioners and the quality performance of a forensic unit including:

- *Open or declared proficiency test*: a test in which the analysts are aware that they are being tested
- *Blind or undeclared proficiency test*: a test in which the analysts are not aware that they are being tested
- *External proficiency test*: a test conducted by an agency independent of the analysts or laboratory being tested.

Questioned material

Material from an unknown source that is under investigation, such as a crime scene footprint or footwear with an unknown owner/wearer.

Reference material

Material from a known source, such as a footprint or footwear, that is used for comparison against the unknown/questioned material.

Regulator

The term 'regulator' in this document refers to the UK Forensic Science Regulator for England and Wales, sponsored by the Home Office.

Reporting practitioner

A forensic practitioner that writes an expert witness report detailing for example, descriptions of exhibits, results, limitations, conclusions and a declaration of truth.

Subjective

Based on opinion.



Verification (linked with internal validation)

Confirmation, through the assessment of existing objective evidence or through experiment, that a method or process is fit (or remains fit) for the specific purpose intended. The Forensic Unit's competent staff shall evidence that they can perform the method at the given location.



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Appendix

Competencies and skills required to work in the field of forensic podology

The route to develop the skills and competencies required to work in the field of forensic podology may vary depending on the current skills and competence demonstrated by the candidate. For example, a qualified podiatrist would focus their development on gaining competence within the forensics discipline, whereas the qualified forensic practitioner would focus their attention on gaining competence in understanding the functioning foot and footwear. A suggested development route for a qualified podiatrist would be as follows:

- 1) Gaining knowledge of specific relevance to the practice of forensic podology. This could include M-level study in areas relevant to forensic podology practice, forensic science/forensic identification study covering forensic practice and its requirements, or through research, or demonstrable experience
- 2) Becoming competent as a forensic practitioner. In practical terms, this can be developed through a combination of approaches which would include:
 - a) Aspects of forensic science/forensic identification study, especially where portfolio-based learning requires training and reflective development in the area of expertise concerned
 - b) Repeated attendance at workshop, seminar, or conference-based training events
 - c) Course attendance in comparative analysis training
 - d) Formal expert witness course training
 - e) Assessed mock case working
 - f) Acting as a supervised assistant to another forensic podiatrist during their case work
 - g) Regular mentorship from a competent forensic practitioner.

Once the necessary skills and competencies have been developed, forensic podology practitioners would then be required to demonstrate both initial and continued competency on a cyclical basis. Please contact the FPSAG for further information.