Forensic Science Regulator

Overseeing Quality

Annual Report

17 November 2018 – 16 November 2019

Dr Gillian Tully

25th February 2020

Foreword

Whether it is data science, computer science, physics, chemistry, biology or another discipline, forensic science should be firmly rooted in good science. Courts should not have to judge whether this expert or that expert is ’better’, but rather there should be a clear explanation of the scientific basis and data from which conclusions are drawn, and any relevant limitations. All forensic science must be conducted by competent forensic scientists, according to scientifically valid methods and be transparently reported, making very clear the limits of knowledge and/or methodology. Implementation of quality standards is a means to this end, ensuring a systematic approach to scientific validity, competence and quality. It therefore remains my absolute priority to publish a standard for the development of evaluation opinions, to ensure that this systematic approach to quality covers all scientific activities from crime scene to court.

Some practitioners and leaders understand quality. They may be (and indeed should be) challenging about the detail of how to adopt the standards and may rightly point out the need for additional resources. However, they seek to use the requirement to adhere to quality standards to innovate in terms of process and/or technology and, in doing so, they bring about positive change. Often, they are truly inspiring.

Others misunderstand. They may grudgingly implement standards, but in a way that cripples their productivity and locks staff into rigid protocols, no matter what the case requires. Or they may devote much time and energy to avoiding compliance, arguing against change and sticking to “how we’ve always done it”. The problem is that technology has moved on. “How we used to take anti-contamination precautions” is no longer fit for purpose in a world where the sensitivity of DNA methods has increased by several orders of magnitude. “How we used to do digital forensics” is no longer fit for purpose in a world where data volume and complexity have ballooned, and a substantial subset of the data required is in the cloud. Throwing massive volumes of extracted data to investigators, who generally lack the tools and methods to interrogate the data effectively, just shifts a problem; a more integrated approach could be transformative.

Leadership and innovation are critical, because trying to transpose quality standards onto ineffective processes without change only succeeds in adding inefficiency to ineffectiveness.

Whilst the body of this report deals with the year to 16 November 2019, the foreword presents an opportunity to comment on more recent events and I am pleased to note that the Government has committed to investing approximately £28 million over a year to improve forensic science, via the Transforming Forensics Programme.[1] It will be a massive challenge for the programme to deliver effective change, but it is my hope that the work will design quality into innovative approaches, in a way that brings together the best of the public and private sectors and academia.

A new government has been elected and I have been assured that there is no change from the policy to legislate to provide statutory enforcement powers for the Regulator. I am, however, disappointed to note that there is, as yet, no definite plan for government legislation. I therefore welcome the Forensic Science Regulator and Biometrics Strategy Private Member's Bill [2], proposed by Darren Jones, MP. The delay in legislating has, without doubt, resulted in slower progress towards compliance with quality standards, particularly in very small companies and police forces. Nonetheless, there is much learning from the progress thus far and this is reflected in my priorities around assisting with and improving the adoption of standards.

I will continue to lobby for change to ensure that the policies for commissioning forensic science support the provision of high quality forensic science. That has two main elements: the first is that those making case-specific commissioning decisions do so in a knowledgeable, collaborative and outcome-based manner, proportionate to the seriousness of the case and the potential for forensic science to contribute to criminal justice outcomes. I therefore welcome a new project, in the HO, that aims to better quantify the impact of forensic science in the Criminal Justice System. The second element is to ensure that a longer-term strategy for sustainable provision of high quality forensic science is developed as a matter of urgency [3]. The pricing uplifts put in place to stabilise the market this year were the beginning but not the end of this process and I have recently been made aware of concerns in the digital forensics community about unsustainable pricing, driven by high weighting on price in procurement. We must not go back into a spiral of unsustainability.

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1 The Transforming Forensics Programme will launch, in April 2020, its "Forensic Capability Network". This aims to support police forces in the science, quality, operational and commercial aspects of police forensic science.

2 Information available at: https://services.parliament.uk/Bills/2019-20/forensicscienceregulatorandbiometricsstrategy.html [accessed 20.02.2020]

3 The commercial strand of the Forensic Capability Network aims to deliver a long-term strategy.

Dr Gillian Tully

Forensic Science Regulator

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Abbreviations and Acronyms

Abbreviations and acronyms used in this report are listed below in alphabetical order.

Acronym	Full title
ACC	Assistant Chief Constable
AFR	Automatic Facial Recognition
AFSP	Association of Forensic Science Providers
APCC	Association of Police and Crime Commissioners
BS	British Standard
BSI	British Standards Institution
CCTV	Closed Circuit Television
CED	Contamination Elimination Database
CJS	Criminal Justice System
[The] Codes	Forensic Science Regulator's Codes of Practice and Conduct
CPS	Crown Prosecution Service
CQC	Care Quality Commission
CrimLR	Criminal Law Reports
CrimPD	Criminal Practice Directions
CrimPR	Criminal Procedure Rules
CSFS	Chartered Society of Forensic Sciences
CSI	Crime Scene Investigator
DFSG	Forensic Science Regulator's Digital Forensics Specialist Group
DFU	Digital Forensics Unit
DMI	Digital Media Investigator
DNA	Deoxyribonucleic acid
DNASG	Forensic Science Regulator's DNA Specialist Group
Dstl	Defence Science and Technology Laboratory
EDB	Exclusion Database
EDIT	Evidential Drug Identification Testing
EFS	Eurofins Forensic Services
EMSOU	East Midlands Special Operations Unit
EN	European Standard
EWCA	England and Wales Court of Appeal
EWHC	England and Wales High Court
FCN	Forensic Capability Network
FDMWG	Forensic Digital Media Working Group
FFLM	Faculty of Forensic and Legal Medicine of the Royal College of Physicians
FIAD	Forensic Imaging Analysis Division
FINDS	Forensic Information Database Services
FQSSG	Fingerprint Quality Standards Specialist Group
FSM/1	Forensic Science Mirror Committee (of BSI)
FSP	Forensic Science Provider
FSRU	Forensic Science Regulation Unit
FTE	Full Time Equivalent
GQMS	Generic Quality Management System

Acronym	Full title
HMICFRS	Her Majesty's Inspectorate of Constabulary, Fire and Rescue Services
HO	Home Office
HOC	Home Office Circular
ICMP	International Commission of Missing Persons
IEC	International Electrotechnical Commission
ILAC	International Laboratory Accreditation Co-operation
iOS	Internetwork Operating System
ISO	International Organization for Standardization
ISO/CD	International Organization for Standardization Committee Draft
ISO/TC	International Organization for Standardization Technical Committee
IT	Information Technology
LAA	Legal Aid Agency
LFR	Live Facial Recognition
LRCFS	Leverhulme Research Centre for Forensic Science
MFSG	Medical Forensics Specialist Group
MoJ	Ministry of Justice
MP	Member of Parliament
NaBIS	National Ballistics Intelligence Service
NCSC	National Cyber Security Centre
NDNAD	National DNA Database
NFCC	National Fire Chiefs' Council
NHS	National Health Service
NHSE	National Health Service England
NIFS	National Institute of Forensic Science Australia and New Zealand
NIST	National Institute of Standards and Technology
NPCC	National Police Chiefs' Council
NRDG	Netherlands Board of Court Experts (Nederlands Register Gerechtelijk Deskundigen)
OSAC	Organisation of Scientific Area Committees
PCC	Police and Crime Commissioner
PED	Police Elimination Database
PT	Proficiency Testing
QSSG	Quality Standards Specialist Group
Regulator	Forensic Science Regulator
SARC	Sexual Assault Referral Centre
SFR	Streamlined Forensic Reporting
SI	Statutory Instrument
SPJ	Senior Presiding Judge
TF	Transforming Forensics
UK	United Kingdom
UKAFN	United Kingdom Association of Forensic Nurses and Paramedics
UKAS	United Kingdom Accreditation Service
UKIAFT	United Kingdom and Ireland Association of Forensic Toxicologists
UKRI	United Kingdom Research and Innovation

Introduction: Risks and Assurance

Assessment of Assurance

In the appendix to the Regulator's 2018 Annual Report, an assessment of the level of assurance for the main forensic science disciplines and the anticipated trajectory of each was given. A review of that assessment reveals the following trends and issues.

1. The level of compliance with quality standards has increased, particularly for fingerprint comparison but also in digital forensics, in which three police forces, one commercial provider and one health authority all achieved their first accreditation during the year. There is still, however, a significant gap between the standards set and the level of compliance.
    a. A particular problem area is comparison of faces, clothing, footwear, vehicles, etc from CCTV imagery. Last year, the level of commitment to improving quality was rated as high, but there has been very little progress and a continued stream of poor practice has been referred to the Regulator.
2. As scientific testing (validation) of methods in preparation for accreditation has progressed, weaknesses and limitations have been found in some methods and confidence in others has been increased. Examples, each of which demonstrates the value of validation, include the following.
    a. Forensic collision investigation, where the methodology used to establish the coefficient of sliding friction may, in some circumstances, be subject to a large uncertainty of measurement. The use of new technology has indicated the current equipment may compound this issue by not recording optimum information.
    b. Kiosks for self-service downloading of mobile phone data by non-specialists where performance on extraction of native data such as emails, texts and contacts has been shown to be reliably effective, but, whether or not data from third party apps are extracted has been shown to be variable and unpredictable. This has prompted detailed consideration of the means by which investigators can be prompted to seek more detailed analysis where necessary.
    c. There is much greater awareness of contamination risks and cleaning methods for Crime Scene Investigators (CSIs).

3. The position with regard to the Contamination Elimination Database (CED) has evolved, with:
    a. an increase in the number of police officer profiles transferred from the Police Elimination Database (PED) to the CED;
    b. no improvement in the position regarding police staff, whereby participation is not mandatory for existing staff and the Regulator has heard some reports of a small number of CSIs being unwilling to provide samples for the CED; and
    c. an improvement in the operation of the CED, such that any contaminating DNA profiles obtained from environmental monitoring are now searched against the CED and the results reported so that organisations can identify and deal with contamination more effectively.
4. Increasing the level of challenge in the proficiency testing (PT) regime for identification of body fluids has identified weaknesses in some police forces in relation to detection of blood on black surfaces. Ensuring that PT appropriately challenges systems and identifies areas for improvement is an important part of an effective quality management system.
5. To assist with the interpretation of DNA and body fluids at activity level, a substantial project on transfer and persistence of DNA and body fluids has been initiated at the Leverhulme Research Centre for Forensic Science (LRCFS) at the University of Dundee. The project design involved experts from academia and practice working together to identify the pertinent questions to answer and appropriate research methodology. This complements other work of LRCFS in the transfer and persistence of trace evidence such as fibres and particulates.
6. A number of policy-related risks to assurance remain, including:
    a. toxicology capacity having worsened following the cyber-attack affecting Eurofins Forensic Services (EFS);
    b. digital forensics capacity being insufficient to meet demand;
    c. a lack of clear policy regarding provision of fire investigation in criminal cases, which is slowing the progress of fire and rescue services towards achieving the necessary quality standards and leaving commercial providers facing continued uncertainty; and

d. the system for award of legal aid funding and the level of funding available mean that it has not yet been possible for the Regulator to set a meaningful and achievable standard for case review.

Wider Risks

The Regulator has responsibility for the quality of forensic science and not its supply. However, quality does not exist in a vacuum; the governance, funding, procurement and provision of forensic science all impact on the quality of provision. Achieving accreditation to a quality standard is neither the beginning nor the end of improving quality; engendering a real culture of quality requires ongoing leadership and investment in people, processes and innovation. Therefore, the instability that has continued to be seen in this reporting year represents a significant risk to quality.

In her 2018 Annual Report, the Regulator expressed concern that commercial forensic science providers (FSPs) continued to be under significant financial strain and warned that the risks to forensic science provision were close to existential. This followed warnings of underfunding and the resultant risks to the sustainability of the market in 2015, 2016 and 2017 annual reports. Shortly after the end of the 2018 reporting period, this strain reached a point where urgent action was required to avoid one or more of the larger commercial FSPs having to exit all or part of the forensic science market. A police-led Market Stabilisation Gold Group was convened and due diligence established that the vast majority of police contracts with commercial FSPs were unprofitable and unsustainable. The commercial arm of the Transforming Forensics Programme negotiated a short-term stabilisation package which involved uplifts in contract pricing. The agreement of all 43 chief officers and all 43 police and crime commissioners (PCCs) or their mayoral equivalents, in some cases with much reluctance, was secured in an effort led by Chief Constable James Vaughan, the National Police Chiefs' Council (NPCC) lead for forensic science, and a market collapse in the short term was avoided.

Policing, through the NPCC forensic science portfolio and the Transforming Forensics Programme, is planning a longer-term approach to the procurement of forensic science services. The indications are that quality and sustainability will feature to a much greater degree than previously, where cost was the primary consideration. This is welcome. However, participation is not mandatory for police forces and it is the Regulator's

understanding that several forces are considering more insourcing of forensic science provision, which could further destabilise the market.

Insourced provision is not subject to contractual requirements for compliance with quality standards and in the absence of statutory enforcement powers for the Regulator, risks a lower level of compliance. The Regulator regularly receives correspondence from commercial providers of all sizes complaining about the lack of a level playing field for compliance with quality standards. The Regulator welcomes the police requiring compliance through commercial contracts with their suppliers. It is however imperative that policing achieve that same level of compliance for their own internal services, whether those be long established disciplines or the more recent, digital field.

Currently, all decisions regarding commissioning are the responsibility of policing, which is not a national body but a collection of specialist capabilities together with 43 independent territorial forces, each run by a chief officer with oversight from an elected PCC or mayoral equivalent. This means that overall there are over 90 decision-makers in relation to forensic science provision. As yet, it remains unclear how fully forces will sign up to the Forensic Capability Network (FCN) being established by the Transforming Forensics Programme and whether all will follow the commercial lead from the FCN, although indications are favourable. Despite any national strategy or guidance that may be issued, ensuring sustainable, high quality, efficient provision of forensic science nationally can currently only be achieved by persuasion.

The cyber-attack that affected EFS in the summer (see section 2.9) and caused cessation of all work there for approximately seven weeks gave a glimpse of the impact that losing a major broad-spectrum supplier of forensic science would have on the Criminal Justice System (CJS). In parallel, critical shortfalls in digital forensics and toxicology capacity are already impacting on timeliness.

The Home Office (HO) has worked with the Ministry of Justice (MoJ) to reformulate the forensic science governance structure; a forensic science sub-group of the Criminal Justice Board has been formed and is jointly chaired by officials from the HO and MoJ. The sub-group has better representation than its predecessor, the Forensic Policy Steering Group, and as such is well placed to advise on issues facing forensic science. However, it will require vision and determination on behalf of Government to bring about a situation where

policy rather than persuasion dictates the sustainability and quality of forensic science in England and Wales.

Legislation is urgently required to give the Regulator statutory enforcement powers; the seven-year delay between giving assurances about providing statutory powers and the present time has previously been described by the House of Lords Science and Technology Committee [4] as "embarrassing" and by the House of Commons Science and Technology Committee [5] as a failure of leadership. It can only now be interpreted as a lack of priority being given to forensic science quality by the Government.

Priorities

The present Regulator's appointment lasts until 16 November 2020. As such, this will be the final set of priorities and is restricted, as far as possible, to plans for delivery within the year to November 2020. The majority of the priorities set out in the 2018 Annual Report are close to completion, but where they are not complete, have been retained below.

Assisting and Improving Adoption of Standards

1. A project to evaluate how ground truth datasets, which are kept up to date on an ongoing basis, could be made widely available to the digital forensics community to assist with ongoing validation and verification. This has been initiated with the Defence Science and Technology Laboratory (Dstl) and will be reviewed with the Digital Forensics Specialist Group (DFSG) when it reports in Spring 2020, to determine next steps.
2. The Regulator will work with the Forensic Information Databases Service (FINDS), the Transforming Forensics Programme and others with the aim of ensuring that high quality, challenging proficiency tests are available across forensic science, to improve the level of quality assurance that can be gained from the existing requirement to participate in PT.
3. Continuing to determine how adequate assurance can be provided to users of kiosk technology for mobile phone downloads will remain a priority, in

[4] **House of Lords** Science and Technology Select Committee (2019)-. *Forensic science and the criminal justice system: a blueprint for change* 3rd Report of Session 2017-19 - published 1 May 2019 - HL Paper 333.

[5] Available at: https://publications.parliament.uk/pa/cm201719/cmselect/cmsctech/1970/1970.pdf [accessed 20.02.2020]

collaboration with Dstl, Staffordshire Police and the United Kingdom Accreditation Service (UKAS).

4. Following publication of a paper reviewing the impact of implementation of standards in digital forensics, which is due for publication in Forensic Science International: Digital Investigation early in 2020, the Regulator will continue to evaluate the impact of standards on quality and delivery.
5. Complaints and self-referrals to the Regulator will be monitored and, where appropriate, investigated. Learning from complaints, referrals and issues identified during accreditation assessments will continue to form the basis of learning, including through publication of further 'Lessons Learnt' documents.
6. The Regulator will provide ongoing support to those implementing standards, in particular CSI units, fire investigators, collision investigators and all those engaged in digital forensics (including digital media investigators (DMIs)). The Regulator will also work with:
    a. the Transforming Forensics Programme (and the FCN when established);
    b. the NPCC forensic science portfolio, Digital Communications Group, CCTV portfolio, Internet Intelligence and Investigations portfolio and Specialist Capabilities Programme;
    c. the Chartered Society of Forensic Sciences (CSFS), including its Forensic Digital Media Working Group (FDMWG);
    d. the Faculty of Forensic and Legal Medicine (FFLM) and the UK Association of Forensic Nurses and Paramedics (UKAFN);
    e. the Association of Forensic Science Providers (AFSP); and
    f. other relevant organisations that are providing support for adoption of quality standards.

Standards and Guidance Development

A number of standards and guidance documents are almost complete and will be published as soon they are compliant with The Public Sector Bodies (Websites and Mobile Applications) (No. 2) Accessibility Regulations 2018 (SI 952/2018), which aim to ensure public sector websites and mobile apps are accessible to all users, especially those with disabilities).

These documents include the following.

1. FSR-C-116: Sexual Assault Examination: Requirements for the Assessment, Collection and Recording of Forensic Science Related Evidence.
2. FSR-G-212: Guidance for the Assessment, Collection and Recording of Forensic Science Related Evidence in Sexual Assault Examinations.
3. Issue 5 of the Forensic Science Regulator's Codes of Practice and Conduct (the Codes).

Other standards require further consultation and/or development as follows:

1. Consultation with experts and further development of the draft Standard for Development of Evaluative Opinion will continue (section 1.2), with the aim of publication of the standard by November 2020. As this standard progresses, its impact on disciplines such as fingerprints, digital forensics and DNA will be considered by the respective specialist groups.
2. The Medical Forensics Specialist Group (MFSG) will begin work on a standard for forensic recovery in custody suites (section 1.3).
3. The drug driving standard will be completed and a report on the interpretation model produced (section 1.4).
4. An update to the Video Analysis Appendix to the Codes will be published (section 1.8).
5. An appendix to the Codes to assist fire investigators with additional detail and clarity around how they can meet the standard ISO 17020 [6] will be developed and issued for consultation (section 2.4).
6. The revised Code of Practice and Performance Standards for Forensic Pathology in England, Wales and Northern Ireland will be published (section 2.6).
7. Quality standards will be defined for the remaining areas of digital forensics (section 1.10).
    a. Network capture and/or analysis.
    b. Internet intelligence and investigation.
    c. Cell site and communications data.
8. As required, the Regulator's information document concerning legal obligations and associated guidance on reports will be updated to take account of changes

[6] BS EN ISO/IEC 17020:2012 Conformity assessment. Requirements for the operation of various types of bodies performing inspection. Henceforth referred to as "ISO 17020"

to the Criminal Procedure Rules (CrimPR), the Criminal Practice Directions (CrimPD) and case law (section 1.6).

Wider Collaboration

1. The Regulator will liaise with the NPCC's Streamlined Forensic Reporting (SFR) Board, the Crown Prosecution Service (CPS), FSPs, academics and legal professionals to ensure that the SFR process is working in a robust, transparent and timely manner, enabling a proper understanding and identification of the issues by defence teams (section 2.10).
2. Continuing engagement with the HO and MoJ (including through the Forensic Science Sub-Group of the Criminal Justice Board), parliamentary select committees, judiciary and others to assist with development of an improved policy and governance framework for forensic science remains high on the Regulator's list of priorities (section 3.7).
3. The Regulator will work with HO, UK Research and Innovation (UKRI) and academics with the aim of encouraging increased investment in and effective output from research and innovation and will articulate quality-focused research priorities (section 3.6).
4. The Regulator will continue to liaise with international bodies involved in setting standards for forensic science and/or forensic scientists, such as the National Institute of Standards and Technology (NIST) and its Organisation of Scientific Area Committees (OSAC), the Netherlands Board of Court Experts (NRGD) and the National Institute of Forensic Science Australia and New Zealand (NIFS) to share learning.

Section 1: Quality Standards in Place for all Forensic Science Disciplines

Requirement 1 [7] : That appropriate quality standards are in place for all forensic science disciplines, which apply equally whether the services are delivered by small or large organisations, private companies, public laboratories, police forces or individuals.

[7] The Regulator's aims and requirements were set out in full in previous Annual Reports, available at: www.gov.uk/government/publications/forensic-science-regulator-annual-report-2016 and www.gov.uk/government/publications/forensic-science-regulator-annual-report-2015.

1.1 Forensic Science Quality Standards in the UK

During the year from November 2018 to November 2019 the standards and guidance documents in Table 1 have been published.

Table 1: Standards and Guidance Published, 17 November 2018 to 16 November 2019

Publication	Date
Lessons Learnt, Issue 1 [FSR-L-B01]	1st February 2019
Lessons Learnt, Issue 2 [FSR-L-B02]	1st February 2019
Expert Report Content: Issue 1 [FSR-G-200]	14th February 2019
Legal Obligations: Issue 7 [FSR-I-400]	16th April 2019
Expert Report Content: Issue 2 [FSR-G-200]	14th February 2019
Expert Report Content: Issue 3 [FSR-G-200]	17th April 2019
Lessons Learnt, Issue 3 [FSR-L-B03]	9th May 2019
Lessons Learnt, Issue 4 [FSR-L-B04]	9th May 2019
Lessons Learnt, Issue 5 [FSR-L-B05]	9th May 2019
Image Enhancement and Image Comparison: Provision of Opinion (Regulatory Notice 01/2019)	17th July 2019
Validation: Friction Ridge Detail (Fingerprint) Search Algorithm [FSR-G-230]	19th July 2019

1.2 Evaluative Opinion Standard

As outlined in the last annual report a draft standard for interpretation had been prepared and circulated to the group who advised on the draft. As is to be expected when seeking views from a number of experts from various specialisms (for example forensic science, statistics and the law) there were a large number of comments and many of those argued for changes to the draft which conflicted with other suggestions. A number of the comments highlighted areas where the draft needed to be expanded and some which exposed a lack of cover in existing models.

The key areas where changes were considered included, but were not limited to, the following.

1. The terminology employed within the document. This has proved to be a major issue. Finding wording which accurately describes what has been done while also respecting the usages in statistics, science and the law has proved difficult.
2. Determining, and making clear in the draft, the difference between evidence of fact and opinion and attempting to adequately describe and offer examples of these has been an issue.
3. The model on which the draft was built deals with opinion evidence considering propositions at the levels of activity, source and sub-source. Forensic scientists offer opinion evidence which does not fall within this description and work is underway to see how these areas can be drawn in to the standard.
4. The manner in which the quality of the opinion expressed is described is complicated and the approach is still being developed.
5. The manner in which the opinion should be expressed has proved to be a matter of some debate.

A second draft has been prepared and the review process initiated.

1.3 Update on Sexual Assault Referral Centres Standard

The MFSG carried out an extensive review of the consultation feedback from the quality standard for taking forensic samples from complainants in sex offence cases (FSR-C-116: Sexual Assault Examination: Requirements for the Assessment, Collection and Recording of Forensic Science Related Evidence.), the 'readiness assessment questionnaire' and guidance (FSR-G-212: Guidance for the Assessment, Collection and Recording of Forensic Science Related Evidence in Sexual Assault Examinations [8]). The 'readiness assessment questionnaire' was added to FSR-C-116 as an annex and the content finalised. Publication is expected early in 2020.

Learning from the sexual assault referral centres (SARCs) contamination event, first reported in the Regulator's 2016 Annual Report, was incorporated into FSR-C-116 and a Lessons Learnt document based on the findings will be published in early 2020.

[8] The draft standard for taking forensic samples from complainants in sex offence cases and 'questionnaire' is available at: www.gov.uk/government/consultations/forensic-medical-exam-standard-for-sexual-assault-complainants. The draft guidance [FSR-G-212] is available at: www.gov.uk/government/consultations/forensic-medical-examination-assessment-collection-and-recording-of-forensic-evidence.

In light of the anti-contamination content added to the guidance document FSR-G-212, for taking samples in SARCs, the MFSG will review the previously published anti-contamination guidance for SARCs and custodial settings FSR-G-207 [9] and will develop standards and guidance for taking samples from suspects in custody.

At the September MFSG meeting, Mary Newton stepped down as Chair; the Regulator would like to take this opportunity to thank Mary for her hard work, leadership and dedication to progressing the work of the specialist group. The Regulator is delighted to welcome Dr Bernadette Butler from King's College Hospital NHS Foundation Trust as the new Chair of the MFSG.

Discussions have continued between the Regulator, UKAS and the Care Quality Commission (CQC) with the aim of reducing any potential overlaps or gaps between CQC inspections and the accreditation assessment process. Information sharing arrangements will also be developed between the Regulator, UKAS and the CQC as required.

The Regulator will work with UKAS to support learning and an early adopters' pilot. To this end, UKAS has posted an "expression of interest" notice to identify participants for the pilot project, experts for a steering and technical group and technical assessors [10].

NHS England (NHSE) and NHS Improvement have organised workshops in London and Leeds to be held on 19 and 27 November 2019 respectively; these are tailored for regional SARC commissioning leads, including NHSE and Police/Police Crime Commissioner, SARC managers and provider representatives.

The programme includes presentations from the CQC on findings from their SARC inspections, and from the Regulator and UKAS on the standard and the accreditation[11] process. The workshops will also provide the opportunity for discussion to facilitate identification of the appropriate legal entity for each SARC, single and multi-site accreditation, costs, milestones to support achieving accreditation and potential consequences for not meeting the set deadline of October 2023.

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[9] Available at: www.gov.uk/government/publications/sexual-assault-referral-centres-and-custodial-facilities-dna-anti-contamination

[10] See https://www.ukas.com/news/call-for-expressions-of-interest-sexual-assault-referral-centres-sarcs/ [accessed 20.02.2020]

[11] Accreditation to the International standard BS EN ISO 15189:2012 Medical laboratories. Requirements for quality and competence, referred to as "ISO 15189"

1.4 Update on Toxicology Standards

Because officials in the Forensic Science Regulation Unit (FSRU) were fully occupied in dealing with other priority work areas and with issues that arose during the year, it has not been possible to make any progress during the reporting year with either:

1. work with the United Kingdom and Ireland Association of Forensic Toxicologists (UKIAFT) on the possibility of transforming its toxicology guidance into a standard; or
2. the drug driving standard, FSR-C-133.

The work should re-start in 2020.

1.5 Update on Forensic Gait Analysis Standard

A draft code of practice for forensic gait analysis was consulted on in 2018; all comments received during development of the standard or as part of the consultation were carefully considered prior to the document's final publication in 2019. The document was produced by the Chartered Society of Forensic Sciences' Forensic Gait Analysis Working Group in collaboration with the College of Podiatry and is available at: www.gov.uk/government/publications/forensic-gait-analysis-code-of-practice

1.6 Legal Obligations Guidance

The CrimPR Rule 19.3(3)(c) requires that the party instructing an expert witness must disclose, to the other party, anything which would undermine the credibility of that expert or the reliability of the opinion provided by the expert. The CrimPR were amended to introduce a requirement (Rule 19.2(3)(d)) requiring an expert witness to disclose, to their instructing party, any information which the expert would have to disclose under the provisions of Rule 19.3(3)(c). To facilitate the operation of this provision the CrimPD were amended to provide examples of the types of issue which the expert should disclose. This information is incorporated in Part 19A.7 of the CrimPD. These provisions reflect what had previously been set out in guidance issued by the Regulator and is set out in section 7.17 of Issue 7 of the Regulator's document FSR-I-400: Legal Obligations.

The CrimPD were also amended to stress the need for all involved in the CJS to understand, and comply with, the CrimPR and CrimPD (see Part 1A.3).

> "The Criminal Procedure Rules and the Criminal Practice Directions are the law. Together they provide a code of current practice that is binding on the courts to which they are directed, and which promotes the consistent administration of justice. Participants must comply with the Rules and Practice Direction, and directions made by the court, and so it is the responsibility of the courts and those who participate in cases to be familiar with, and to ensure that these provisions are complied with."

Expert witnesses are participants in the CJS for the purpose of the CrimPR and CrimPD (see Rule 1.2(2)).

It is important to note that expert witnesses must declare, in their report, that they have read Part 19 of the CrimPR (see Part 19B.1 of the CrimPD).

The Regulator's document FSR-I-400: Legal Obligations, was amended to reflect the changes noted above. The guidance on expert witness reports [FSR-G-200] was also amended.

Several senior members of the judiciary gave evidence before the House of Lords Select Committee on Science and Technology inquiry into forensic science. This evidence provided a valuable insight into the views of the judiciary as to what is expected of expert witnesses in the CJS. The relevant documents have been amended to set out these views.

The Accreditation of Forensic Service Provider Regulations 2018 [12] came into effect in March 2019. These are separate from the work of the Regulator but introduced requirements for accreditation in relation to fingerprint and DNA work. The relevant documents have been amended to set out the impact of these Regulations and the potential for change due to, for example, requirements for new declarations to facilitate the operation of the Regulations.

1.7 DNA Mixtures: Guidance on Proficiency Trials

The previous Regulator commissioned a DNA mixture study, outputs of which were used to inform the content of the guidance document *DNA Mixture Interpretation* [FSR-G-222]. A further output of the mixture study was draft guidance on how such studies should be formulated; the Regulator's DNA Specialist Group (DNASG) developed the guidance further

[12] The Accreditation of Forensic Service Providers Regulations 2018 No. 1276, available at: www.legislation.gov.uk/id/uksi/2018/1276 [accessed 20.02.2020].

into the document FSR-G-224: Proficiency Testing Guidance for DNA Mixture Analysis and Interpretation, which will be published early in 2020.

1.8 Facial Comparison Standard

Update of the Video Analysis Appendix to the Codes

In last year's annual report, an update to FSR-C-119, the Video Analysis Appendix to the Codes was identified as the route to clarify the requirements for facial comparison; the intent was to ensure that the requirements for comparison of any image content originating from video footage were updated. The amendments flagged in last year's annual report were made and the draft was reviewed by forensic imaging practitioners in the then Forensic Image Analysis Division (FIAD) [13] of the Chartered Society of Forensic Sciences as well as various practitioners in police video laboratories.

However, the NPCC Specialist Capabilities Programme started a CCTV workstream this year (2019) and revisions to the video analysis appendix were paused while any further amendments likely to be prompted by the CCTV workstream were identified. The revision resumed mid-year and the new version is now expected to be published in the first half of 2020.

Image Analysis: Statement of Principles

In July, the first Regulatory Notice was published, entitled 'Image Enhancement and Image Comparison: Provision of Opinion'. The notice aimed to emphasise certain of practitioners' legal obligations by setting out specific principles based on case law that apply when presenting opinion in relation to image enhancement and/or comparison. In particular, in light of examples of experts straying beyond their expertise and reporting results with inadequate consideration of uncertainty of measurement, it sought to remind practitioners:

1. to restrict any expert evidence to matters within their area of expertise; and
2. to ensure that uncertainty of measurement and limitations of evidence were articulated clearly.

These issues, and the intent to issue principles to adhere to, were flagged in section 1.8 of the Regulator's 2018 Annual Report.

[13] FIAD has since been replaced by the Forensic Digital Media Working Group (FDMWG) or the CSFS.

A critique [14] was published in Forensic Science International: Synergy, to which the Regulator responded with a letter to the journal's editor, co-authored with Professor Michael Stockdale, Head of Law at Northumbria University [15]. The author of the original critique provided a brief response [16]. Thereafter, the Regulator spoke with the image analysis and comparison community at a meeting of the FDMWG of the CSFS. The meeting aimed to initiate the improvement of standards in image comparison; there is further work to do and the Regulator will be meeting with the CSFS early in 2020 to discuss next steps.

Availability of Appropriate Quality Imagery

The NPCC lead for CCTV, Assistant Chief Constable (ACC) Jenny Gilmer, instigated a wide-ranging Specialist Capabilities Programme to look at the end to end process of recovery, handling and reporting of imagery which was cited as a risk area in last year's annual report. The Programme has engaged across the breadth of the CJS partners and therefore is able to address issues as diverse as training, ways of working and cloud storage. The work of the Programme is expected continue during 2020. The Regulator will continue to support ACC Gilmer and her colleagues with this important work.

Law Enforcement Facial Images and New Biometric Modalities Oversight and Advisory Board

As part of its Biometrics Strategy, the HO established a Law Enforcement Facial Images and New Biometrics Modalities Oversight and Advisory Board. This Board has no statutory remit and no power to implement any recommendations it may make. In her 2018 annual report, the Regulator stated that it was "perhaps too early to judge whether or not the Board will be effective in fulfilling an effective oversight function." Since that time, the Board has met on four occasions but, in the Regulator's view, has made no substantive progress towards establishing an effective governance and oversight framework for police use of facial recognition or other biometrics. Guidance for trial deployment of live facial recognition (LFR) was commissioned by the Board and is in draft form; further detail is required on elements such as trial design and evaluation. However, the lack of a statutory remit for the

[14] See https://doi.org/10.1016/j.fsisyn.2019.07.005 [accessed 20.02.2020]
[15] See https://www.sciencedirect.com/science/article/pii/S2589871X19301512?via%3Dihub [accessed 20.02.2020]
[16] See https://www.sciencedirect.com/science/article/pii/S2589871X19301536 [accessed 20.02.2020]

Board relegates the document to non-directive advice; as such, it is couched in indefinite language and there is no requirement for any force to follow its suggestions.

The Regulator is concerned that the existence of the Board may be relied upon to underpin usage of LFR and other biometrics, when in fact it has done little more than review current deployments; the judicial review into the use of LFR by South Wales Police [17] included, at para 44:

> "The Secretary of State has set up an Oversight and Advisory Board, comprising representatives from the police, Home Office, the Surveillance Camera Commissioner, the Information Commissioner, the Biometrics Commissioner, and the Forensic Science Regulator, to co-ordinate consideration of the use of facial imaging and AFR [Automatic Facial Recognition] by law enforcement authorities."

Once a new Government is in place, the Regulator, with the Commissioner for the Retention and Use of Biometric Material and the Surveillance Camera Commissioner will seek a meeting with the Policing Minister to determine how a governance framework can be developed.

1.9 Revision of the Regulator's Codes of Practice and Conduct

The Codes have been poised for re-publication at various points across 2019, only to have events and/or incidents prompt a review of whether any specific aspect of the Codes ought to be amended. It is now anticipated that issue 5 of the Codes will be issued early in 2020.

1.10 Standards under Consideration for Digital Forensics

Cell Site Analysis and Communications Data

In April 2019 expressions of interest to take part in a new pilot accreditation scheme were sought from UK-based bodies that undertake cell site analysis. The pilot was due to run until mid-2020, however delays in agreeing the validation approach and performing test calls to provide ground truth data to support the validation studies now mean that the pilot is unlikely to complete before late 2020. The Regulator would remind all cell site practitioners

[17] *The Queen (on application of Edward Bridges)* v *The Chief Constable of South Wales Police,* [2019] EWHC 2341 (Admin)

that they should be complying with FSR-C-135, the cell site analysis appendix to the Codes.

Network Forensics

The next version of the Codes will reiterate that screening or extraction of data from a device and/or local area networks operated by domestic and small business users remains within the scope of incident scene investigation, requiring accreditation to ISO 17020 and the Codes by October 2020. The Network Forensics Sub-Group of the DFSG is continuing the development of a quality assurance framework for cases where a network administrator rather than a forensic practitioner is required to perform the targeted recovery of data from the network.

Open Source Intelligence (Internet Intelligence and Investigations)

The DFSG sub-group dealing with internet intelligence and investigations has shown that an appendix to the Regulator's Codes could be produced and the quality assurance framework could mirror that of digital forensics. However, this area of investigation is largely performed outside the sphere of traditional forensic sciences, often with a range of other investigators and/or analysists, which would make it more challenging for an accreditation approach to be implemented. The Regulator is therefore exploring with the NPCC Specialist Capabilities Programme on Internet Intelligence and Investigations if suitable practice guidance that incorporates the adequate quality measures could be developed.

1.11 International Standards

At the end of this reporting year, the Regulator stood down from her position as Chair of The British Standards Institution (BSI) Mirror Committee for Forensic Science (FSM/1), to focus resources on domestic standards development. At the time of reporting, the process for appointing a new Chair is in progress; meanwhile, FSM/1 continues to be the UK's voice in relation to the development of forensic science related standards internationally, through International Organisation for Standardization (ISO). During the last year, the ISO Technical Committee (ISO/TC) 272 has continued to work on three standards at Committee Draft (ISO/CD) stage; the FSM/1 Committee has provided comments on each:

1. ISO/CD 21043-3 Forensic Sciences - Part 3: Analysis;
2. ISO/CD 21043-4 Forensic Sciences - Part 4: Interpretation; and

3. ISO/CD 21043-5 Forensic Sciences - Part 5: Reporting.

As previously stated, the UK quality standards framework for forensic science is set out in the Codes. The UK standards already cover the requirements in the new international standards. Therefore, the Regulator will not require organisations to be certified against the new standards.

The development, by ISO/TC 272, of a new standard for forensic grade consumables, ISO 20964, had been proposed and supported by the UK. However, as the UK had insufficient resource to lead its development and there was limited interest from other countries, its development was discontinued during the year. During the coming year (2020), the FSM/1 Committee will determine if the draft can be developed further by BSI into a British Standard.

1.12 Update of Fingerprint Standards

Validation: Friction Ridge Detail (Fingerprint) Search Algorithm [FSR-G-230] guidance was finalised by the Fingerprint Quality Standards Specialist Group (FQSSG) and has been published [18] (see section 2.11).

The work to identify research and development that would be beneficial to the fingerprint community and further underpin fingerprint examination and its use within the wider CJS is completed. The finalised document Fingerprint Research and Development Considerations [FSR-I-409] will be published early in 2020.

In future there must be a move away from using the term ‘identification’ as this terminology risks giving a misleading impression of certainty or near certainty, particularly where comparisons are complex, or the sufficiency of detail leads to variable expert opinion as to whether a mark originated from a particular individual.

The FQSSG will form a fingerprint interpretation sub group to align fingerprint interpretation guidance with the evaluative opinion standard (section 1.2) when a more advanced draft of that standard is available. It is envisaged that the approach and terminology used for fingerprint comparison will be addressed by this work.

[18] See https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/819059/230_Fingerprint_Algorith_Validation.Issue_1.pdf

1.13 Update on Standard for Case Review

In the last annual report, it was stated that the Regulator had funded a 'dry run' to evaluate whether or not accreditation against the standard ISO 17020 would provide an adequate level of assurance at a proportionate cost. At that time, two of the three participating organisations, one of which was participating in the pilot Generic Quality Management Scheme (GQMS) being developed by the CSFS, had been assessed.

During this reporting year, the final organisation was assessed, feedback was collated, and a report produced by UKAS. The UKAS report concluded that ISO 17020 is an applicable standard for accrediting case review activities. However, the cost of such a system is not insubstantial and there remains a structural problem with implementing a standard for case review work that is primarily funded by the Legal Aid Agency (LAA). Solicitors are generally required to award work to the provider offering the lowest quote for the work; this takes no account of any formal quality assurance mechanism. Without statutory enforcement powers to ensure compliance across the board, this would result in providers who adopted a quality standard (which would have an associated cost) being placed at a competitive disadvantage relative to those who did not. Further, the current LAA rates seem unlikely to support implementation of accreditation.

The Regulator's Forensic Science Advisory Council considered the UKAS report, together with alternative options for improving quality assurance of case review. It concluded that it was not possible to make a recommendation on which approach to take without wider change in the CJS. The Regulator is therefore raising the issue at the January 2020 meeting of the Forensic Science Sub-Group of the Criminal Justice Board.

Section 2: Full Compliance with Quality Standards

Requirement 2 [19] **:** That there is full compliance with the quality standards requirements across all forensic science disciplines, from crime scene to court and in all sectors, and that the quality culture has matured.

[19] The Regulator's aims and requirements were set out in full in previous Annual Reports, available at: www.gov.uk/government/publications/forensic-science-regulator-annual-report-2016 and www.gov.uk/government/publications/forensic-science-regulator-annual-report-2015.

2.1 Compliance with the Regulator's Codes of Practice and Conduct

The number of organisations that have demonstrated compliance with the Codes has now risen to 42. This leaves approximately 17 organisations in England & Wales that hold accreditation to ISO 17025 but not the Codes and are regularly practicing forensic science in the CJS. Of these, 12 are in policing (5 hold accreditation solely for digital forensics), 3 are small digital forensics companies and the remaining 2 are primarily instructed by the defence.

The Regulator would like to congratulate all those organisations that have achieved accreditation to the Codes. The provisions of the Codes are based on substantial learning from good practice and from errors and failings in the field of forensic science and so compliance reduces the risk of recurrence of failings and facilitates good practice. Those not yet assessed against the Codes are strongly encouraged to work towards compliance as swiftly as possible, particularly since in the next year, additional provisions to protect against cyber-attack will be incorporated (see section 2.9).

2.2 Update on Compliance with Digital Forensics Standards

A recent evaluation of the impact of accreditation [20] has shown that it has driven improvements across all aspects of digital forensics, including:

1. record keeping;
2. management of non-conforming work;
3. training;
4. competence;
5. procedures;
6. practice;
7. validation;
8. ongoing quality assurance;
9. equipment;
10. accommodation;

[20] At the time of reporting (November 2019) the evaluation has been submitted for publication in *Forensic Science International: Digital Investigation*. Subject to peer review and acceptance, publication is anticipated in early 2020.

11. exhibit handling; and
12. continuity and reporting.

The issues identified during assessment visits ranged from minor areas for improvement to major gaps in assurance; organisations which have not gained accreditation have not benefitted from this improvement process and most will have gaps in their quality assurance. The most concerning aspect of the lack of compliance is the (likely) lack of validation of methods. This means that the limitations of methods in routine use may not be well understood, with consequent risks to the ability to effectively fulfil disclosure obligations and to provide the appropriate level of information to investigators and courts.

The picture of compliance in the commercial sector is difficult to evaluate fully. Of the four largest digital forensics providers, three hold accreditation to ISO 17025 and the Codes for the main services they offer. A fourth had its accreditation to ISO 17025 suspended on 3 June 2019 and reinstated on 2 August 2019 after substantial work to address weaknesses in its processes; it has not yet gained accreditation to the Codes. Two further small digital forensics companies hold accreditation to ISO 17025 but not the Codes. What is unknown is the number of other small digital forensics companies offering services into the CJS without any accreditation. A new procurement framework for digital forensics is being developed by the commercial arm of the Transforming Forensics programme and will emphasise the importance of quality standards. However, risk remains around *ad hoc* procurement of services, some of which may not be fit for the intended purpose. A particular risk exists in relation to CCTV image analysis and comparison, where there are currently no accredited providers and the Regulator has voiced concerns about experts straying outside their area(s) of expertise (see section 1.8).

The NPCC digital forensics portfolio, which is a component of the NPCC forensic science portfolio, has undertaken a compliance mapping exercise against 16 core digital forensics methods, enabling a percentage compliance score to be assigned to each force. This showed that compliance ranged from 0% to 73%, with a mean of 20%. The assessment of compliance considered the Digital Forensics Units (DFUs) in police forces. There are many digital forensics activities taking place outside DFUs, in what has essentially grown up as a cottage industry. In particular, DMIs are undertaking virtually the same processes as DFUs and additional processes at scenes, but none of the DMI units is compliant with the standards required for digital forensics and few are yet working towards compliance. The

true picture of compliance across policing is therefore worse than indicated by the 20% figure.

Although this is a woeful level of compliance against a standard which was set in 2011 for compliance in 2017, the Regulator acknowledges that individual DFUs are not the cause of the problem, nor is the digital forensics portfolio, which has worked hard to provide leadership and to support DFUs towards accreditation.

In reality, DFUs are under-resourced and over-stretched, with demand in terms of number and complexity of devices and volume of data increasing continually. Further, the level of fragmentation of provision of digital forensic services results in a great deal of duplication of effort with inevitable waste of resources. With approximately 60 legal entities seeking digital forensics accreditation, all using slightly different methods and therefore all needing to conduct their own validation, the level of compliance is unlikely to improve.

The Regulator therefore welcomes the formation, by the Forensic Science Sub-Group of the Criminal Justice Board, of a Digital Forensics Working Group. The working group aims:

1. to determine a cross-CJS vision for high quality digital forensics;
2. to identify cross-CJS dependencies; and
3. to ensure a holistic approach, bringing together various NPCC and government initiatives.

The Regulator's team will support this initiative and considers that significant investment in digital forensics is required in order for the CJS to operate effectively. There is undoubtedly learning from overseas, where technology to effectively interrogate data has been deployed for some years.

2.3 Update on Firearms Classification

Firearms classification remains an area where there is little compliance in policing. Triage, to determine either that no further action is warranted or that an examination by an accredited provider is required, is permitted without accreditation but must be performed by competent individuals. Accreditation to ISO 17025 and the Codes is required for classification for evidential purposes. Merseyside Police, together with the three hubs for the National Ballistics Intelligence Service (NaBIS) at Greater Manchester Police,

Metropolitan Police Service and West Midland Police hold the requisite accreditation [21] as do several commercial forensic science providers.

The CPS has set out its position, which is that preliminary classifications may be permitted without accreditation to enable a charge or remand decision to be made only where such a decision cannot, for reasons of operational risk, be deferred until a report has been provided by an accredited organisation. In such instances: [22]

1. the remand statement must be clearly caveated that it contains preliminary findings only;
2. the prosecutor shall ensure that there has been a proper completion of Form MGFSP for submission of items for forensic examination, identifying the forensic issues that need to be addressed, the classification of the weapon and the timescale required; and
3. a report shall be obtained from an accredited provider within the specified timescale.

It is unlikely that there will be a significant further move towards compliance while the Regulator has no statutory enforcement powers.

2.4 Work Towards Compliance with Crime Scene Investigation Standards

There are three strands to the crime (or incident) scene investigation standards.

Investigation of Simple or Complex Incident Scenes by Crime Scene Investigators

The deadline for accreditation is October 2020 and at the time of writing, it is expected that around 30% of police forces will have gained accreditation for the work of a proportion of their Crime Scene Investigators (CSI) on simple incident scenes by this date; only a handful of CSI hubs are likely to have gained accreditation for complex incident scenes. A decision was made by the NPCC Performance and Standards Group (part of the NPCC forensic science portfolio) to prioritise accreditation of simple incident scenes, since less complex incidents provide a starting point from which learning can be shared. Issues such as training and competence, anti-contamination measures, note-taking, method validation and

[21] West Midlands Police does not yet hold accreditation to the Codes.
[22] Taken from guidance issued by the CPS dated 6 August 2019 available from: www.cps.gov.uk/legal-guidance/firearms [Accessed 20.02.2020]

so on, which are common to all incident scenes, will be addressed in this first tranche of assessment visits, leaving only the more complex elements such as setting up appropriate cordons, controlling entry, complex strategy setting and so on for the later tranche of assessment visits.

Initial feedback suggests that the additional time required for note-taking and anti-contamination to meet the demands of the standard will result in each CSI being able to attend fewer scenes per day. Inevitably, the impact will be greatest in the early stages, as CSIs start to embed the new processes and over time, there will be efficiencies to be gained as new processes enter the workflow and become familiar. However, it is still likely that fewer scenes will be visited per day. This creates a conundrum: in a resource-constrained environment, police forces can do things "as they have always been done" to maintain productivity, risking cross-contamination in an era where DNA sensitivity has increased vastly and is routinely in the order of a few cells, or accept that fewer scenes can be attended. Of course, in an ideal world, there would be an increase in the resources made available, but there are difficult choices being made throughout the CJS and little additional funding to be found. The feedback from those furthest along the path towards accreditation and from those involved in assessing competence in the early stages of the process indicates that the standards are necessary.

Fire Scene Investigation

Last year's report set out plans for a pilot of accreditation to ISO 17020. However, only one of the pilot participants was sufficiently far advanced to proceed and so instead of a pilot, that participant was assessed through a "dry run" exercise. In a dry run, (UKAS) trials its assessment methodology by assessing the compliance of a participant with the standard and producing both a report on the viability of the assessment methodology and an evaluation of the participant's level of compliance.

The report concluded that ISO 17020, ILAC G19 [23] and the Codes are applicable for the assessment of fire investigation activities. Further clarity will be required to assist organisations and UKAS in the expected requirements for a number of areas identified during this exercise (including validation, critical findings checks and reporting), so the Regulator will develop an appendix to the Codes to provide this additional level of detail.

[23] ILAC G19:08/2014. *Modules in a Forensic Science Process*, available at https://ilac.org/latest_ilac_news/ilac-g19082014-published/ [accessed 20.02.2020]

Because the pilot could not be carried out in the original timescale and an appendix to the Codes is required, the date for fire investigation to achieve accreditation will be moved. There will be no time for inaction or complacency – it will require a great deal of effort to achieve compliance according to the revised timetable, which will be published in issue 5 of the Codes.

Commercial forensic science providers must charge for their services while most fire and rescue services provide services without charge to their local force; the requirements of accreditation place a cost burden on all and so clarity of policy would be welcomed by everyone. Fire and rescue services would like to understand whether they will be supported by police to gain accreditation for a service that they provide without charge and which they have no statutory duty to provide, while commercial providers need to understand the likely demand for their services and how they can realistically compete against a “free” service. Policy responsibility for fire, policing and forensic science all lie within the HO and the Regulator understands that policy officials from the relevant departments are liaising.

Collision Investigation

The national programme to prepare police collision investigators for accreditation has made significant progress during the year. The scale of the challenge to validate collision investigation methods is large; thousands of hours and significant sums of money have been utilised in the method validation work. Faced with the challenge, the community worked together and conducted the experimentation once for all forces, with each force contributing funding and expertise. Several “crash days” were conducted and the team worked with vendors of the commonly used equipment, to assist with gathering the requisite data. It is early days: the validation has not yet been fully compiled or independently reviewed, but there has already been useful learning and the approach of working so closely together has not been seen in other forensic science disciplines. Without this co-operation, individual forces could never have achieved this task.

In parallel with the experimental work, discussions have continued to progress an ambitious, networked route to accreditation, which the NPCC Specialist Capabilities Programme has supported. All 43 territorial forces in England and Wales have given provisional agreement to continue with this approach but the governing agreement has yet to be finalised.

2.5 Update on Contamination Elimination Database

The CED has continued to demonstrate its value, with over 1100 DNA profiles that had been stored on the National DNA Database (NDNAD) as unidentified “crime scene samples” now having been confirmed as being contaminant profiles from police officers and staff. In the last quarter for which figures are available (July – September 2019), 24 contaminant police officer/staff profiles were removed from the NDNAD after being identified by the CED and investigated in force. In the coming year, the Regulator would like to see improved timeliness from forces in investigating matches highlighted by the CED.

As noted in the introduction, DNA profiles obtained from environmental monitoring samples (swabs taken from work areas to detect contamination) are now checked against the Contamination DNA Database, NDNAD, and the CED as well as the International Commission of Missing Persons (ICMP) Exclusion Database (EDB). The results are reported back to the originating laboratory. In this way, contamination events such as a victim’s DNA being detected in a drying cabinet and a crime scene profile being detected near a work surface, have been identified, enabling improvements in practice to be made.

During the year, a pilot study was carried out in the East Midlands region. This incorporated DNA profiles from staff working in SARCs and environmental monitoring results from swabs onto the CED; it is expected to report by early 2020. The Regulator wishes to thank all those involved.

In the absence of direction by the Police Staff Council, the Regulator appeals to all police staff to allow their DNA profile to be included in the CED. Otherwise, they risk contamination of evidence going undetected, investigations being misled, and their own profiles being retained on the NDNAD as apparent “crime scene samples” *ad infinitum*. The Regulator would also urge manufacturers of consumables used in DNA analysis to collaborate in providing anonymised staff samples to the CED; to date, the vast majority of manufacturers have declined to do so.

2.6 Update on Forensic Pathology

Code of Practice for Forensic Pathology

The code of practice for forensic pathology has been reviewed and updated. Only one section, that on less invasive post mortem examinations, is yet to be agreed.

A new section has been created dealing with the donation of organs and tissue. This will be supported by a guidance document which will be published at the same time as this code.

The guidance document on the history section of the report has been updated and will be published at the same time as this code.

Excited Delirium

Guidance has been prepared on the use of the term 'excited delirium' as a cause of death. This will be published at the same time as the Code.

Audit

The audit initiated in 2017 was completed and the report published at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/768011/Audit_2017_-_Final_Report.pdf.

A new audit was initiated in 2018/19. The review of the reports has been completed and will be published in due course.

Legal Issues in Forensic Pathology and Tissue Retention

The document has been updated and will be published at the same time as the Code.

2.7 Fingerprint Comparison Compliance

In March 2019, the Accreditation of Forensic Service Providers Regulations 2018 (SI 1276/2018) [24] were implemented, which introduced a requirement for competent law enforcement authorities to use providers of fingerprint and DNA analysis that hold accreditation to ISO 17025. This legal requirement provided a catalyst for the accreditation of police fingerprint comparison bureaux. By the end of this reporting period, all save five police bureaux had achieved ISO 17025 accreditation and those not accredited had made provision for matches from their fingerprint bureaux to be checked at an accredited facility. Of the bureaux not accredited at the end of the reporting period, three had been recommended for accreditation and were close to grant of accreditation. One bureau had not applied due to a regional restructure that may result in the work being moved to a different bureau. The remaining force had not been recommended for accreditation.

[24] The Accreditation of Forensic Service Providers Regulations 2018 No. 1276, available at: www.legislation.gov.uk/id/uksi/2018/1276 [accessed 20.02.2020].

Although the Chief Officer has expressed to the Regulator the view the bureau is working at a high standard, it is difficult to reconcile that view with the UKAS decision not to recommend accreditation; the force must make every effort to address the issues raised as a matter of urgency and gain its accreditation without further delay.

2.8 Sole Traders and Small/Micro-Businesses

The report of the House of Lords Science and Technology Committee [25] recommended that the Forensic Science Regulator should work with UKAS to find a proportionate way to reduce costs of accreditation for niche and smaller private providers. The Regulator responded to this recommendation thus [26]:

> "Continuing work with UKAS and the Chartered Society of Forensic Sciences (CSFS) to find ways in which the costs of accreditation could be reduced for smaller and niche providers remains a high priority. The generic quality management system being piloted has the potential to reduce both the 'internal' preparation time an organisation needs to spend in establishing their quality management system and the UKAS assessment time that would be required to gain accreditation. In addition, it provides a mechanism for audit and peer review for sole traders and very small businesses and support for ongoing quality management. It therefore has the potential to reduce the costs of gaining and maintaining accreditation. However, because the CSFS needs to recover its costs in developing and maintaining the system, there is a cost to joining the scheme. This cost is ultimately related to the number of organisations that join: a large number would enable the costs of the scheme to be spread more broadly and hence the cost to each organisation would be smaller. While the Regulator has no statutory powers, the number of organisations joining the scheme will remain low. If a means of funding the CSFS scheme could be found, such that the cost to small businesses of joining the scheme could be reduced or eliminated, there would be a significant impact on the overall cost of accreditation. I have discussed this with Home Office officials, who have undertaken to determine whether grant funding could be found.

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[25] See section on Wider Risks, footnote 4 in the introduction.

[26] Available at: https://www.parliament.uk/documents/lords-committees/science-technology/forensic-science/Forensic-science-regulator-response-forensic-science.pdf [accessed 20.02.2020].

Alongside this work, I will continue to work with UKAS to seek ways to enable the appropriate assurance to be gained at a lower cost."

The Government response included the following [27]:

"13. With respect to the costs for smaller providers, their Lordships will understand that our top priority is to prevent miscarriages of justice. Providers that have invested in accreditation recognise it as an investment in basic quality management and it is important that providers play on a level playing field. This means removing the opportunity for providers to be undercut by those who have not demonstrated this competency to UKAS."

14. The Government also wants to promote innovation and we note that the Regulator is working with UKAS and the Chartered Society to determine how to reduce the costs of accreditation for niche and smaller private providers. We do not wish to pre-empt this work but will consider any support the Government can offer as part of this process as it progresses. For example, Home Office officials will explore whether grant funding can be found for this purpose. It is also important to note that the Regulator's codes are drafted with reference to an Advisory Council, which includes representation from small and niche providers."

The CSFS scheme was piloted through the dry run to assess ISO 17020 for case review (see section 1.13); this was a useful exercise and highlighted areas where the management system may be simplified. However, for this scheme to work efficiently, it needs multiple participants and without central funding and/or statutory powers for the Regulator, the number of participants is unlikely to increase. The Regulator understands that Home Office officials have had initial discussions about potential funding routes with colleagues in the Department for Business, Energy and Industrial Strategy, which is also the sponsor department for UKAS.

Discussions regarding seeking assurance for case review using options other than accreditation took place at the Forensic Science Advisory Council. As a result, that the wider issue of cost for small business which are primarily paid from LAA funding will be raised at the January 2020 meeting of the Forensic Science Sub-Group of the Criminal Justice Board,

[27] Available at: https://www.parliament.uk/documents/lords-committees/science-technology/forensic-science/Govt-response-forensic-science.pdf [accessed 20.02.2020].

2.9 Complaints and Investigations – Update from Last Year's Report

Referrals of Quality Issues During the Year

Cyber Security

The most significant referral this year was the result of a cyber-attack on one of the largest commercial providers. The consequences of this attack were severe. The immediate consequences were the loss of access to affected IT systems, data held on those systems and the methods whose functionality required those systems to be fully operative. There were further consequences as follows.

1. The provider had to withdraw most services.
2. Customers and stakeholders blocked electronic communications with the provider.
3. As a result of the communications blockade the provider could not accept new work even in areas that were not affected.
4. The reliability of all data held on the provider's services was brought into question.
5. The reliability of all methods using the systems was brought into question.
6. Cases could not progress in the CJS due to the issues listed above.
7. The provider had to commission significant programmes of work to:
    a. verify the data on its systems to confirm that it was unaffected;
    b. introduce and validate methods that did not rely on the affected systems; and
    c. revalidate all methods that employed the affected systems once they were recovered.

The impact on the provider and on the CJS was extreme, emphasising that forensic science is part of the UK's critical national infrastructure. The NPCC and all providers worked to maintain the provision of services to the CJS, albeit with rationing of services and lengthened delivery times.

The National Cyber Security Centre (NCSC) worked with all major providers to ensure that appropriate security provisions were in place. The NCSC also provided the Regulator with advice on what cyber security provisions should be adopted by providers to reduce the risk

of another such attack. A consultation exercise was undertaken on this advice and, following the consultation, it has been reviewed with the NCSC and the Quality Standards Specialist Group (QSSG).

It is likely that the reviewed requirements will be issued as a regulatory notice and incorporated in the version of the Codes subsequent to Issue 5. This is to ensure that all forensic units have sufficient time to implement the new requirements before their compliance is assessed.

Digital Data

There were several self-referrals this year related to poor handling or control of digital forensic evidence or data. The main handling issues concerned data and exhibits being supplied to the wrong individuals or organisations, although in all instances, the information remained within the law enforcement and partner community. At least one handling issue required a self-referral by the unit in question to the Information Commissioner's Office; continuity was not lost as an audit trail was maintained, but the material was incorrectly routed. Most of the issues appear to have arisen because procedures did not fully cover data transfer. Almost all data handling incidents required corrective actions to improve procedures; all incidents required staff to be either reminded of the underlying aims of existing requirements or trained on the improved procedures.

Digital Data Extraction Software

There have been several referrals where software tools for data extraction have not performed as the users expected or, when an issue has arisen, users of the tool considered that the nature of the problem had not been communicated correctly or quickly enough by the tool providers. Extracting data from devices is often a process of reverse engineering, generally partially or fully automated by a variety of software tools. The phone's software and applications are regularly changing and keeping up is a constant challenge for the tool developers. As the tools are extracting data in ways the phone designer had not intended, it is not entirely surprising that a tool on its own is unlikely to extract all data that might be present, and investigators may have to do more.

Although failure to find data is the more common issue, there is a risk that the tool may perform poorly in other ways. The most serious referral was where the tool incorrectly attributed the recipient of deleted messages. This was a serious error, which upon

investigation appeared to be isolated to a single version of iOS (Internetwork Operating System) with deleted data; the tool has now been patched. This was a reminder that all officers need to understand that data of this type should always be corroborated, for instance against call data records. The NPCC led on ensuring that there was an appropriate national approach and sent out guidance to their expert network. This risk must be considered to be present with all tools, albeit generally small: it appeared that only certain permutations of the deleted data in this case would have resulted in the error occurring.

It is unlikely that test data could be produced that would demonstrate that the error could not occur with any future iOS or even Android release; however, testing could reduce risk. Those outside the NPCC expert network considered that the release notes for the patch, which referred to a 'solved issue', did not convey the seriousness of the error to all. Release notes for all tools can be helpful in identifying where issues have been solved, bugs fixed and new or improved capabilities incorporated, to help users to assess potential impact on previously extracted data. However, it would assist in managing and assessing risk if live issues with tools or methods could be shared wider. Consequently, the NPCC is looking at how user groups on the new sharing platform, the Knowledge Hub, might be used to allow all policing partners to be aware of issues as they are raised, rather than waiting until the patch becomes available.

Presumptive Drug Testing Kits

In *Bird* v *Adams* [1972] Criminal Law Review (CrimLR) 179 the court determined that, in most circumstances, an admission by a suspect as to the nature of a substance believed to be a controlled drug was worthless. While there have been a small number of cases where such admissions have been relied on, these have been exceptions where the nature of the substance could be reliably stated. The HO introduced a 'guilty plea' system using approved presumptive drug testing kits to facilitate the CJS accepting admissions by a suspect (see Home Office Circular (HOC) 26 of 1991). This system has been maintained (the current provisions being in HOC 15/2012 as amended by HOC 13/2014) and led to the introduction of the Evidential Drug Identification Testing (EDIT) process. These systems allow the use of approved presumptive drug testing kits for evidential purposes in simple possession cases only. Use for non-evidential purposes is allowed in other cases.

In *R* v *Prosser* [2019] EWCA Crim 836 a presumptive drug testing kit was used solely for the purposes of a charging decision. This led to a charge of possession with intent to supply Class A drugs. At the time of the charging decision the CPS, rightly, stressed the need for scientific analysis of the material to establish whether it was a controlled drug. The material was submitted for laboratory analysis.

At the earliest opportunity the accused pled guilty to the charge and was sentenced. The laboratory then reported that the material was a mixture of codeine and paracetamol and that no controlled drug was present. This led to an appeal where the conviction was quashed and a conviction for the attempt was substituted.

Clearly the CJS processes in this case did not operate as they should. The Regulator has raised these issues with the CPS and the senior Judiciary.

It is also clear that the kit gave a false positive result in this case. This matter has been discussed with experts and it appears that the Marquis Reagent based kits when used on such mixtures might give a result which a user, unless very experienced, may take as a positive result. This matter has been raised with the HO in relation to the testing and approval of kits and with stakeholders in relation to the training of kit users.

Anonymous Reporting Line

In July 2019, the Forensic Science Regulator's Anonymous Reporting Line, which is hosted and operated by CrimeStoppers, was launched. This line is available to the general public and forensic science professionals to report concerns about forensic science quality. For those within the profession, it is intended that this line is used as a last resort, since the Regulator generally expects any quality issue identified within a forensic unit to be addressed through that organisation's internal quality management processes in the first instance. There may, however, be instances where a member of staff believes either that their organisation has not addressed their concerns or that they would be disadvantaged in some way by reporting concerns internally. It is for such instances that the anonymous reporting line has been established.

This is a route for referrals of quality issues only and is not for issues such as sexism or bullying in the workplace; issues such as these should be addressed via another avenue.

Referral Trends

Table 2 details the number of referrals to the Regulator in each of the last five years. As noted previously, the frequency of quality referrals to the Regulator is not in itself an indicator of concern; of greater concern are quality failures that are unrecognised or unreported and so are not effectively dealt with. As quality standards have been introduced into successive disciplines there has been an increase in referrals, which indicates that failures are being identified and acted upon, not that the number of failures is increasing.

Table 2: Referrals to the Regulator 17 November 2014–16 November 2015 to 17 November 2018–16 November 2019 [28]

Classification	2014–2015	2015–2016	2016–2017	2017–2018	2018–2019
Severe risk	0	0	0	0	1
High risk	7	9	14	6	4
Medium risk	15	33	25	44	60
Low risk	9	9	14	27	29
Outside scope	3	4	6	8	11
Total	**34**	**55**	**59**	**85**	**105**

2.10 Streamlined Forensic Reports, Abbreviated Reports and Procedural Issues

In response to concerns raised previously by the Regulator, including in her 2018 Annual Report, removal of abbreviated statements from the reporting process was piloted in the East Midlands Region, with the support of the Senior Presiding Judge (SPJ), then Lady Justice Macur. The SPJ also reiterated the requirement that scientists should not be called to give expert evidence on a Stage1 SFR (SFR1):

> "since the SFR1 is an initial report to provide key forensic information at the earliest opportunity to enable the parties to identify the relevant issues and necessary scientific evidence. It is stage two of the process that provides the

[28] The 2017–2018 figures are slightly different from those in the last annual report due a matter being considered a referral after the text was finalised for the report.

‘expert’ evidence, and the responsible forensic scientist should be required to attend court if the evidence cannot be agreed.” [29]

New SFR guidance will reiterate the need to employ SFR in full, in disciplines where it has been embedded; abbreviated statements should not be used for such cases. The pilot for the removal of abbreviated statements was deemed to be successful. A proforma forensic outcomes report will be shared with all forces and suppliers, to communicate initial results in disciplines where the SFR process has not been implemented.

Procedural issues continue to cause intermittent problems, including an example made known to the Regulator where a scientist attended a Crown court as warned, only to be questioned at length about his colleague’s report. His colleague had not been warned to attend nor had the attending scientist supervised the work. This departure from the rules for introducing expert evidence, which are clearly set out in Part 19 of the CrimPR should never happen. It places the scientist in an impossible position and risks the fairness of a trial. The new SFR guidance aims to address such issues; a ‘Case Management Risk Form’ will be introduced to standardise the approach to challenging the wrong person being called to court and options to mitigate the associated risks.

Experts instructed by the defence continue to report that they are regularly instructed late in the process, often with only a few days to review the evidence and prepare a report.

Procedural issues, whether they involve the incorrect use of SFR1s or abbreviated statements, late instruction of experts or calling the wrong expert, are avoidable. It has been reported to the Regulator that they are much more common in some geographical areas than others, so as part of an action from the Forensic Science Advisory Council, the AFSP has undertaken to produce a ’heat map’ of the examples its members have encountered. This will assist with identifying where issues are occurring and therefore how to bring about improvement. The Advisory Council has representation from CPS and the judiciary as well as the police and commercial providers of forensic science, so will be well placed to identify what actions are required. The NPCC’s SFR Board is also seeking further information and is providing support to forces.

Research into the manner of operation of the SFR process is underway by Dr Sophie Carr and Associate Professor Emma Piasecki of Northumbria University, with input from Professor Itiel Dror of University College London. Carr and colleagues have highlighted

[29] Letter from the SPJ to resident judges and police forces.

risks relating to insufficient contextual information, incorrect emphasis or insufficient information to enable proper identification of the issues. [30] However, the SFR process is viewed as an important way in which resources can be focussed on the issues in dispute [31], so ensuring that the process works robustly is important. The SFR Board seeks to ensure that relevant recommendations from academic work are fed into the SFR guidance issued to police forces.

2.11 Home Office Biometrics Programme

Development and testing of new algorithms for fingerprint comparison has progressed and a document to provide guidance on the requirements for testing and documentation at each stage was developed by the Regulator's FQSSG and published in July [32]. Because of the Accreditation of Forensic Service Providers Regulations 2018 [33], fingerprint bureaux which have automated database searching within their scope of accreditation will need to ensure that they manage the testing and implementation process effectively so as to maintain their accreditation throughout.

Implementation of the first phase of the upgrade to the NDNAD has been delayed until approximately April 2020; the Regulator has provided guidance on the validation requirements for forensic science methods, which are based on an assessment of risks to the CJS. Planning is underway within the Home Office Biometrics Programme and FINDS teams to ensure that risks to the CJS are controlled by appropriate testing prior to implementation.

Last year, the Regulator reported that there had been no progress towards certification to the TickITplus [34] standard for the NDNAD and that the NDNAD has been non-compliant with the previous requirement, for TickIT certification, for some years. Towards the end of this reporting year, there have been more constructive discussions with HO officials

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30 Carr, S., Piasecki, E., Tully, G., and Wilson TJ. (2016). Opening the Scientific Expert's Black Box: 'Critical Trust' as a Reformative Principle in Criminal Evidence. *The Journal of Criminal Law* vol. 80(5), pp 364–386.

31 Letter from the SPJ to resident judges and police forces.

32 Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/819059/230_Fingerprint_Algorith_Validation.Issue_1.pdf

33 The Accreditation of Forensic Service Providers Regulations 2018 No. 1276, available at: www.legislation.gov.uk/id/uksi/2018/1276 [accessed 20.02.2020].

34 TickITplus offers a flexible approach to IT quality and certification, including software development and information security management. For further information, see www.tickitplus.org/en/information/information.html [accessed 20.02.2020].

responsible for hosting and maintaining the NDNAD. While the Regulator would be open to considering an alternative standard if an evidence-based case were made, some form of independent assurance is required, given the vital importance of the NDNAD and its integrity. The Regulator expects to see substantial progress this year.

2.12 Statutory Powers

Throughout the report there are examples of the issues and consequences of the lack of statutory powers for the Regulator (see section on wider risks and sections 1.3, 1.8 and 1.13 as examples). It was the policy of the last Government to introduce statutory powers at the earliest available opportunity. During 2019 there was an attempt to achieve this through a Private Members Bill, but the 2017-2019 Parliamentary session has now ended, so the Bill will not progress; nonetheless, the Regulator wishes to thank the Bill's proposer (Chris Green MP) and its sponsors for their efforts. At the time of writing, whilst the Regulator continues to engage with the HO policy team in anticipation of legislation it remains unclear if or when such powers will feed into the legislative programme of a new administration, when elected.

Section 3: Shared Understanding of Quality and Standards

Requirement 3 [35]: That there is a shared understanding of quality and standards by all stakeholders, including commissioners of forensic science, expert practitioners, researchers and all end users, including the police, the prosecuting authorities, defence and courts.

3.1 Promoting Adoption of Standards

If standards are to be adopted to the best effect, the people who will be working within a quality system need to understand their value and how they work. There needs to be a commitment to changing and improving practices over time and not an implicit assumption that following standard operating procedures means that thought is unnecessary. At a meeting the Regulator attended during the year, one of the attendees noted that less-skilled

[35] The Regulator's aims and requirements were set out in full in previous annual reports, available at: www.gov.uk/government/publications/forensic-science-regulator-annual-report-2016 and www.gov.uk/government/publications/forensic-science-regulator-annual-report-2015.

practitioners would be needed as standards were adopted; this is utterly erroneous and dangerous. Quality systems provide a means to standardise routine operations on the basis of experimentally optimised and tested good practice. This in turn ensures that the requirements of the court to be informed about issues such as validity, reliability, uncertainty and safety of inference can be met. However, the practitioner must always be thinking about the optimal route for the material they are examining. If the item is unsuited to a standard method, there ought to be procedures within the quality system to enable safe and transparent deployment of alternative methods, whether they are other standard methods or innovative approaches.

Of course, the system by which forensic science is commissioned must facilitate proper case by case evaluation: if what is procured is a standard application of a series of basic tests, then that is what will be delivered, but it might not be what is required. And if the equipment or consumables procured are not fit for purpose, there will be a negative impact on cases; if the staff recruited are not of the right calibre, they are unlikely to make effective, competent experts. That is why the Regulator prioritises speaking to a broad range of people involved, directly or tangentially, in forensic science, such as practitioners or supporting professionals. During the year, in addition to informal visits to forensic units and academic institutes, the Regulator has personally delivered the presentations listed in Table 3, whilst her representatives have delivered those listed in Table 4.

Table 3: Presentations delivered by the Regulator, November 2018 to November 2019

Presentation Title	**Event**
Regulatory Challenges	Association of Police and Crime Commissioners (APCC) Forensics-Biometrics Briefing, London, November 2018
Quality Standards and Why they are Important for Collision Investigation	Forensic Collision Investigation Seminar, London, January 2019
Quality Standards in Forensic Science: A Review of Progress, Learning and Next Steps	Forensics Europe Expo, London, March 2019
Quality standards in Digital Forensics – Progress and Environment	International Communications Data and Digital Forensics (ICDDF) Conference, Heathrow, March 2019

Presentation Title	Event
Forensic Science in the CJS: Quality, Quality Standards, Impact and Challenges	Academy of Experts Seminar, London, March 2019
Collection, analysis and Interpretation of CCTV Imagery – The Issues	CCTV Working Group at ICDDF, Heathrow, March 2019
Regulatory Perspective	Alan Turing Institute Workshop on Probabilistic Reasoning, London, April 2019
Forensic Science in Homicide Investigation	Homicide Investigation and Forensic Science Symposium, Cardiff, May 2019
Quality, Provision and Future of Forensic Science	Visiting Professor Lecture at Northumbria University, Newcastle, May 2019
Scientific Standards and Accreditation	Biometrics Working Group, London, May 2019
Quality and the Role of the DMI	DMI Spring Conference, Oxford, May 2019
Quality Standards for SARCs	Rowan Best Practice Day, Belfast, June 2019
UK Perspective	Research Innovation to Implementation Symposium, Gaithersburg MD, June 2019
How is Scientific Research and Innovation Seeking to Meet Crime and Security Challenges?	Nuffield Council on Bioethics: The Future of Science in Crime and Security, London, July 2019
CSIs and Quality Standards What are we trying to achieve?	CSI Expert Network Event, Birmingham, September 2019
Forensic Science Quality: Risk, Assurance and Warning Signs	Judicial College: Delivering Judgments and Admissibility of Evidence, Coventry, October 2019
Imagery: Building Quality from Collection to Court	Chartered Society of Forensic Sciences Digital Media Working Group, Birmingham, October 2019
Whole System Approach for Digital Forensics	Cityforum Round Table: Towards a Future Vision for Digital Forensics, London, October 2019
Tackling Risks to Quality of Forensic Science in the Criminal Justice System	Bond Solon Expert Witness Conference, London, November 2019

Table 4: Presentations by Forensic Science Regulation Unit officials representing the Regulator, November 2018 to November 2019

Presentation Title	Event
An Inspector Calls: Preparing for a SARC Care Quality Commission and Forensic Science Regulator's Inspection	The St. Mary's Centre 17th Annual Conference 30 April -1st May 2019 (workshop presentation on both days)
Forensic Science Regulation and Fingerprint Update	Fingerprint Industry/Academia Conference, University of Leicester, 26th July 2019
Cell Site Accreditation Pilot: Validation Meeting	Forensic Science Regulator's Cell Site Pilot Launch 6th August 2019
Introduction to Risk Assessment in Validation	National fire Network, 30th September 2019
Forensic Science: Quality, Risk and Assurance	Joint meeting of the Chartered Society of Forensic Sciences and the British Academy of Forensic Sciences, November 2019.

3.2 Parliamentary Scrutiny of Forensic Science

House of Lords Science and Technology Select Committee

The foreword of the Regulator's 2018 report referred to her oral evidence to the House of Lords Science and Technology Select Committee on 22 January 2019. This was followed up with additional written evidence, as requested, concerning the governance and oversight of forensic science [36]. On 1 May 2019, the Committee published its report [37], which the Regulator welcomed in a statement [38] and which formed the basis of further discussions with the Forensic Science Advisory Council and the DFSG in particular. Although it is the responsibility of the Government to formally respond to Select Committee reports the Regulator responded to the Chair of the Select Committee concerning the specific recommendations directed to her [39]. It is the Regulator's hope that the Government will, as

[36] Available at: http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/science-and-technology-committee-lords/forensic-science/written/96445.html [accessed 20.02.2020].
[37] See section on Wider Risks, footnote 4 in the Introduction.
[38] Available at: https://www.gov.uk/government/news/regulators-statement-on-lords-committee-report-on-forensic-science
[39] Available at: https://www.parliament.uk/documents/lords-committees/science-technology/forensic-science/Forensic-science-regulator-response-forensic-science.pdf [accessed 20.02.2020].

urged, develop “a new forensic science strategy which focuses on greater coordination and collaboration” and will take forward the other thoughtful and helpful recommendations in the report, in particular, legislation to place the role of Forensic Science Regulator on a statutory basis.

House of Commons Science and Technology Select Committee

On 10 January 2019, the Rt. Hon. Norman Lamb MP, Chair of the House of Commons Science and Technology Select Committee, wrote to the Regulator, requesting information regarding discussions with the HO in relation to legislation for statutory powers and offering the assistance of the Committee [40]. The Regulator responded, clarifying provisions that would improve the then Private Member’s Bill and stating that she expected little progress to be made [41]. On 12 February 2019, the Committee announced that it would hold a one-off evidence session with the Commissioner for the Retention and Use of Biometric Material, Paul Wiles, the Forensic Science Regulator and the Minister for Countering Extremism, Baroness Williams of Trafford, to follow up on the Committee’s 2018 Report “Biometrics strategy and forensic services” [42]. The session was held on 19 March [43]. On 26 June 2019, the Regulator gave the Committee a brief oral update on the cyber-attack affecting Eurofins Forensic Services.

The Committee published its report on 18 July 2019 [44]. This concluded that the Government had failed to show leadership in not passing legislation to grant the Regulator statutory powers and expressed serious concerns about the stability of the forensic market and consequent risks to the CJS. It also urged the Government to work with the Regulator to develop plans for a national forensic science capability, for niche services where skills are threatened. Before the Government’s response had been submitted to the Committee,

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40 Available at: https://www.parliament.uk/documents/commons-committees/science-technology/Correspondence/190110-Chair-to-Dr-G-Tully-re-Forensic-science-regulation.pdf [accessed 20.02.2020].

41 Available at: https://www.parliament.uk/documents/commons-committees/science-technology/Correspondence/190121-Gillian-Tully-to-Chair-re-forensic-science-regulation.pdf [accessed 20.02.2020].

42 See https://www.parliament.uk/business/committees/committees-a-z/commons-select/science-and-technology-committee/news-parliament-2017/biometrics-strategy-and-forensic-services-chairs-comments-17-19/ [accessed 20.02.2020].

43 A transcript of the evidence is available at: http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/science-and-technology-committee/the-work-of-the-biometrics-commissioner-and-the-forensic-science-regulator/oral/98556.html [accessed 20.02.2020].

44 Available at: https://publications.parliament.uk/pa/cm201719/cmselect/cmsctech/1970/1970.pdf [accessed 20.02.2020].

Parliament was dissolved and the 2019 General Election called. Norman Lamb stepped down at the election and the new Committee is yet to be announced; the new Committee will decide whether or not to pursue enquiries into forensic science.

3.3 Research Priorities from a Quality Perspective

There is an ongoing need for research to support the quality of forensic science. Particular areas in which the Regulator would like to encourage research include the following.

1. Research to underpin the scientific basis of facial comparison.
2. Research to underpin the scientific basis of methods such as gait analysis, where understanding of independence (or linkage) between class characteristics is limited.
3. Further data collation, to underpin evaluation of evidential significance.
4. Development of reliable approaches to assist with validating, collating and effectively mining data from digital sources, such that reasonable lines of enquiry can be followed efficiently and with reduced risk of missing critical information.
5. Research to understand how forensic scientists can more effectively communicate their findings, and the significance of those findings, to juries.

In addition, the FQSSG has been developing a document setting out research priorities in the fingerprints discipline, which will be published early in 2020 and can be used by researchers to identify needs for fingerprint-related research.

3.4 Lessons Learnt Publications

This year an *ad hoc* series of documents have been produced to publicise lessons that the forensic science community can take from investigations conducted as a result of quality failures referred to the Regulator as required in the Codes.

With so many cases worked on professionally, objectively and diligently in the CJS each year, occasionally errors occur, and it is important that the findings from investigating these errors are disseminated to the forensic science community. Lessons Learnt documents have been produced on topics including:

1. competency and integrity;
2. the handling of proficiency test samples; and
3. contextual bias.

The intention is to continue producing such documents, where the findings of an investigation into an error or series of errors might provide guidance or clarity to other organisations and practitioners.

3.5 Regulator's Annual Conference Update

The Regulator's annual conference took place on 5 March 2019. The event was attended by approximately 200 delegates representing many areas of the forensic community such as:

1. the police;
2. the commercial, medical, defence and security, and academic sectors;
3. prosecutors and legal professionals; and
4. policy officials.

The Minister with responsibility for policing, the Rt. Hon. Nick Hurd MP, provided a video presentation and since he was not able to be present on the day due to parliamentary pressures, Alex McDonald, Deputy Director for Identity Policy in the Data and Identity Directorate attended to take questions from the floor on the Minister's behalf.

Max Hill QC, the Director for Public Prosecutions, gave a presentation on the marrying of forensic science and legal expertise in the CJS to build public confidence. He discussed the role of the CPS and how it relates to forensic science, including the codes for prosecution, the disclosure management documents and the need for transparency.

Jeff Adams, from the FSRU, talked about the integrity of forensic science, recent related issues and the responses. The issue of experts showing a lack of candour was also discussed, specifically descriptions of experience and expertise. It was acknowledged that whilst integrity issues only affect a very small number of cases, it is important to learn from failures.

The positive impact of following quality standards was clearly presented by Andrew Price, the Head of East Midlands Special Operations Unit (EMSOU). He discussed the process that the EMSOU went through to achieve fingerprint analysis accreditation, highlighting the initial issues encountered, the challenges faced, the process followed and the outcomes.

Christophe Champod, Professor of Forensic Science at Université de Lausanne, Switzerland, gave a presentation focused on balance, probability and transparency as the key elements when interpreting scientific evidence. Using case examples of fingerprint

evidence and footwear, evaluation of the probability of findings, given alternative propositions, and explanation in court were discussed.

Jim Fraser, Professor of Forensic Science, Strathclyde University, gave a presentation on how all aspects of forensic science come together during a homicide investigation. Police and forensic science cultures were discussed, including where obstacles can be addressed leading to a more productive relationship and outcomes.

Audit management, risks, validation and testing related to digital forensics and what the future may hold was discussed by Mark Stokes, then Head of Digital Forensics, Metropolitan Police Service. He stressed the importance of ground truth data and the need for a central facility for validating tools and software.

The Regulator's conference also included a parallel workshop session in the afternoon on medical forensics, specifically the forensic science practices taking place in SARCs. In this session:

1. Andrew Hunt from NHS England discussed the sexual assault and abuse strategy;
2. Delia Geary and Alison Brodie from UKAS gave an overview of accreditation;
3. Kirsty Faulkner, the head of the FINDS, discussed the use of contamination databases;
4. Paula O'Rouke from Cellmark Forensic Services gave a presentation on the recent advances in forensic techniques; and
5. Mary Newton, the Chair of the Forensic Science Regulator's Medical Forensics Specialist Group and Dr Linda Teebay, Consultant Paediatrician and Forensic Lead, Paediatric SARC Alder Hey, led a discussion on the practical implementation of the Regulator's forthcoming standard and guidance.

The Regulator's 2020 conference will be held on 10 March in Birmingham.

3.6 Encouraging Research in Forensic Science

The HO and UKRI have established a project to assist with linking needs for research in the CJS with the research community and identifying ways to improve coordination (and potentially funding) of research. The Regulator is willing to assist with this work as it develops.

Writing letters of support for high quality research applications and participating in an advisory capacity are other ways in which the Regulator aims to support the research community. For example, during this reporting year she has:

1. participated in an advisory group for an ethnographic study of digital forensics at Exeter University;
2. attended the opening of the Lancashire Forensic Science Academy;
3. contributed to an expert meeting scoping the transfer and persistence work in Dundee;
4. participated in a dissemination event related to research on forensic science in homicide investigations, led by South Wales and Northumbria Universities;
5. visited a range of scientific and legal academics at Northumbria University;
6. facilitated discussion at the Forensic Science Advisory Council of forensic genetic genealogy and implementation of massively parallel sequencing methods; and
7. contributed to a Nuffield Council on Bioethics event on crime and security.

The Regulator was a member of the steering committee for and plenary speaker at the NIST Research Innovation to Implementation in Forensic Science Symposium. [45] The symposium focused on how to overcome barriers to implementing research in forensic science.

3.7 Engagement Across the Criminal Justice System

There are multiple bilateral interactions in forensic science:

1. forensic scientists and the police;
2. the police and the CPS;
3. the police and the HO;
4. the HO and the MoJ;
5. the MoJ and legal professionals/the judiciary;
6. the judiciary and academics;
7. academics and forensic scientists and/or the police.

[45] Notes from the symposium are available at: https://www.nist.gov/publications/notes-nist-research-innovation-implementation-forensic-science-symposium-ri2i [accessed 20.02.2020].

However, with the exception of the recently formed Forensic Science Sub-Group of the Criminal Justice Board, there have been few opportunities for multilateral interactions. The Regulator is in a privileged position to be able to speak with and make links between each of these communities with no conflicts of interest and has continued to do so, liaising with, for example:

1. professional bodies and learned societies;
2. collaborative groups such as the AFSP;
3. policing, via the NPCC Forensic Science portfolio and its sub-groups, and the Transforming Forensics programme;
4. police and crime commissioners via the relevant APCC leads for forensic science and biometrics;
5. fire and rescue services, through the fire investigation group of the National Fire Chiefs' Council (NFCC);
6. the Criminal Cases Review Commission;
7. the senior judiciary;
8. scientific and legal academics;
9. the CPS;
10. a range of other regulators and inspectorates, including Her Majesty's Inspectorate of Constabulary, Fire and Rescue Services (HMICFRS), the CQC and UKAS;
11. HO Ministers and officials; and
12. Parliamentary Committees.

Ensuring that the quality of forensic science is fully considered by all those with the potential to influence policy, strategy and practice will continue to be one of the Regulator's high priorities.

Routine/Administrative Report

Data Protection Act

From time to time the Regulator needs to engage with organisations and/or individuals with specific knowledge or skills and to share certain personal information with those organisations and/or individuals. Similarly, those organisations and/or individuals may have cause to share information with the Regulator.

To ensure that any information so shared is processed in accordance with the Data Protection Act 2018, the Regulator has in place a template Data Sharing Agreement which can be adapted to the specific requirements of the organisation with whom the sharing of information is necessary.

The Regulator is pleased to say that, in September 2019, such an agreement was concluded with the Chartered Society of Forensic Sciences, allowing two-way sharing of information between the respective organisations. In keeping with the principle of data minimisation, each instance of data sharing is accompanied by a tailored request so that only the minimum event specific information is shared.

Further data sharing agreements have been drafted and are currently under consideration by respective organisations.

A charter has been published, which describes how personal information that is received may be processed. This privacy notice can be found at:

www.gov.uk/government/organisations/forensic-science-regulator/about/personal-information-charter.

Resources

The HO allocated the following resources to the Regulator for the financial years 2018-2019 and 2019-2020 (Table 5).

Table 5: Resources allocated to the Regulator, 2018/19 and 2019/20

	Financial Year 2018/19	**Financial Year 2019/20**
Administration budget (staff pay, travel, accommodation, etc.)	£470,000	£474,000
Programme budget (developing standards and forensic pathology audits)	£100,000	£25,000
Total Budget	£570,000	£499,000
Staffing: Regulator (full time equivalent [FTE])	0.75	0.75
Officials: Specialist scientific roles (FTE)	5.0	5.0

Secretariat support	Part of 2 FTE's	Part of 2 FTE's

The Regulator notes with disappointment the reduced funding available in 20190-20 relative to 2018-19; in the face of an ever-greater number of referrals and ongoing support required for those working towards achieving the requisite quality standards, more rather than fewer resources are required. However, the funding reduction was for programme expenses (where work is contracted externally); historically, with few staff to support the work, it has been difficult to administer procurement and contracting processes. The reduction has therefore had less effect than would a reduction to the budget for staff. Additional staff will be needed in the coming year and then again if statutory powers are granted; the Regulator is in discussion with HO officials about future staffing and budget requirements.

Acknowledgements from the Regulator

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Without the time and expertise of all of the experts who contribute to my Forensic Science Advisory Council, my specialist advisory groups and the Chairs who lead them, it would not be possible to develop and review appropriate standards, so my thanks to all of you. As ever, our draft standards have benefitted greatly from the comments received during consultation, so my thanks to all of those who commented.

I have continued to benefit from constructive discussions with:

1. forensic science providers in the public and private sector, primarily although not exclusively through the AFSP;
2. policing through the NPCC forensic science portfolio and its sub-groups,the Transforming Forensics Programme and the Specialist Capabilities Programme; and
3. the fire and rescue services through the fire investigation group of the NFCC.

Again, many thanks to all of those who engage.

Thank you to all of the professional bodies and learned societies who have contributed to raising forensic science quality; in particular this year, I have benefitted from input from:

1. the CSFS;
2. the FFLM;
3. the Royal College of Paediatrics and Child Health;
4. the UKAFN;
5. the Royal Statistical Society;
6. the College of Podiatry;
7. the British Association in Forensic Medicine; and
8. Royal College of Pathologists.

Policy officials at the HO have been open and helpful in their discussions with me as have other commissioners and regulators: I would like to mention in particular Paul Wiles, the Commissioner for the Retention and Use of Biometric Material and his staff officer, Lucy Bradshaw-Murrow and Sir Tom Winsor, Her Majesty's Chief Inspector of Constabulary. I have also benefitted from constructive discussions with Professor John Aston, the HO Chief Scientific Advisor.

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Dr Gillian Tully, Forensic Science Regulator

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