Guidance: DNA contamination controls – Forensic medical examinations

FSR-GUI-0017

Issue 2

Publication date September 2025

This document is issued by the Forensic Science Regulator in line with Section 9(1) of the Forensic Science Regulator Act 2021.

© Crown Copyright 2025

The text in this document (excluding the Forensic Science Regulator's logo, any other logo, and material quoted from other sources) may be reproduced free of charge in any format or medium providing it is reproduced accurately and not used in a misleading context. The material must be acknowledged as Crown Copyright and its title specified.

This document is not subject to the Open Government Licence.

Contents

Contents 3

1. Introduction....5

1.1 DNA contamination 5

2. Scope 7

3. Terms and definitions 8

4. 4. Assessment of Risk 9

5. Personnel 9

5.1 Training and competence (Code section 22 and 91.4) 9

6. Facilities 10

6.1 General 10

6.2 Accommodation and environmental conditions (ISO 15189:2022 6.3, 6.4, 6.6; ILAC G19 3.12) 11

Layout 11

Furniture 12

Air quality and air flow 12

7. Contamination prevention....14

7.1 General 14

7.2 Cleaning....15

7.3 Environmental monitoring and gross contamination (ISO 15189:2022, sec 6.3) 17

8. Packaging and general materials 20

8.1 General 20

8.2 Packaging 20

8.3 Consumables 20

8.4 Equipment....22

8.5 Use Of Personal Protective Equipment....23

8.6 DNA Elimination Samples (ISO 15189:2022 6.3.1, 6.3.2)....25

9. Acknowledgements....26

10. Modification....26

11. Review....26

12. References....27

13. Additional Reading....29

14. Abbreviations....30

15. Glossary....30

1. Introduction

1.1 DNA contamination

1.1.1 For the purposes of the forensic medical examination (FME) DNA contamination can be defined as “the undesirable introduction of DNA, or biological material containing DNA, to an item/exhibit or sample during a forensic medical examination”. This is distinct from the adventitious transfer of biological material to an exhibit or sample that can occur, usually prior to the exhibit or sample being recovered.

1.1.2 Contamination may occur as follows:

a. Directly, also described as primary transfer (for example, saliva or dandruff from an examiner ending up on an exhibit/sample); or

b. Indirectly, also described as secondary or tertiary transfer (for example, biological material present on a drawer handle is transferred on to the gloves of an examiner who opens the drawer; the examiner fails to change their outer pair of gloves and then handles a DNA grade consumable, resulting in the indirect transfer of biological material from the handle of the drawer to the consumable).

1.1.3 The principal sources of DNA contamination in FMEs, are from:

a. a forensic healthcare practitioner (FHP) to the exhibit/sample;

b. contaminated consumables (for example, water, swabs, lubricant, personal protective equipment (PPE)/ barrier clothing) to the exhibit/ sample;

c. exhibit to exhibit or DNA sample to DNA sample; and

d. contaminated equipment not properly cleaned between each examination (for example, examination couch, scissors, pens, or specialist medical video-camera) to the exhibit/sample.

1.1.4 These guidelines provide good practice that is necessary because DNA techniques in routine use can readily generate profiles from DNA found in

minute saliva aerosols or in skin cells deposited on handled items [1]. Whilst this guidance relates to control of DNA contamination, many of the practices outlined could assist with reducing contamination in general, including from trace material contamination.

1.1.5 It is recognised that DNA contamination incidents cannot be eliminated completely, given the prevalence of human DNA within the living and working environment and the issue is exacerbated by the increasing sensitivity of DNA analytical techniques. Therefore, an effective DNA contamination control process requires a combination of approaches both to minimise the risk of occurrence and to maximise the ability to detect contamination when it does occur.

1.1.6 FME contamination control measures fall into two core areas of activity:

a. Preventative measures in the facility including:

i. Minimising the chance of contamination occurring, for example, FHPs and relevant personnel wearing PPE, ensuring those undergoing an FME are accompanied within the facility to the examination room in a manner which limits contamination opportunities;
ii. Ensuring effective separation of equipment and consumables from recovered items/exhibits and separation of items/exhibits from different individuals;
iii. Restricting access to areas containing exhibit and consumables;
iv. Restricting access to rooms used during the FME assessment and after cleaning;
v. Cleaning surfaces in examination rooms before or after use;
vi. Ensuring DNA critical consumables are free from detectable levels of DNA, based on a risk assessment, for example using consumables compliant with ISO 18385 [2] that are forensic DNA grade (FDG).
vii. Using recovery, sampling and packaging techniques which avoid contact with areas which are not part of the material of interest; and

viii. Ensuring equipment is adequately decontaminated between examinations based on risk assessment; and

ix. Ensuring FHPs and relevant personnel are aware of contamination risks and trained in the use of contamination control measures.

b. Detection of contamination (performed by FSPs) primarily by:

i. Comparison of DNA profiles generated from items against a database of reference DNA profiles from personnel from whom there is a significant risk of contamination (for example, police officers, forensic crime scene examiners; FHPs and manufacturers of consumables); and

ii. Comparison of DNA profiles generated from items to results detected from quality assurance (QA) testing of reagents and consumables (includes unused or moistened swabs) and from laboratory controls;

iii. Comparison of DNA profiles generated from checks on competency of efficacy of cleaning of critical equipment (high touch areas) and examination rooms;

iv. Comparison of DNA profiles generated from checks on suitability of the environment to operate in, for example, commissioning or recommissioning of FME rooms; and

v. Investigation of unexpected results.

2. Scope

2.1.1 The purpose of this document is to provide guidance for FHPs, crisis workers (CWs), police officers, and cleaners to minimise DNA contamination in the FME process in settings used routinely for police custody and for sexual assault examinations (e.g. sexual assault referral centres (SARC)).

2.1.2 The Forensic Science Regulator's Code of Practice (the Code) [3] applies to the FME of sexual offence complainants and compliance with the Code is required from 2nd October 2025. The Code applies to all healthcare

professionals providing forensic medical services including evidential sample collection and handling.

3. Terms and definitions

3.1.1 The terms and definitions set out in the statutory Code, and the glossary section apply to this document. Those in ILAC G19:06/2022 [4] 'Modules in a Forensic Science Process' apply where there is no corresponding definition set out in the Forensic Science Regulator's guidance and the Code.

3.1.2 As in the Code, in this guidance FHP is used to refer to forensic physicians (including paediatricians), forensic nurses, forensic midwives and paramedics. The term 'professional' is used to refer to other relevant roles such as crisis workers, and police investigators.

3.1.3 The word 'shall' has been used in this document where there is a corresponding requirement in the Code and/or ISO 15189:2022 [5]; the word 'should' has been used to indicate generally accepted practice where the reason for not complying, or any deviation, shall be recorded. The word 'may' has been used for recommendations [6] . Recommendations have been used to indicate what ideal practice is when it is practicable.

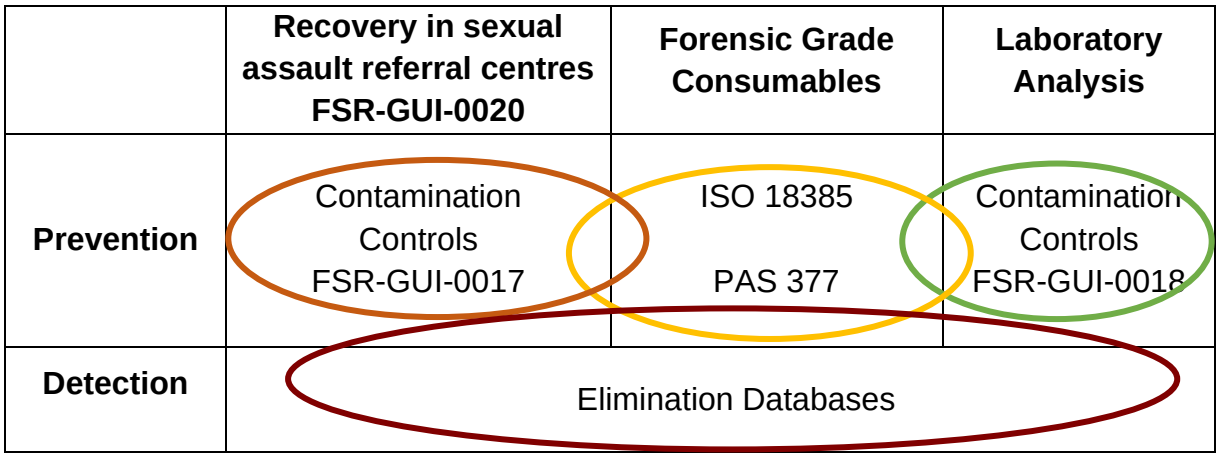

Figure 1: Interaction of prevention and detection principles across the DNA workflow from recovery of material to analysis

3.1.4 The interaction of the Forensic Science Regulator's guidance together with the DNA consumable standards BS ISO 18385 [2] and PAS 377 [7] is shown in Figure 1.

3.1.5 For the purpose of this document, the term 'patient' is used to refer to complainants who have alleged or are suspected to have been subjected to sexual assault and individuals alleged to have committed or suspected of committing offences against the person such as, sexual assault, grievous bodily harm and murder.

4. 4. Assessment of Risk

4.1.1 A risk based approach should be taken to ensure the forensic integrity of forensic evidence.

4.1.2 The risk of contamination to the forensic evidence should be assessed for every step of the forensic process and mitigations put in place which are proportionate to the risks identified. The contamination control measures taken should be justified based on this assessment of risk.

4.1.3 Any deviations from the facility's SOPs made to accommodate the patient' health and welfare needs will be determined on a risk-derived approach based using professional judgement and documented.

5. Personnel

5.1 Training and competence (Code section 22 and 91.4)

5.1.1 This guidance should be introduced to all relevant personnel with a reason the enter a designated DNA clean area and should form part of their induction training.

5.1.2 Issues relating to contamination risks and their avoidance in specific processes, e.g., the use of personal items, and methods should be an integral part of training of FHP and other personnel /staff who have reason to access DNA clean areas at the facility, e.g. the forensic medical examination room.

5.1.3 Those who undertake forensic cleaning activities should be deemed as competent to do so and show knowledge and understanding of the requirements of safe handling and storage of cleaning products and equipment.

5.1.4 When competencies are assessed, assessors should ensure that the contamination risks of any process and the means of avoidance are fully understood and demonstrated.

6. Facilities

6.1 General

6.1.1 As a minimum this guidance applies to any room or area used for receiving patients for examination, medical examination and/or sample collection.

6.1.2 Rooms used to conduct the FME should be designated as a 'DNA clean area' and DNA contamination control practices in place, this room/s should be secure and access restricted to authorised personnel.

6.1.3 A log should be maintained to record use of the DNA clean area, including the date and time when each patient (SARC case reference) was examined, the name(s) of the FHP(s)and any others in attendance.

6.1.4 There shall be a named person within the facility with responsibility for ensuring a suitable environment is provided to support the quality standards (the Code, section 91.2). This will enable the FHP to carry out their duties appropriately, without compromising the integrity of any material or samples recovered. Any quality issues should be reported and escalated as appropriate.

6.1.5 The requisite health and safety checks should be carried out for the use of the facility including use of the cleaning reagents.

6.2 Accommodation and environmental conditions (ISO 15189:2022 6.3, 6.4, 6.6; ILAC G19 3.12)

6.2.1 A dedicated FME room should be used solely for the FME and be designated 'DNA clean' in readiness for use.

6.2.2 The style and finish of fixtures and fittings, such as air-conditioning, ceilings, lighting and working space shall allow for effective repeat cleaning as required by the Code (section 91.4.9).

6.2.3 The furnishings, equipment, reagents and consumables which are utilised within the facility should minimise the risk of DNA contamination. The Faculty of Forensic & Legal Medicine (FFLM) has provided guidance on the equipment for use in FME rooms [8].

Layout

6.2.4 The ideal set up for a DNA clean FME room should include:

a. A designated area for the patient's outer clothing, separate from the FME area.

b. Controlled access;

c. The layout of the FME room should effectively shield the patient from the non-medical personnel (e.g., interpreters, social workers) during the examination and sample recovery stage to avoid cross-contamination from these individuals;

d. Walls and ceilings of smooth finish sealed and resistant to degradation from frequent cleaning. The active agent, corrosive nature and downstream effects of the cleaning materials used need to be understood; surfaces need to be resistant to degradation, as a result of frequent contact with the cleaning reagents;

e. Suitable floor covering, of a material to be cleaned frequently, which will be, for example, sealed vinyl, ideally continuing some way up the wall for ease of cleaning.

f. Curved coving at the junctions between the floors, walls, and ceiling to avoid crevices which are difficult to clean; and

g. Sealed window glazing to prevent draughts and ideally the sills should be sloped with an easily cleanable surface. Where blinds are required, ideally these should not be on the inside of the window. Draughts and strong air currents (such as from heating and cooling units) should be avoided.

Furniture

6.2.5 Furniture in the FME room should be readily cleanable and resistant to frequent cleaning.

6.2.6 Drawer units should provide sufficient storage capacity to enable work surfaces to be kept clear, other than for large or frequently used equipment.

Air quality and air flow

6.2.7 Airflow within and between designated forensic areas of the facility shall be kept to a level which minimises the risk of contamination from environmental DNA (the Code section 91.4.7).

6.2.8 The movement of air in and out of the FME room should be balanced. If there is a difference in pressure then there should be positive pressure within the examination area, so that air is not drawn in from outside the room. Figure 2 provides a simple diagram to show the ideal airflow through a FME room to reduce the risk of DNA contamination.

6.2.9 Any air conditioning and or ventilation system shall be designed to minimise the risk of cross-contamination from other parts of the building and the control of airflow to minimise draughts (the Code section 91.4.7).

6.2.10 A minimum airflow of 10 times whole room replacement per hour should be used, in line with recommendations for medical general treatment facilities. The clean air should enter the room, for example, a sock diffuser to reduce air wafts with extraction near door/exit.

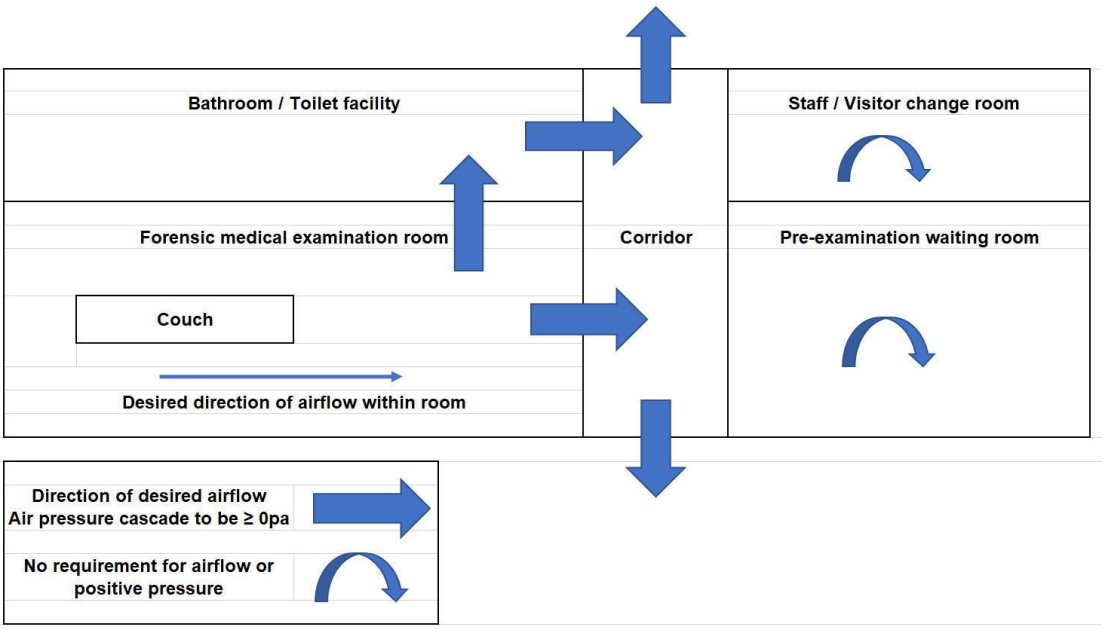

Figure 2: Example of a simple schematic of relative airflow direction and pressure for layout for an FME room.

6.2.11 Air conditioning and/or ventilation should also be considered to ensure patient's well-being and provide facilities that consider the comfort and needs of patients and those accompanying them (ISO 15189, sec 4.3 and 6.3.5).

6.2.12 Where the recommendation at 6.2.9 is not met, additional assurance that the risk of airborne contamination is being managed should be provided. Through EM or the environment could be monitored for airborne contamination using a process negative control (in which a moistened control swab is exposed to the medical examination environment during and/or after the examination process), the frequency of this monitoring should be based on an assessment of risk.

6.2.13 Where physical building changes or new build has been identified or is necessary then the requirements set out in the Code sections 91.4.3 to 91.4.9 apply.

7. Contamination prevention

7.1 General

7.1.1 Section 23.3 of the Code provides detailed requirements on contamination avoidance, monitoring and detection and describe steps to be taken to establish procedures relevant to contamination control. These include conducting a hazard or risk-based analysis (for example, process mapping) with respect to contamination.

7.1.2 The following conditions to prevent cross-contamination between complainants and suspects should apply:

a. The FHP undertaking the FME of a complainant should not provide any medical examination or any other service to the alleged suspect in the same case, for example, where the suspect is in custody and vice versa;

b. Where the provider of FHPs delivers services to both SARC and custodial settings, there shall be separate rotas in operation to ensure the practitioner available for sexual offence FMEs of complainants is not used for custody medicine at that time (Code section 91.6.6);

c. Policies and procedures should be in place to manage the risk of cross-contamination in cases where multiple patients from the same alleged crime attend the SARC at the same time, or multiple suspects from the same alleged crime are in custody at the same time. Procedures should be reviewed on a case-by-case basis to reflect the case circumstances, for example, the involvement of siblings may have different considerations to those of unrelated individuals; and

d. In cases with multiple suspects, and complainants the appropriate information should be documented and shared with the relevant parties and disclosed in any subsequent report or statement.

7.2 Cleaning

7.2.1 Forensic medical facilities should be cleaned using cleaning equipment dedicated solely for use in each DNA clean area and using a method validated as being effective at reducing the level of DNA. Where a method has been validated centrally this should be verified to demonstrate it remains fit of purpose at the location used, this can be achieved through EM.

7.2.2 Verification of the efficacy of the cleaning processes should include sampling by an individual not involved in the cleaning process. This should be post cleaning and prior to use. Any profiles obtained should only be checked against the relevant facility personnel, including those conducting the cleaning, to facilitate assessing whether the cleaning is effective and whether the cleaning personnel are inadvertently transferring their DNA. It might be necessary for a check against consumable manufacturing elimination databases (conducted by FSPs) to exclude consumables as the source for unknown profiles.

7.2.3 It is also essential to ensure consideration is given to the health and safety implications of using these cleaning regimes, which should be risk assessed and safe systems of work established prior to use.

7.2.4 Validated cleaning methods have shown that double spray and wipe is effective [9].

7.2.5 The forensic medical room should be sealed or locked after each clean and the door labelled to identify the status of the room. Consideration for the requirement for cleaning before use if the room is sealed and unused for prolonged periods of time between cleans.

7.2.6 The date of cleaning, (time if appropriate) and by whom shall be recorded in the cleaning logs and retained (the Code section 91.4.10d).

Minimum cleaning requirements

7.2.7 Between the examination of a patient, the following should be cleaned:

a. Work surfaces – all surfaces which may either directly or indirectly come into contact with the patient, consumables, or exhibits, during sample recovery activities. These surfaces should also be cleaned.

b. Individual pieces of equipment including:

   i. pens;
   ii. examination couch;
   iii. mobile examination light with magnifying lens; and
   iv. special medical video-camera with attachments for photo-documentation.

c. IT equipment (graphic pads and pens, and keyboards).

7.2.8 On a weekly basis (assuming there has been no gross contamination with body fluid material, for example, blood) the following should be cleaned:

a. floors;

b. equipment such as sphygmomanometers, computers, keyboards, and all exposed cables; and

c. all contact surfaces such as cupboards and door handles.

7.2.9 A deep clean should be undertaken at regular intervals, for example every three months. The frequency and the areas included in this clean should be determined by the facility using a risk assessment that demonstrates contamination is sufficiently well-managed. The deep clean should include the areas listed above and areas not already covered by the other cleaning:

a. lights and vents;

b. walls and ceiling;

c. windows and blinds; and

d. the insides of cupboards and drawers.

7.2.10 Cleaning or replacement of air filters should be undertaken at a frequency recommended by the manufacturers.

7.2.11 For rooms which are used on an infrequent basis a risk assessment should be used to determine when a clean is required which may include data from EM prior to re-commencing use.

7.2.12 Where a spill or leak of biological material occurs, depending on the circumstances and extent of the spillage, it may be appropriate to undertake additional cleaning of the affected area to provide additional mitigation.

7.3 Environmental monitoring and gross contamination (ISO 15189:2022, sec 6.3)

7.3.1 The principle of EM is to undertake an initial programme of testing on a periodic basis to check particular rooms or areas are DNA clean and to assess whether the decontamination policy for the area in question is effective and has been carried out properly.

7.3.2 The EM sampling regime should reflect the risk profile of the activities being carried out and be proportionate to the risk. The areas which should be sampled vary according to the function of the area.

7.3.3 The person collecting the EM samples (for example, swabs) should be different to the person who undertakes the cleaning. The forensic service provider (FSP) undertaking the EM sample testing should be able to advise on the level of gross contamination from the results obtained. The service level/turnaround times specified in contracts with the DNA EM sample testing provider(s) should be short e.g., within 7 working days. This allows for any contamination issues to be identified as early as possible, so that the facility can take immediate action.

7.3.4 EM samples taken soon after a deep clean provides the assurance of the efficacy of the cleaning (existing and new method of cleaning) and approval to use the environment in the case of new or refurbished facilities.

7.3.5 EM samples should take the form of a dip sample exercise and be conducted between deep cleans, determined by risk and usage; this may be done by using monitoring forms with pre-printed sample collection sites. Initially the monitoring should be carried out monthly to build a picture of the

background level of DNA across the operational work areas and to achieve a steady state of acceptable levels. Based on the results returned, the frequency of the sampling and/or cleaning can be adjusted, and areas targeted based on risk and previous results.

7.3.6 Samples should be taken by swabbing selected areas, (for example the work bench, the sample trolley and the examination couch) and areas of equipment which are in direct contact with operators, patients at all stages of the FME process.

7.3.7 Table 1 sets out the criteria for evaluating the EM results [10].

Category	Quant Score (ng/µl)	Allele Count	Action based on risk of location*		
			Low Risk	Medium Risk	High Risk
Green	Quant Score ≤ 0.0002	≤10 alleles above the limit of detection	1	1	1
Amber	Quant Score > 0.0002 < 0.004	>10 and <35 alleles above the limit of detection	1	2	2
Red	Quant Score ≥ 0.004	≥35 alleles above the limit of detection	2	3	3

*Action No.	Action
1	No action required
2	FSP Action: EM sample requires assessment: check against SED Facility Action: Area cleaned
3	FSP Action: EM sample requires profiling and checked against the SED Facility Action: Area cleaned and re-sampled. If possible, the item will be quarantined pending results of re-sampling, where an item is replaceable e.g., a sharps bin, it should be disposed of instead of cleaning and re-sampling.

Table 1: Criteria for evaluating environmental monitoring results

7.3.8 Where red category contamination has been identified on an EM sample taken from a high or medium risk location in the room or high/medium risk equipment should be cleaned using the validated method and re-tested until a green category result is obtained. If the contaminant was detected on an

item of equipment, this should either be removed from use or additional precautions taken until a green category result is obtained.

7.3.9 If after cleaning and retesting, the repeated EM results still show a red category contamination on either/or medium and high risk locations or equipment, the facility management should either:

a. investigate to identify the root cause and implement corrective procedures; or

b. utilise an external reviewer to look at the results, policies, and processes [11].

7.3.10 All level 2 and 3 actions require profiling of the sample and checking against the FSP staff and the facility personnel, including those conducting the cleaning, to facilitate assessing whether:

a. the cleaning staff inadvertently transferred their DNA; or

b. the cleaning is ineffective by the level of unknown DNA sources detected; or

c. DNA has been introduced by the FSP.

It might be necessary for a check against consumable manufacturing elimination databases as part of any root cause analysis, this is carried out by the FSPs.

7.3.11 For example, if all areas tested consistently returned green results, the low-risk areas could be discontinued, the frequency of the medium risk areas could be reduced e.g. to every 6 months and high-risk areas reduced to every 3 months. In order to monitor and identify problem areas or other trends, all results should be recorded and a trend analysis completed and this data used to determine the appropriate frequency of EM and risk ratings for the different areas updated based on the EM results.

7.3.12 Once assurance has been demonstrated cleaning is effective and the risk of contamination from these areas of the environment are significantly low

then EM can focus on high-risk areas until a body of evidence supports accepting risks should EM cease.

8. Packaging and general materials

8.1 General

8.1.1 Any sample, packaging and/or collection kits used shall be fit for their intended purpose (the Code section 18.1.1). This can be demonstrated by consumable manufacturers and kit assemblers meeting the requirements set out for FDG consumables in BS ISO 18385 [2] and/or PAS 377:2023 [7] see also section 8.3 of this guidance.

8.1.2 Areas used for the storage and handling of consumables, samples and exhibits shall be secure and access shall be restricted to authorised personnel only (the Code section 91.4.4).

8.2 Packaging

8.2.1 The packaging of collected material should preserve the integrity of the potential material for FME and minimise the risk of loss, degradation or contamination. As a minimum this should include:

a. Separate packaging of items where the packaging of items together is likely to compromise them;

b. Appropriate packaging for the size, condition and forensic analysis requirements of the material recovered; and

c. Secure sealing of exhibit packaging.

8.3 Consumables

8.3.1 Consumables are single-use commodities used in the collection, preservation and processing of material for forensic analysis, and are bought and used routinely. These include PPE, tamper evident containers, swabs, collection kits based on FFLM recommendations [12] and validated [13] , and packaging which comes into direct contact with the material for

forensic analysis. A consumable can also be equipment used in the collection, processing and safe handling of the material, for example, disposable tweezers or scissors.

8.3.2 Precautions should be in place to minimise the contamination of consumables prior to use, these include secure storage, restricted access, steps to minimise the chance the handler causes inadvertent DNA contamination and the risk of DNA being transferred from adjacent items or the storage environment [14].

8.3.3 The facility shall carry out continuous assessment of consumables which come into direct contact with material for forensic analysis (such as swabs and water) to address ongoing acceptance for use (ISO 15189, [5] sec 6.6.3, 6.6.7d). The facility will need to establish the frequency of this assessment based on their own risk assessment and taking into account their previous findings. Note that batch testing of FDG consumables on receipt or point-of-use testing is not required. Confirmation of acceptance for use should include:

a. Confirmation the consumables are forensic DNA grade, either:
   i. through use of consumables compliant with PAS 377 [7] and/or ISO 18385 [2], and confirmation the certificate has been received and relates to the batch received; or
   ii. confirmation they have undergone post-production treatment and the batch has been tested to confirm it is DNA free;
b. Confirmation the packaging was intact and the consumables could not have been compromised;
c. A check of the integrity and condition of consumables before use (i.e. the seal on a swab is not broken). Consumables should not be used if they may have been compromised;
d. A check that the consumable remains within its expiry date;
e. Auditing of facilities and processes for the receipt, storage, and use of consumables;

8.3.4 Consumables should be stored in a dedicated storage area outside the FME room. Where consumables are stored within the medical room for back up purposes, or as a necessity (for example in custody) these should be kept in cleanable, sealed container/s and a facemask and clean gloves should be worn when opening and removing consumables.

8.3.5 The use of barrier clothing/PPE is detailed in section 8.5; it is required to minimise contamination and should be single use.

8.3.6 As stated in the Code (section 92.2.1) consumables used for the recovery of samples for DNA analysis shall be demonstrated to be forensic DNA grade through supplier compliance with PAS 377 [7] and/or ISO 18385 [2] and evidence of assurance testing by the supplier which negates the need for end user batch testing (the Code, sec 92.2.3).

8.3.7 A record of the batch/lot information and expiry date of consumables should be recorded and traceable to the examination in which they have been used.

8.3.8 To avoid accidental use of the wrong grade of consumable, FDG consumables to be used for the recovery of DNA evidence should be identifiable and kept separately from non-forensic DNA grade consumables.

8.3.9 Consumables (including PPE) and reagents used should not be past their expiry date, unless it is verified, they remain fit for purpose beyond that date (the Code section 28.2.1).

8.4 Equipment

8.4.1 Equipment which may come into contact with surfaces or areas where DNA may be recovered (e.g., special medical video-camera) should be cleaned using a method demonstrated to be effective at reducing DNA. A cleaning log of such equipment should be kept.

8.4.2 Based on the facility's risk assessment, wherever possible, the use of re-usable equipment (for example, tweezers, scissors or pens) should be avoided wherever possible.

8.4.3 The Code requires that policy and procedures are in place for the decontamination of reusable equipment (for example, special medical video- camera, stethoscope, computer keyboards, mouse) (section 91.12.2d). Re-usable equipment shall be decontaminated between each examination.

8.4.4 The Code also requires policy and procedures to include the use of cleaning method demonstrated to be effective in removing or denaturing DNA (section 91.12.2b), this is not intended to address infection control measures. Cleaning methods should not interfere with downstream DNA processing. Cleaning process examples are as follows.

a. Items not suitable for immersion in fluid without being damaged should be thoroughly cleaned using disposable cleaning roll or wipes liberally wetted with a chemical which inactivates and reduces DNA. If equipment will have direct contact with sampling materials or has health and safety implications then the cleaning process should ensure that all residues of the cleaning agent is removed, for example, by cleaning with ‘sterile’ water or DNA free water, (if available). Where equipment or items are susceptible to corrosion, then an appropriate cleaning agent which does not corrode or appropriate barrier used on the equipment that is suitable for cleaning should be used.

b. Small items thought to be contaminated which are suitable for immersion in fluid without damaging them should be submerged in a cleaning agent, scrubbed/wiped down to remove material. If equipment will have direct contact with sampling materials or has health and safety implications then it should be rinsed in sterile distilled water and placed in clean sealed protective packaging, (for example, bag, plastic box) in readiness for the next use.

8.5 Use Of Personal Protective Equipment

8.5.1 Persons not critical to the examination or support of the patient being examined should be excluded where possible, for example, police and

family members. As required by the Code (section 91.11.4) everyone present during an examination shall wear PPE, which shall be changed between the examination of each patient.

8.5.2 PPE should include as a minimum:

a. Disposable barrier clothing: such as lab coats, scrubs or aprons and disposable sleeve covers, this should cover all clothing or skin.

b. Gloves: Two pairs of disposable non-latex, powder-free gloves (for example, nitrile). The outer pair of gloves should be changed; between sampling different areas; before handling equipment; or after touching frequently touched surfaces, such as taps, door handles, bins, curtains. The outer pair of gloves should also be changed after manoeuvring the curtain around the couch regardless of whether it is a disposable curtain or not.

c. Face mask, mob cap, and clogs or overshoes: it is preferable these are worn as a minimum. Ideally a pinch-nose type face mask should be used and talking should be kept to a minimum when recovering DNA samples.

8.5.3 Hands should be decontaminated by washing with liquid soap using good hand washing technique [15] before donning gloves and following their removal. If taking blood sample for alcohol analysis then avoid using alcohol hand rub.

8.5.4 For cleaning activities and examinations where samples for DNA are being recovered, the following protective barrier clothing should be worn and put on in the following order:

a. Face mask.

b. Overshoes.

c. Mob cap.

d. Inner base gloves.

e. Disposable lab coat, ‘scrubs’, or apron and sleeve covers.

f. Outer gloves.

8.5.5 The protective barrier clothing should be disposed of appropriately after use.

8.6 DNA Elimination Samples (ISO 15189:2022 6.3.1, 6.3.2)

8.6.1 Any individual entering a DNA clean facility may inadvertently introduce their DNA into the environment. This may subsequently contaminate an exhibit or sample which may mislead an investigation, waste resources and cause unnecessary delay. Contamination of samples could render any subsequent results unusable or inconclusive for the case and in turn have a detrimental impact on the patient. The provision of an elimination sample, and the use of a searchable elimination database assists in detecting contamination and ensuring the relevance of detected DNA profiles.

8.6.2 As required by the Code (section 91.11.6) the facility shall require a DNA elimination sample from all personnel who work at the facility prior to entering the FME area of the facility and addition of their DNA profile to a DNA elimination database(s). This includes (but is not limited to) FHPs, professionals such as crisis workers, and cleaning personnel. All other attendees entering the facility, (including the patient, whether police-referral or self-referral cases, interpreters, contractors, friends and family) should provide a DNA elimination sample prior to entry, or their details and contact information recorded in case there is a need to request a sample at a later date for contamination elimination purposes. Consideration should be given to excluding from the FME room any individual(s) who are not willing to provide their details, where this does not impact the patient's decision to undergo a medical examination.

8.6.3 Section 91.11.8 of the Code gives requirements for policy and procedures for the management of elimination samples.

8.6.4 There should be policies and procedures in place for taking and managing DNA elimination samples and the investigation of any identified contamination.

9. Acknowledgements

9.1.1 This guidance has been updated by the Office of the Forensic Science Regulator, the Faculty of Forensic & Legal Medicine, The Havens, the Forensic Capability Network and reviewed by the Forensic Science Regulator's Medical Forensics Specialist Group.

10. Modification

10.1.1 This is the second issue of this document.

10.1.2 The Regulator uses an identification system for all documents. In the normal sequence of documents this identifier is of the form 'FSR-###-####' where (a) (the first three '#') indicates letters to describe the type of document and (b) the second four '#' indicates a numerical code to identify the document. For example, this document is FSR-GUI-0017, and the 'GUI' indicates that it is a guidance document. Combined with the issue number this ensures that each document is uniquely identified.

10.1.3 If it is necessary to publish a modified version of a document (for example, a version in a different language), then the modified version will have an additional letter at the end of the unique identifier. The identifier thus becoming FSR-#-####.

10.1.4 In all cases the normal document bearing the identifier FSR-#-### is to be taken as the definitive version. In the event of any discrepancy between the normal version and a modified version then the text of the normal version shall prevail.

11. Review

11.1.1 The Forensic Science Regulator welcomes comments. Please send them to the address as set out at: Forensic Science Regulator - GOV.UK or email: FSREnquiries@forensicscienceregulator.gov.uk

12. References

[1] R. A. H. van Oorschot, G. E. Meakin, B. Kokshoorn, M. Goray and B. Szkuta, “DNA Transfer in Forensic Science: Recent Progress towards Meeting Challenges.,” *Genes,* vol. 12, no. 11, p. 1766, 2021.

[2] International Organization for Standardization, BS ISO 18385 Minimising the risk of human DNA contamination in products used to collect, store and analyse biological material for forensic purposes - Requirements.

[3] Forensic Science Regulator, “Forensic Science Regulator: Code of Practice- version 2,” [Online]. Available: https://www.gov.uk/government/publications/forensic-science-activities-statutory-code-of-practice-version-2. [Accessed 01 08 2025].

[4] International Laboratory Accreditation Cooperation, “ILAC G19:06/2022 Modules in a Forensic Science Process: International Laboratory Accreditation Cooperation,” [Online]. Available: https://ilac.org/publications-and-resources/ilac-guidance-series/. [Accessed 11 09 2025].

[5] International Organization for Standardization, BS EN ISO 15189:2022 Medical Laboratories - Requirements for quality and competence.

[6] General Medical Council, “Good medical practice,” [Online]. Available: https://www.gmc-uk.org/professional-standards/the-professional-standards/good-medical-practice. [Accessed 18 08 2025].

[7] British Standards Institute, “PAS 377 - Consumables used in the collection, preservation and processing of material for forensic

analysis – Product, manufacturing and forensic kit assembly – Specification," [Online]. Available: https://www.bsigroup.com/en-GB/insights-and-media/insights/brochures/pas-377-product-manufacturing-and-forensic-kit-assembly-specification/. [Accessed 11 09 2025].

[8] Faculty of Forensic & Legal Medicine, "Recommendations - Operational procedures and equipment for clinical rooms," [Online]. Available: https://fflm.ac.uk/resources/publications/recommendations-operational-procedures-and-equipment-for-clinical-rooms/. [Accessed 11 09 2025].

[9] M. Gaskell, L. Clifford, A. Jones, G. O. Hannford and K. Sullivan, "Validation of forensic cleaning processes undertaken within Sexual Assault Referral Centres.," *J Forensic Leg Med.,* pre-publication.

[10] M. Gaskell, J. Guiness and K. Sullivan, "Understanding and mitigating the risks that environmental DNA contamination poses to the recovery of forensic evidence from victims and suspects of rape and sexual assault," *Jornal of Forensic and Legal Medicine,* vol. 114, no. 1752-928X, p. 102911, 2025.

[11] P. A. Smith, K. Jetten and C. Lovell , "Set up to 'fail'? Implementing contamination minimisation procedures and environmental monitoring in a Sexual Assault Referral Centre," *Journal of Forensic and Legal Medicine,* vol. 90, 2022.

[12] FFLM, "Recommended equipment for obtaining forensic samples from complainants and suspects," Faculty of Forensic & Legal Medicine, 16 01 2025. [Online]. Available: https://fflm.ac.uk/resources/publications/recommended-

equipment-for-obtaining-forensic-samples-from-complainants-and-suspects/. [Accessed 04 08 2025].

[13] M. Gaskell, J. Guiness and K. Sullivan, “Validation of consumables used in the recovery of DNA evidence within Sexual Assault Referral Centres (SARCs),” *Forensic Science International: Synergy,* vol. 9, p. 100559, 2024.

[14] A. E. Fonneløp, H. Johannessen , T. Egeland and P. Gill, “Contamination during criminal investigation: Detecting police contamination and secondary DNA transfer from evidence bags,” *Forensic Science International: Genetics,* vol. 23, pp. 121-129, 2016.

[15] F. Sessa, E. Panepinto, M. Salerno, M. Chisari, M. Esposito, G. Cocimano and C. Pomara, “Impact of liquid antibacterial soap and hand sanitizer on DNA transfer in forensic investigations: an experimental study,” *Forensic Sciences Research,* vol. 10, no. 2, 2025.

13. Additional Reading

Ballantyne, K., Salemi, R., Guarino, F., Pearson, J., Garlepp, D., Fowler, S. and van Oorschot, R. (2015) DNA contamination minimisation – finding an effective cleaning method, Australian Journal of Forensic Sciences, vol. 47, issue 4, pp 428–439.

National Institute of Justice Forensic Technology Center of Excellence, (2011) Comparison Study of Disinfectants for Decontamination, Award No. 2010-DN-BX-K210. Available from: https://fliphtml5.com/oqoc/wqnc/basic/ [Accessed 23 11 23].

Nittis, M., Stark, M. (2014) ‘Evidence based practice: Laboratory feedback informs forensic specimen collection in NSW’, Journal of Forensic and Legal Medicine, Vol. 25, pp38-44.

14. Abbreviations

Abbreviation	Meaning
CPS	Crown Prosecution Service
CW	Crisis Worker
DNA	Deoxyribonucleic acid
EM	Environmental Monitoring
FFLM	Faculty of Forensic & Legal Medicine of the Royal College of Physicians
FDG	Forensic DNA Grade
FHP	Forensic Healthcare Practitioner
FSP	Forensic Service Provider
FME	Forensic Medical Examination
FSR	Forensic Science Regulator
HCP	Healthcare Professional
ISO	International Organisation for Standardization
PPE	Personal Protective Equipment
SARC	Sexual Assault Referral Centre

15. Glossary

Facility	The physical environment used for any medical examination and sample collection, which in part is a forensic unit.

Published by:

The Forensic Science Regulator

23 Stephenson Street

Birmingham

B2 4BJ.

www.gov.uk/government/organisations/forensic-science-regulator