Guidance: DNA contamination controls – Forensic medical examinations

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Issue 1

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Contents

1. Introduction

1.1 DNA contamination

1.1.1 DNA Contamination is 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 forensic medical examinations are from:

a. a forensic healthcare practitioner to the exhibit/sample;

b. contaminated consumables (for example, water, swabs, tubes, 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 for good practice are 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. 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 Forensic medical examination contamination control measures fall into two core areas of activity:

a. Preventative measures including:

i. Minimising the chance of contamination occurring, for example, forensic healthcare practitioners and relevant personnel wearing personal protective equipment (PPE), ensuring that those undergoing a forensic medical examination are conveyed to the examination room in a manner that 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 forensic medical assessment and after cleaning;
v. Cleaning surfaces in examination rooms before and/or after use;
vi. Ensuring critical consumables are free from detectable levels of DNA based on risk assessment (for example, consumables compliant with PAS 377:2023 [1].
vii. Using recovery, sampling and packaging techniques that avoid contact with areas that are not part of the material of interest; and

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

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

b. Detection of contamination 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; forensic healthcare practitioners 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 and from laboratory controls;

iii. Environmental monitoring of examination rooms;

iv. Investigation of unexpected results

2. Scope

2.1.1 The purpose of this document is to provide guidance for forensic healthcare practitioners to minimise DNA contamination in the forensic medical examination 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) [2] applies to Forensic examination of sexual offence complainants and compliance with the Code is required within 24 months from the date the Code came into force (2 October 2023). The Code applies to all healthcare professionals (HCP) providing forensic medical services including evidential sample collection.

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 [3] '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 forensic healthcare practitioner is used to refer to forensic physicians (e.g. 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 ISO 15189:2022 [4] and/or the Code; 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. Recommendations have been used to indicate what ideal practice is when it is practicable.

3.1.4 The interaction of the Forensic Science Regulator's guidance together with the DNA consumable standards PAS 377:2023 [1] and BS ISO 18385:2016 [5] is shown in Figure 1.

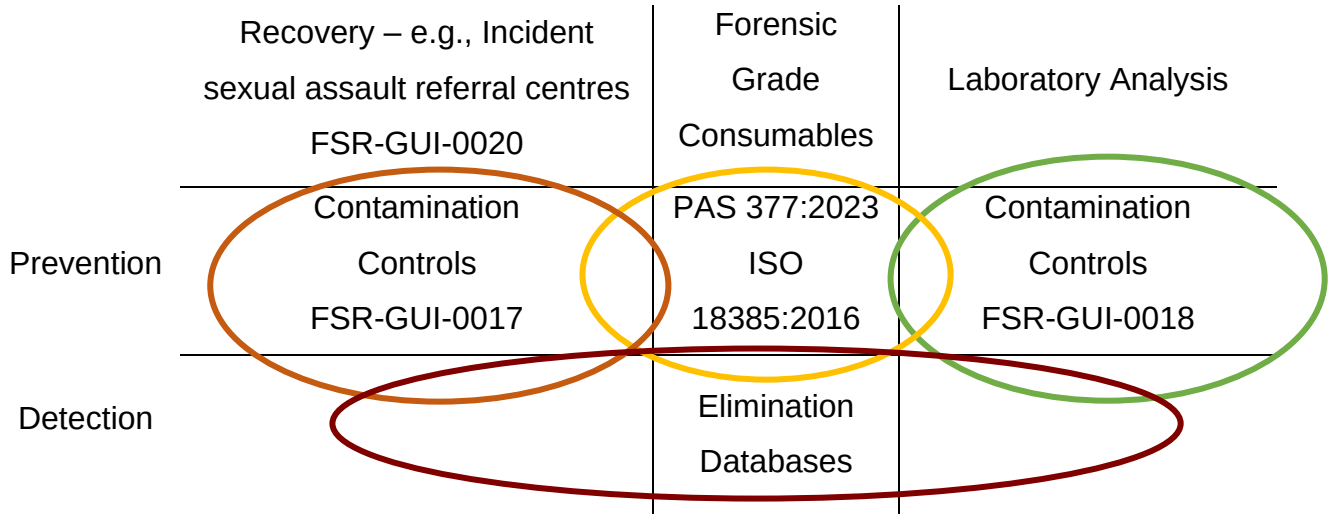

Figure 1: Interaction of prevention and detection principles across the DNA workflow from recovery of material to analysis

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. Personnel

4.1 Training and competence (Code sections 28 and 102.5.1)

4.1.1 This guidance should be introduced to all relevant personnel and should form part of their induction training.

4.1.2 Issues relating to contamination risks and their avoidance in specific processes and methods should be an integral part of forensic medical practitioner training.

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

5. Facilities

5.1 General

5.1.1 Rooms used to conduct the forensic medical examinations should be designated as a ‘DNA clean area’ and DNA anti-contamination practices in place.

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

5.1.3 The room designated as a ‘DNA clean area’ should be secure and access restricted to authorised personnel.

5.1.4 A log should be maintained to record use of the DNA clean area, including the date and time when each patient was examined, the name(s) of the forensic medical practitioner(s) and any others in attendance.

5.1.5 There shall be a named person within the facility with responsibility for ensuring that a suitable environment is provided to support the quality standards (the Code, section 102.3.1). This will enable the forensic medical practitioner to carry out their duties appropriately, without compromising the integrity of any

material or samples recovered. Any quality issues should be reported to this named person and for police owned facilities should include informing the police forensic submissions/science unit appropriate.

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

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

5.2.1 An identified room where the forensic medical examination or sample collection will take place should be designated the ‘forensic medical examination’ or ‘DNA clean area’ in readiness for use.

5.2.2 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 102.5.9).

5.2.3 The furnishings, equipment, reagents and consumables that 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 forensic medical examination rooms [6].

Layout

5.2.4 The ideal set up for a DNA clean forensic medical examination room should include:

a. A designated area for the patient’s outer clothing, separate from the forensic medical examination area.

b. Controlled access

c. The layout of the forensic medical examination 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 from 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. Readily cleanable flooring material, for example fully sealed vinyl, ideally continuing part way up the wall for ease of cleaning.

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

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 portable fans) should be avoided.

Furniture

5.2.5 Furniture in the medical examination room should be readily cleanable and resistant to frequent cleaning.

5.2.6 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

5.2.7 Airflow within and between designated forensic areas of the facility shall be kept to a level that minimises the risk of contamination from environmental DNA (the Code section 102.5.7).

5.2.8 The movement of air in and out of the forensic medical examination 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 1 provides a simple diagram to show the ideal airflow through a medical examination room to reduce the risk of DNA contamination.

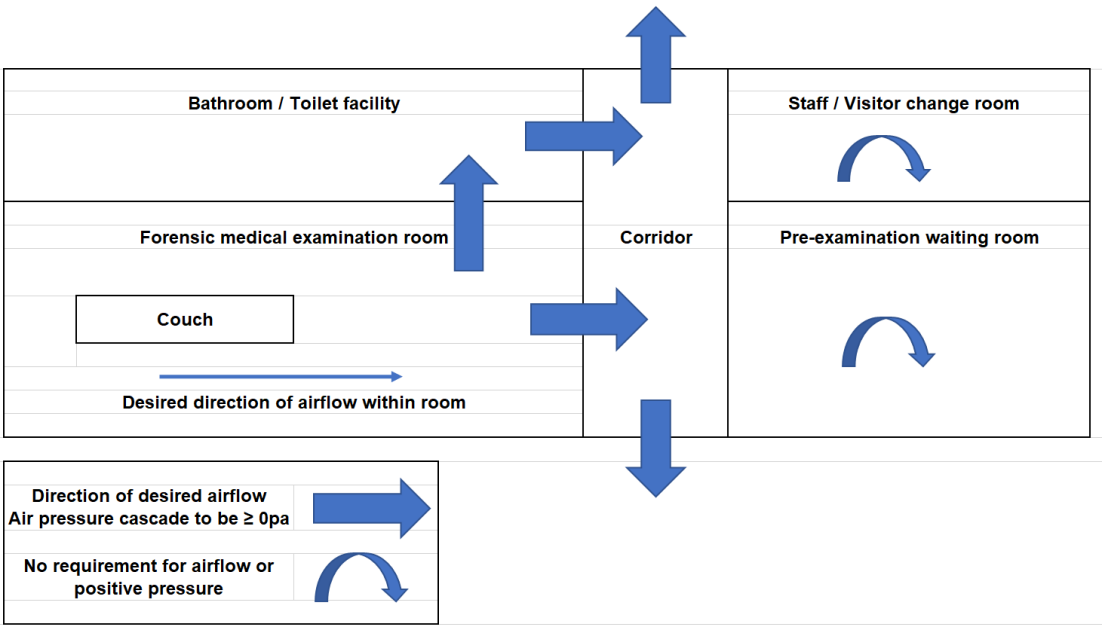

Figure 2: Simple schematic of relative airflow direction and pressure for an example layout of the forensic medical examination room.

5.2.9 The use of any air conditioning and or ventilation system shall be designed to minimise the risk of cross contamination using suitable filtration, for example high-efficiency particulate absorbing (HEPA) filter and the control of airflow to minimise draughts (the Code section 102.5.7). Any air supplied from outside the room should be filtered to reduce the risk of external contaminants.

5.2.10 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.

5.2.11 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).

5.2.12 Where the recommendation at 5.2.10 is not met, additional assurance that the risk of airborne contamination is being managed should be provided. The environment could be monitored for airborne contamination using a process negative control (in which a wetted 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.

5.2.13 Where physical building changes or new build has been identified or is necessary then the requirements set out in the Code sections 102.5.3 to 102.5.9 apply.

6. Contamination prevention

6.1 General

6.1.1 Section 29.3 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.

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

a. The forensic medical practitioner undertaking the forensic medical examination 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.

b. Where the provider of forensic medical practitioners delivers services to both SARC and custodial settings, there should be separate rotas in operation to ensure that the practitioner available for sexual offence forensic medical examinations of complainants is not used for custody medicine at that time.

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.

d. Police officers should be trained in (general) forensic awareness, to address activities where a risk of DNA contamination might arise and ensure appropriate records are made of the actions to minimise this; for example, in cases with multiple suspects, and the separate transportation and use of different forensic medical practitioners for suspects and complainants in the same case, where this was not possible, the appropriate information should be documented and shared with the relevant parties and disclosed in any subsequent report or statement.

6.2 Cleaning

6.2.1 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 removing DNA. Where a method has been validated centrally this should be verified to demonstrate it remains fit of purpose at the location used.

6.2.2 Verification of the efficacy of the cleaning processes should include sampling areas immediately after cleaning by an individual not involved with cleaning, and processing of the samples as for environmental samples. 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 to exclude consumables as the source for unknown profiles.

6.2.3 It is also essential to ensure that 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.

6.2.4 An example of a cleaning process from the Scottish Police Authority Forensic Services [7], is as follows:

a. Spray 1% Virkon solution on the surface and wipe if necessary to evenly distribute the solution.

b. leave for 30 seconds then wipe the entire surface with a disposable paper cloth using a circular motion and discard the cloth.

c. Re-apply 1% Virkon solution as before and leave for a further 30 seconds.

d. Wipe surface with fresh disposable cloth in a circular motion as before and discard the cloth.

e. Finally dry the work surface with a fresh cloth. Each forensic medical room should have a cleaning schedule, with the frequency of cleaning dependant on the extent of use of the room and the equipment within it. A cleaning log should be maintained to show the daily, weekly, or monthly activities undertaken as per the schedule.

6.2.5 The forensic medical room should be sealed or locked after each clean and the door labelled to identify the status of the room. This does not negate the requirement for cleaning before use if the room is still sealed more than a month from the previous cleaning.

6.2.6 The date of cleaning, (time if appropriate) and by whom shall be recorded in the cleaning logs and retained (the Code section 102.5.10d).

Minimum cleaning requirements

6.2.7 Between the examination of patients, 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 before use.

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).

6.2.8 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.

6.2.9 At least once a month a deep clean should be undertaken, unless environmental monitoring results can demonstrate that the risk of contamination is sufficiently well managed by a less frequent deep clean. 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.

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

6.2.11 For rooms that are used on an infrequent basis, i.e. less than once a month, a clean should be undertaken prior to re-commencing use.

6.2.12 Where a spill or leak of biological material occurs, it should be removed using a cleaning regime validated to provide effective DNA decontamination. Depending on the circumstances and extent of the spillage it may be appropriate to undertake environmental monitoring of the affected area to provide assurance that all contamination has been removed.

6.3 Decontamination of re-usable equipment (ISO 15189:2022, sec 6.4.4)

6.3.1 Items that are not suitable for immersion in fluid without damaging them should be thoroughly cleaned using disposable cleaning roll or wipes liberally wetted with a chemical that destroys DNA, followed by cleaning with DNA grade distilled water. Where equipment or items are susceptible to corrosion, then an appropriate cleaning agent which does not corrode should be used.

6.3.2 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 and then rinsed in sterile distilled water.

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

6.4.1 The principle of Environmental Monitoring (EM) is to undertake a programme of testing on a periodic basis to check that 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.

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

6.4.3 The person collecting the EM samples (for example, swabs) should be different to the person who undertakes the cleaning. The forensic science 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 two weeks. This allows for any contamination issues to be identified as early as possible, so that the facility can take immediate action.

6.4.4 EM samples should take the form of a dip sample exercise and be conducted midway between deep cleans; 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.

6.4.5 Samples should be taken by swabbing selected areas, (for example the work bench, the sample trolley and the examination couch) and equipment which are in contact with operators, patients at all stages of the forensic medical examination process. The development of a training manual explaining the EM dip-sampling procedure, which includes photographs of the areas/items to be swabbed, is good practice.

6.4.6 Table 1 sets out the criteria for evaluating the EM results.

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<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

6.4.7 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 be removed from use until a green category result is obtained.

6.4.8 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 [8].

6.4.9 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

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.

6.4.10 In order to monitor and identify problem areas or other trends, all results should be recorded and trend analysis completed

7. Packaging and general chemicals and materials

7.1 General

7.1.1 Any sample, packaging and/or collection kits used shall be fit for their intended purpose (the Code section 22.1.1). This can be demonstrated by consumable manufacturers and kit assemblers meeting the requirements set out for DNA

consumables in BS ISO 18385:2016 [5] and/or PAS 377:2023 [1] see also section 7.3 of this guidance.

7.1.2 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 102.5.4).

7.2 Packaging

7.2.1 The packaging of collected material should preserve the integrity of the potential material for forensic examination 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. The appropriate packaging for the size, condition and forensic analysis requirements of the material recovered; and

c. Secure sealing of exhibit packaging.

7.3 Consumables

7.3.1 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 personal protective equipment, tamper evident containers, swabs, FFLM collection kits, and packaging that 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.

7.3.2 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 that the handler causes inadvertent DNA contamination and the risk of DNA being transferred from adjacent items or the storage environment [9].

7.3.3 The facility shall carry out periodic assessment of consumables that come into direct contact with material for forensic analysis (such as swabs and water) to

address ongoing acceptance for use (ISO 15189, 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 on receipt is not an effective measure of ongoing acceptance as this does not address risks that may be introduced from storage and routine use. Confirmation of acceptance for use should include:

a. Confirmation that the consumables are forensic DNA grade, either:
    i. through use of consumables compliant with PAS 377 [1] and/or ISO 18385 [5], and confirmation that the certificate has been received and relates to the batch received; or
    ii. confirmation that they have undergone post-production treatment and the batch has been tested to confirm it is DNA free;
b. Confirmation that 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;
f. Periodic testing of consumables for DNA contamination based on assessment of risk. The facility will need to establish the consumables to be tested and frequency of this testing based on a risk assessment and their own previous results. Collection kits and consumables provided as forensic DNA grade would be expected to have a low risk of contamination provided the outer packaging remains intact and the kit/consumable remains in date.

7.3.4 Consumables should be stored in a dedicated storage area outside of the medical examination room. Where consumables are stored within the medical room for back up purposes, these should be kept in cleanable, sealed container/s and a facemask and gloves should be worn when opening and removing consumables.

7.3.5 The use of barrier clothing/PPE is detailed in section 7.5; it is required to minimise contamination and should be single use.

7.3.6 As stated in the Code (section 103.3.1) consumables used for the recovery of samples for DNA analysis shall be demonstrated to be forensic DNA grade through batch testing or using validated post-production treatment, such as ethylene oxide treatment, or both. Use of DNA consumables compliant with PAS 377 [1] and/or ISO 18385 [5] negates the need for end user batch testing (the Code, sec 103.3.3).

7.3.7 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.

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

7.3.9 Consumables (including PPE) and reagents used should not be past their expiry date, unless it is verified that they remain fit for purpose beyond that date (the Code section 34.2.1).

7.4 Equipment

7.4.1 Equipment that 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 a removing DNA. A cleaning log of such equipment should be kept.

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

7.4.3 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 102.13.2d). Re-usable equipment should be decontaminated between each examination.

7.4.4 The Code also requires policy and procedures to include the use of cleaning method demonstrated to be effective in removing or denaturing DNA (section

102.13.2b). 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 that inactivates and removes 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 that does not corrode 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.

7.5 Use Of Personal Protective Equipment

7.5.1 Persons not critical to the examination or support of the person being examined should be excluded where possible, for example, police and family members. As required by the Code (section 102.12.4) everyone present during an examination shall wear personal protective equipment (PPE) which shall be changed between the examination of each patient.

7.5.2 PPE should include as a minimum:

a. Disposable barrier clothing: such as 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 overshoes: it is preferable that these are worn. Ideally a pinch-nose type face mask should be used and talking should be kept to a minimum when recovering DNA samples.

7.5.3 Hands should be decontaminated by washing with liquid soap using good hand washing technique before donning gloves and following their removal.

7.5.4 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’ scene suit or apron and sleeve covers; and

f. Outer gloves.

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

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

7.6.1 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. 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.

7.6.2 As required by the Code (section 102.12.6) the facility shall require a DNA elimination sample from all personnel who work at the facility prior to entering

the forensic medical examination areas of the facility and addition of their DNA profile to a DNA elimination database(s). This includes (but is not limited to) forensic healthcare practitioners, professionals such as crisis workers (CWs), cleaning personnel, and contractors. All other attendees entering the facility, (including the patient, whether police-referral or self-referral cases, interpreters, 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 medical examination room any individual(s) who are not willing to provide their details, where this does not impact the patients decision to undergo a medical examination.

7.6.3 Section 102.12.8 of the Code gives requirements for policy and procedures for the management of elimination samples.

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

8. Acknowledgements

8.1.1 This guidance has been adapted from the previous, non-statutory guidance (FSR-G-207, the control and avoidance of contamination in forensic medical examinations) reviewed by the Forensic Science Regulator's Medical Forensics Specialist Group.

9. Modification

9.1.1 This is the first issue of this document.

9.1.2 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.

9.1.3 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-#-####.

9.1.4 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.

10. Review

10.1.1 The Forensic Science Regulator welcomes comments. Please send them to the address as set out at: www.gov.uk/government/organisations/forensic-science-regulator, or email: FSREnquiries@forensicscienceregulator.gov.uk

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12. Additional Reading

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13. Abbreviations

Abbreviation	Meaning
CPS	Crown Prosecution Service
DNA	Deoxyribonucleic acid
FFLM	Faculty of Forensic & Legal Medicine of the Royal College of Physicians
FSR	Forensic Science Regulator
HCP	Healthcare Professional
ISO	International Organisation for Standardization
PPE	Personal Protective Equipment
SARC	Sexual Assault Referral Centre

14. Glossary

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

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