Faculty of Forensic & Legal Medicine

Forensic Science Sub-committee

NEWSLETTER January 2024

The following documents were revised for approval at the FFLM's Academic Committee:

- **Recommendations for the collection of forensic specimens from complainants and suspects**
- **Recommendations for the collection of forensic specimens from complainants and suspects - the evidence**
- **Forensic Science Subcommittee (FSSC) Newsletter**
- **Guide for establishing urgency of sexual offence examination**
- **Recommended equipment for obtaining forensic samples from complainants and suspects** - minor amendment to include FDG for examinee gowns and to the validated cleaning agents
- **Operational procedures and equipment for forensic medical examination rooms in Sexual Assault Referral Centres (SARCs)** (Reviewed by the FSSC and no updates required)
- **Operational procedures and equipment for clinical and forensic examination rooms in police stations** (Reviewed by the FSSC and no updates required)
- **The FME forms for complainant and suspect samples have been amended to highlight the importance of submitting the forms with the samples (see Q13 for background to this)**

Blood Vials

Please note that SceneSafe will be introducing a new blood vial in both road traffic and toxicology kits as of February 2024.

Questions to the FSSC

1. **The FFLM guidance recommends we use a MOIST swab not a wet swab as the first of our swab pairs. All the published evidence I can find seem to use the term wet swabs rather than moisten. Is there a paper I am missing?**

   Secondly the FFLM recommends that moderate pressure is applied when swabbing. I note that the term 'moderate pressure' was used in Sweet et al and 'moderately strong pressure' was used by Pang et al. What does the FFLM deem moderate pressure and how does one measure that?

   The use of the term moist was suggested by the forensic scientists as if the swab is too wet it will not pick up DNA as well, it is perhaps a subtle difference, but that is why the terminology was changed.

   In relation to the amount of pressure the examiner uses to take a skin swab – if you press too hard you won't pick up the trace/foreign DNA on the skin of the examinee but the DNA of the examinee. This is not possible to measure.

2. **Should Foley Catheters be FDG or not?**

   Foley catheters should be used after the forensic intimate swabs have been taken as advised in *The Physical Signs of Child Sexual Abuse* (aka 'The Purple Book') so they do not need to be FDG.

3. **A forensic scientist advised the FSSC that they had received a police submission form that included the following wording, and was considering the best course of action to take in terms of feedback:**

   'The IP has since informed officers that a condom was used during the vaginal intercourse and as a result officers have contacted the SARC where they have informed them that they would not conduct the examination as there has been no mention of any internal injuries which would be the only reason they would conduct the exam.'

   The forensic scientist was then informed that the nurse had stated that the only need for a forensic medical examination would be to document internal injuries. If the victim had not disclosed internal pain or discomfort in the vaginal area then they would not conduct an exam.

   The FSSC discussed this in detail. The forensic scientists were of the opinion that whilst the use of a condom usually prevents the deposition of semen, they can fail, and of course there may have been cellular DNA on the outside of the condom which may have transferred to the internal vagina. By not taking swabs we can never know if any of either were transferred - and should an offender ever be nominated by other means, we cannot consider DNA testing (YSTRs more specifically) to try and address penetration of any kind. The scientist felt that the advice for this complainant had not been appropriate and that there are other benefits of having a medical examination following an allegation of rape. It was noted that the condom may have been put on late, broke, or there might have been pre-ejaculate.

   The committee agreed that it was paramount that both therapeutic and forensic aspects needed to be considered for all complainants of sexual assault.

4. **Under the Fingernails section in the Recommendations document, it states in packaging and storage to freeze the samples. This is true of the fingernail swabs but not for fingernail clippings as these should be dry stored. Therefore, this column is causing some confusion. The correct storage advice however, is provided on Page 7 under the Toxicology section.**

   The recommendations document has been amended.

5. **I am dealing with the case of a client with high arsenic levels in her body. I hope that police will be able to process the case, but as it is so rare, I am looking for possibilities to find expert knowledge. I hope you can give me some tips on where to look for forensic experts concerning arsenic poisoning.**

   There are centres, Supra-Regional Assay Service (SAS), for testing of trace elements in Birmingham, Glasgow, Guildford, Leeds, London King's College, London Imperial College, and Southampton. The website states:

   '*The analysis of trace elements in a high sample matrix needs a number of specific considerations. Clinical or environmental samples often contain a high level of salts and other dissolved solids that will affect the sensitivity of assays. SAS centres are equipped with a range of spectroscopic and mass spectrometric equipment to provide high quality analysis of more than 30 elements from a variety of sources that can be toxic. Dietary, environmental, pharmaceutical or industrial exposure can be implemented, and results of trace metals are influenced by other diseases of major organs including intestine, liver and kidney.'*

   Please see this link for more information: *https://www.sas-centre.org/specialities/trace-elements*.

   A list is provided of the various assays available and information sheets about the various tract elements. This would be a useful resource for those preparing for examinations in the field.

6. **I am reaching out to ask the FSSC's guidance on the challenging situation of sampling female perpetrators in police custody. There appear to be complexities in our area and while we recognise/agree the ideal scenario would involve the involvement of a trained Forensic Nurse Examiner (FNE) or a SARC, we can no longer rely on the local SARC to send a FNE for such examinations, as suggested in the FFLM publication '*Examination of Female Suspects of Sexual Assault'*.**

   After reviewing the FFLM document, it is clear that the emphasis on having Healthcare Professionals (HCPs) appropriately trained and competent is crucial for conducting thorough examinations, which is absolutely essential. However, due to the irregularity of cases and the challenges in maintaining competency in certain procedures, such as speculum use, this could be challenging for some HCPs working in the custodial environment.

   In light of this, the local Forensic Medical Department has drafted a temporary policy that mandates officers request/obtain as a minimum standard; a urine sample (police officer)/seize underwear (police officer), with detainee's consent; pubic hair combings or mons pubis wet/dry/perineal /peri anal wet/dry, inner thigh wet/dry. I am aware some private healthcare providers subcontract this task to their local SARC at a significant cost, an option that has yet to be explored for our local area.

   All HCPs are aware of the critical importance of upholding the standards of forensic examinations, currently we are seeing a slight increase in arrests which is bringing such challenges but recognise the requirement to be proactive to address commitment to ensuring the integrity of forensic evidence collection.

   My question to the FSSC is as follows:

   In addition to the approach, I have outlined (temporary policy) is it acceptable to take vulval swabs, low vaginal swabs, and 'blind' high vaginal swabs (as well as anal/rectal swabs) as appropriate, as per *Recommendations for Collection of Forensic Specimens* without use of speculum/proctoscope.

   This may reflect a practical and balanced response to the situation, is this a reasonable compromise to ensure that valuable forensic evidence is preserved in cases involving female perpetrators, as currently there is little or no forensic evidence being obtained. Unfortunately, this is often a complex issue in many police custody settings. HCPs recognise the commitment required to maintaining where possible the highest standards in Forensic Practices.

   The FSSC discussed the current difficulties of providing a service to female suspects in custody. This is a problem in many areas throughout the UK. However, this is a new problem, the result of the failure to commission the service that is required. This is not the only area where there is a problem. There are issues with provision of a clinical forensic medical service to adult complainants of assault too.

   The FFLM promotes high quality care for **BOTH** complainants and suspects as well as the equivalence of healthcare in custody, SARCs, and other environments.

   The FFLM document '*Examination of Female Suspects of Sexual Assault*' states that when performing intimate examinations of adult female suspects of sexual assault under arrest and detained in police custody, consideration must be given to the following key principles:

   i. The examination must take place in an appropriate environment;

   ii. The HCP conducting the examination must be appropriately trained (theoretical knowledge) and have the necessary competencies (skills);

   iii. Cross contamination must be avoided.

   These are recommendations and if clinicians are not able to follow the recommendations, then this should be fully documented. Cost is of course an important consideration, and it is important that public resources are used effectively and efficiently. However, if we do not provide the service that is required there is a real risk to the criminal justice system.

   Please note that the current recommendation is for moist/dry swabbing not wet.

7. **Should patient gowns be a FDG consumable?**

   Yes

8. **If the patient has provided a urine sample into a clean 'household' receptable should this be transferred into a collection vessel with preservative as soon as practicable?**

   Yes, and it is essential that the date and time of the original urination **AND** the date and time of the transfer into a collection vessel with preservative along with the storage temperature (e.g. room temperature, refrigerated) during the intervening time period should be recorded.

9. **Is it acceptable to use the forensic kits up to the expiry date?**

   Yes. The expiry date relates to the glue on tamper-evident bags and so long as the bag had been sealed by the expiry date, the kit can be used up until then.

10. **Medical Sexual Assault Clinicians Aotearoa (MEDSAC), and New Zealand's Crown Research Institute (ESR), have read with interest the latest FFLM recommendations for forensic sampling. Our particular interest lies in collection of specimens from complainants of sexual assault and non-fatal strangulation/suffocation. We have a couple of questions regarding your recommendations, and wonder if you may be able to provide some background to these changes?**

    i. **Water vials - what is done with the water vial information. Is it simply being recorded, or is there routine testing of batches?**

    ii. **Hair - our examiners would be delighted to no longer have to collect control hair samples! Could you please advise the rationale for why you have removed the collection of a control sample of hair for hair comparisons (where relevant)?**

    iii. **Control skin swab - could you please advise further about this? This would increase costs - are they routinely collected and tested?**

    i. The suppliers of the water vials have sample batches which they can test as necessary.

    ii. This is taken from the FSSC Newsletter January 2023:

    I recently dealt with a query about hair control samples and now I look at it, I think it needs clarifying. The custody nurse who contacted me thought it was a hair DNA ref sample, probably as the method of sampling mentions roots. The reference to 5 hairs also implies DNA testing whereas for a microscopic comparison it should be closer to 25 hairs. As hair-to-hair comparisons are rarely done these days, I would advise that hair controls are not taken. Microscopic comparisons are not very useful as evidence and have been largely discredited in the USA as evidence on their own. I can't see why hairs would be taken as a DNA reference instead of a PACE sample.

    The committee discussed and agreed that the control sample for hair comparison was no longer required and could be removed from the Recommendations (amendments have been made to the January 2023 version).

    iii. This is from July 2022 FSSC newsletter:

    Can someone please help me understand better, what the purpose of taking control swabs for background DNA is for? Is this done to get a reference DNA of the complainant? Do we still need to take such swabs since the FFLM recommendations state that control swabs are no longer needed.

    Retention of water vials or moist control swabs is not necessary, but in their absence, the module batch number, expiry date and supplier should be recorded, if available. The control skin swabs are required for the recovery of background DNA and/or other material – to help the scientist's interpretation when its presence in a specific area is significant e.g. visible injury or bite on the skin. Ensure relevant background area is sampled and if multiple areas of skin are sampled, take appropriate multiple controls.

    So, samples are routinely taken, but we are not sure how often they are tested as this may depend on the overall forensic strategy. There is a resources issue in terms of the cost of the swabs and the time it takes to obtain them.

11. **During a recent FCN verification exercise, it was noted that Aquagel leaked through the standard couch cover onto the couch. The reason we moved away from coated covers previously was due to patient discomfort. The coated covers are not breathable and therefore the patient in the past complained about getting too hot and sweaty. However, with the new ISO 15189 do we think it's time to start using the coated version again to avoid contamination?**

    The FSSC decided to wait for more information from environmental monitoring investigations regarding this issue before recommending a change to the current couch cover. Whilst there was a risk of contamination if there wasn't an impermeable couch cover it might be unpleasant for patients to sit on for long periods of time. Clinicians advised that they use a folded sheet for patients to sit on for the examination.

12. **The FSSC had been contacted regarding the investigation of women procuring a medical abortion without going through appropriate channels and queried if the committee had any awareness of this?**

    The toxicologists were aware of prosecution cases where the pregnancy had been terminated after 24 weeks.

    There were concerns about how the consent for toxicology samples was being managed in such cases as the clinician/patient might not be fully aware of what needed consenting to.

    Previous advice on consent issues has been given in the *July 2020 edition of the FSSC Newsletter*.

13. **We have had the returning issue of some forces/SARCs not releasing the forensic medical examination forms. Often the reason given is that the form contains confidential information. On reading through the form, I realise that nowhere on the actual form does it state that a copy should be provided to the FSP. The recommendation document does state that ideally the document should be exhibited but I know that this does not happen in most regions.**

    On page 1 of the Recommendations document, it is recommended that the associated documents, e.g. FME forms (or equivalent) are exhibited once completed to ensure that the forensic scientist has all the relevant information when analysing the sample. It is essential that this is stressed during the initial training.

    Both FME forms have at the top of the form:

    Relevant sections of this form must be completed and a copy submitted with the samples.

    If informed consent for forensic samples is taken from the patient by the examining clinician confidentiality should not be an issue. Afterall, the explanation relating to the taking of samples must include the fact that the samples will be given to the forensic scientist for testing and that the scientist requires certain information in order to be able to interpret the result of any scientific test.

14. **We understand from R v Harling [1970] RTR 441 that a suspect who loses confidence in a doctor/HCP after three unsuccessful attempts to obtain blood may have a reasonable excuse not to provide a sample.**

    The case of Graeme Swann was then raised. Swann provided an evidential BrAC 45 mcg/100ml at the police station (the article states mg, but I think this is an error). It was back in 2011, so he was offered and elected for a blood sample. A 2ml blood sample was taken, but the nurse thought it was insufficient and took another sample (83mg/100ml). At court, it was successfully argued the first sample should have been the one tested - and forensic alcohol consultant John Mundy told the court the original 2ml was 'ample'. Ruling in Mr Swann's favour, district judge Julia Newton said: 'I cannot be sure the two-millilitre sample was insufficient or incapable of analysis by ordinary means. It may have been possible to analyse. Therefore, on the specific facts of this case I am not sure the crown can rely on the second sample of blood. The burden of proof is on the crown to prove the first sample was incapable of analysis.'

    Assuming 2ml of blood was the total sample, that would be divided between the two vials.

    - **Does the Faculty have a view on what amount constitutes a sample? Does this differ between the Sections 5, 5a and 4?**
    - **Does the Faculty have a view of the minimum amount of blood necessary for analysis?**
    - **Is there any specific advice for HCPs when their first sample is low-volume?**

    The forensic toxicologists confirmed that 1ml of blood divided into two may be enough to test for alcohol only. More blood would be required dependent on the specific section of the RTA under investigation and how many tests are required – alcohol and/or drugs and then how many different drugs are suspected.

    The exact amount of blood required would depend on the provider (see Appendix 1 - Advice from Eurofins) but that providers would try and work with less if only a small sample of blood had been obtained.

15. **What is the advice as to how to hold the swab when sampling?**

    It was agreed that it should be held by its stopper not the shaft. The Recommendations have been amended on page 1.

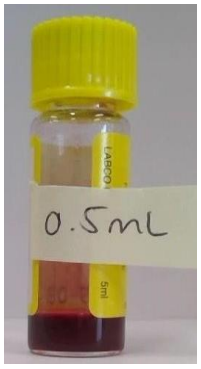
Appendix 1 - Advice from Eurofins

Ideal – allows us to complete all drug and alcohol testing:

- Sample volume of **8mL** to be taken.
- Split into 2 vials of **2 x 4mL** samples for submission.

*NB: Although the vial holds 5 mL, it is recommended that only 4mL is added to avoid the vial cracking if the vial is ever frozen (**we recommend refrigeration only for RTA cases**).*

Minimum – the lowest volume with which we should be able to complete all drug and alcohol testing:



- Total sample volume of **5mL** taken.
- Split into 2 vials and **2 x 2.5mL** samples for submission.

Depending on the type of testing, ideal volumes are as follows:

- Drugs only (THC & other drugs) **2mL**
- Drugs (all) and alcohol **2.5mL**
- Alcohol only **0.5mL**

Insufficient – Cases with sample volumes of **< 2.5mL** will be assessed individually. Testing will need to be prioritised and staged (customer must state drug to be targeted). The results may be delayed, and cases may be lost if the testing cannot be carried out.

Volumes stated below are those submitted <u>after splitting:</u>

Less than 1.5mL

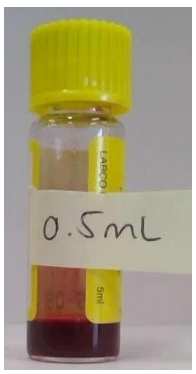
- Analysis will be conducted in a staged manner; one test at a time in to preserve the sample volume. State the drug to be prioritised. e.g. THC only or other drugs (excluding THC).

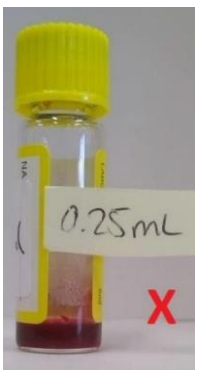
Less than 1mL

- Analysis will be conducted in a staged manner based on the customer's request. State the drug to be prioritised. For e.g., THC only or other drugs (excluding THC).

Less than 0.5mL

- Insufficient for **all** Section 5A drugs analysis. State the drug to be prioritised, however, no repeat analysis can be conducted should the initial analysis not meet our strict criteria.
- Ok for S4.
- Ok for alcohol ONLY.





Less than 0.25 mL

- Insufficient for **any** Section 5A drugs analysis.
- We are unlikely to be able to complete S4 analysis. If testing can be done it will be completed on reduced sample volume and low levels of drugs may not be detected. Such cases will be assessed individually.