BEST PRACTICE MANUALS. A GUIDE TO FORMAT AND CONTENT

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ABSTRACT: The Quality Assurance Working Group was requested by ENFSI to develop a common format and provide guidance for the production of ENFSI Best Practice Manuals. This presentation will describe the recommended format and how it should be applied by the ENFSI Working Groups. It will also refer to the Fibres Working Group's Best Practice Manual as an example of how the guidance has been interpreted.

KEY WORDS: Best practice; Quality assurance, ENFSI guidelines; Fibres.

Problems of Forensic Sciences, vol. XLVII, 2001, 207–215
Received 12 December 2000; accepted 15 September 2001

INTRODUCTION

One of the major aims of ENFSI is to promote consistent and reliable evidence, not only from laboratory examinations, but throughout the whole forensic process. By this I mean from examination of the scene of an incident to the presentation of evidence in the courts.

ENFSI clearly recognises that what any particular forensic science laboratory actually does will depend on the resources it has available and the specific requirements of its customers and criminal justice system. However, there are some basic principles that should always apply to the way laboratories carry out their forensic examinations.

For example, ENFSI has agreed that, for their laboratory testing activities, all its Member laboratories should have achieved, or should be taking steps towards achieving, ISO Guide 25 compliant accreditation (e.g. EN 45001), or compliance with some other quality management standard with broadly equivalent objectives. I expect that this will be amended shortly to specify compliance with the new international standard, ISO 17025, and its specific interpretation by the ILAC for forensic science laboratories.

ENFSI has also encouraged its Working Groups to develop Best Practice manuals. The purpose of these is to assist member laboratories establish and maintain working practices that will ensure a fit for purpose response to

their customers' requests, minimise the risk of error and lead to more consistent methodology and more compatible results.

In this context, "Best Practice" is not absolute. It can best be described as the means by which the optimum outcome can be achieved for a particular requirement under a given set of circumstances. It follows from this that the best approach to use for any given forensic examination could differ according to the circumstances of the offence, the questions being asked and the intended use of the output. Best Practice should not be influenced by the facilities and resources available to the laboratory, although these can, of course, restrict the extent to which best practice can be achieved. Perhaps by clearly identifying best practice, we will be able to help such laboratories to obtain better facilities and resources.

The aim of this presentation, however, is to explain how we in the QA Working Group feel that Best Practice manuals should be put together and what they should address. We were asked to do this by ENFSI – to suggest a systematic framework and to advise the other Working Groups on the relevant quality considerations to help them comply with the international standards.

We do not see it as our job to address the technical matters of the other Working Groups. That is clearly for them to do. And each Working Group may wish to place more emphasis on certain parts of the Guide we are proposing than others. But it is important that they consider the contribution they can make in all the areas described, rather than just focus on what they are comfortable with. Even if the members of the Working Groups have no direct involvement in a particular part of the forensic process, they should always be in a position to provide appropriate advice.

We have been very fortunate in developing the framework for Best Practice manuals in being able to test it out in anger with the Fibres Working Group as we have gone along. I should like to take this opportunity to thank them for their co-operation and patience. The fact that we are on version 7 of our Guide and the Fibres Working Group are on version 10 of their Best Practice Manual I think reflects that our thinking has not always been as clear as we would have been liked. And we both still have some way to go to get things completed as we would like them. But let me explain what we have done to date.

THE BASIC APPROACH

The intention is to cover the whole forensic process, from examination of the scene of an incident to the presentation of evidence in the courts, so we have approached the manual in the same vein. We deal first with identifying

what the customer wants. In our context the customer will usually be the police investigating officer, and what he wants might be some assistance with a scene examination or some work in the laboratory. We then addresses the process of deciding what can be done that will help and in what order the work should be carried out. These are the things we all have to do before we actually get our hands dirty. The practical considerations involved in examining the scene, or a victim or a suspect, to discover what occurred and recover the evidence, and then carrying out the laboratory examinations come next. At the back end of the process we finally address the issues involved in making best use of the examination results or findings and presenting these to the courts as expert evidence. Only when we have given proper consideration to all these matters can we say that we have adopted best practice.

FORMAT AND CONTENT

Aims and scope

In our recommended format we suggest that each manual should first set out its aims and scope. The aims should be clear and specific. The scope should address the entire forensic process and the people, resources and procedures issues required. It should also define any limitations as to what is covered.

The clear and specific way these are addressed in the Fibres Working Group's manual is a useful model:

I. Aims.

1. To provide a framework of standards, quality principles and approaches for the detection, recovery, examination and use of fibre evidence for forensic purposes in compliance with the requirements of ISO 17025, as interpreted for forensic science laboratories.
2. To provide a systematic approach for Member laboratories of ENFSI and other forensic science laboratories to establish and maintain working practices in the field of forensic fibre examination that will deliver reliable results, maximise the quality of information obtained and produce robust evidence.
3. To encourage more consistent methodology and hence the production of more comparable results, so as to facilitate interchange of data between laboratories.

II. Scope.

1. The following types of evidence encountered in fibres cases:

– the composition/manufacture of fibres or textiles;
– one way transfer of fibres to non-textile objects;

- one way or cross transfer of fibres between textile items, which may be clothes, household, and home textiles or textiles from vehicles;
- transfer of fibre pilings;
- knots;
- comparison of clothing with photographs;
- examination of damage to textiles.

2. The systems, procedures, personnel, equipment and accommodation requirements involved in the entire forensic process, from examinations at the scene of incident to the presentation of evidence in court.

Quality assurance

As one of our main aims is to help other Working Groups to comply with the international quality standards, we felt it would be essential next to provide some clear advice on the quality assurance requirements that need to be addressed and to define some of the more important terms. Quality assurance is essential. Quality assurance gives us the confidence that all our findings can be relied upon and that they relate to the correct item or sample.

We had thought of creating a separate document for this to which all the working groups could refer, as there will be a lot of commonality in what needs to be considered. But, on balance, we felt that if we did this, the quality considerations would be largely forgotten about and not tailored to the different areas of work. This section is thus intended to prompt the Working Groups to think of the requirements in their specific context.

There is not time to go through all the QA issues in detail today, but the areas that the Working Groups should all address are: their personnel and what is expected of them; the tools they need to do the job in terms of equipment, materials, chemicals and accommodation; the requirement to use validated methods and procedures; what they need to record for effective control of casework administration, training, equipment, reference materials and standards, other critical materials and chemicals, and the operation of methods; and how performance should be monitored and assessed.

Much of this is covered by the ISO standards, but I will pick out two areas for specific mention today.

The first is competency. By competency, I mean the qualifications and experience and the knowledge, skills and other abilities essential for effective performance. Certain aspects of competency will clearly be common to all forensic scientists, but there are evidence-specific requirements that will vary between the Working Groups that will have to be addressed by them individually. You will have heard a lot from Mike Fereday and Alan Kershaw this morning about how we are seeking to deal with the question of competency in the UK. We feel that the only real way is to have occupational standards developed by practitioners themselves to a formal protocol, to use these

standards as the focus for all training, and then to assess performance on completion of the training against the standards. We also recognise that competency is not a permanent attribute and it needs to be kept up to date. Competency is in my view a major issue for all the Working Groups to spend some time on and one they would be advised to keep fairly high on their agendas.

The second area I would like to mention is validation. Validation is about demonstrating that the methods and procedures we use are fit for purpose. I am sure that we will all agree that this is essential. For published and peer-reviewed methods, we can accept the work done by others, but we still have to verify that we get robust and reliable results when we use them. We provide advice on what is required under such circumstances. For methods developed or significantly modified in-house, we should carry out a full validation exercise before they are introduced into casework. There are numerous texts on how to go about this and we provide some basic guidance for the Best Practice manuals. We also give some useful references where more detail can be found. But I am sure that this is one area where we in the QA Working Group can still do more to assist, and Gerard Lancelin's presentation is an excellent start. Meanwhile, I would strongly recommend that all Working Groups look very closely at the methods and procedures they are currently using to check how thoroughly they have been properly validated. There may be some surprises!

Establishing the requirement

I would now like to move on to the start of the forensic process, which is getting clarity about the problem the customer, the investigating officer, is seeking to solve and the assistance he is looking for from the forensic scientist. This might seem on the face of it to be obvious. But I have learned over the years that it is not. We should not just be a bolt on extra, responding to requests for specific examinations to be carried out to provide confirmatory evidence after the police have done all their work. For best practice we need to become an integral part of the investigation team. We advise consideration of the sorts of information we need to ascertain to be able to do this, and the need for communication channels to remain open so that we can quickly adjust should the requirements change.

Case assessment

Once the customer requirement is established it is important that we carry out an assessment of what is possible and what is likely to be of most value, given what needs to be proved and the constraints we have identified. In order to do this we need to consider the same sorts of things we have traditionally considered only after we have completed our work, when we are try-

ing to assess and interpret our findings. I will cover these later. There has been some excellent work done by some of my FSS colleagues (Evett et al.) in this area that I would recommend.

A crucial issue here is that not only should the proposition or scenario suggested by the police investigating officer be considered, but also the reasonable alternatives to this: for example, the man broke the window (police proposition) and the man did not break the window and has never been near the scene of the crime (defence proposition). For an impartial, objective approach to the work, best practice would require information to be gathered that can later be considered in terms of the alternative propositions, to establish which is the more likely.

Prioritisation and sequence of examination

The work then has to be planned, and it has to be carried out in the right order to meet the customer's priorities for information and ensure at the same time that we stand the best chance of obtaining all the right evidence to help the police investigation and later assist the court in reaching the right conclusion. We recommend that the Working Groups pay full attention to this in developing their examination and analysis protocols.

Examining the scene, victims and suspects

We now move on to the practical work. This initially involves examination of the scene of crime, together sometimes with victims of the crime, who can represent a crime scene in themselves, and any suspects. Forensic scientists do not always attend the scene and they rarely get involved in the examination of suspects and victims. The former is often the province of police personnel and the latter that of medical practitioners. But we do get involved in this area in some cases, either to help determine how things happened, or to advise others how to carry out tests in the field and to collect evidential material in the best way. We thus need to consider what is best practice.

Where we are involved in carrying out interpretations at the scene, for example with fire investigation, accident reconstruction and blood pattern analysis, or where we are carrying out field tests on materials we would ideally examine in the laboratory, we need to have processes in place that are compatible with the environment. We suggest that the Working Groups should offer guidance on this.

We recommend also that the Working Groups should advise on how best to locate, recover, preserve, package and label the evidential material in such a way that the integrity of the evidence is not compromised.

The most important consideration here is the adoption of stringent anti-contamination precautions. What these are will depend very much on

the types of evidence involved. Although we in the QA Working Group can offer some general guidance it will require the specialist expertise in the various other Working Groups to develop best practice.

Laboratory examinations

We now at last get to best practice in the laboratory. If we had started here, I hope you will appreciate that there would have been many lost opportunities to improve the contribution we could make.

Many of the issues the Working Groups need to consider for laboratory examinations are somewhat similar to those at the scene of crime. For example, we must adhere to strict anti-contamination guidelines and we have to have processes in place for locating and recovering evidence that will not compromise its integrity. However, in the laboratory, we examine the evidence in more detail and we carry out more analyses. The concentration of work of a similar nature in relatively small areas creates its own problems in terms of evidence handling. The QA Working Group can give general guidance, but again it is the experts in the other Working Groups who will have to establish the evidence-specific requirements for their specific areas.

We have suggested that a useful approach might be for the Working Groups to consider here the broad approach to their examinations and the analytical protocols they would recommend. We have also indicated that we feel it is not appropriate for them to dictate specific methods or techniques, but to identify what could be used, depending on the circumstances of the case, and what their value, scope of application and limitations are. We recommend placing detailed information, including references to validation data and the standard operating procedures, to a technical appendix.

Evaluation and interpretation

Once we have all the information we have set out to obtain from our examinations, how do we make best use of it? I have already stressed how closely the process of evaluation and interpretation is linked to that of case assessment, and the work done by my FSS colleagues I referred to earlier addresses both.

In this part of the Working Group manuals, we suggest that they identify the other sources of information available that will help them better understand and make use of the information they have obtained from the case examination. This will include such things as commercial contacts, frequency databases, and transfer and persistence studies.

The evidence should then all be considered in the context of the competing propositions identified at the case assessment stage. A Bayesian approach is well suited to this, where the probability of the evidence given each of the propositions is assessed and compared to obtain a likelihood ratio. The

higher the likelihood ratio, the more it favours the proposition in the numerator. A likelihood ratio of unity indicates equal support for both propositions and the smaller the likelihood ratio gets the more it support the proposition in the denominator. It would be only in very limited circumstances that there would be sufficient data to allow robust numbers to be produced, but the approach can be used with 'gut feel' numbers very successfully.

There are other approaches to assessment and interpretation that might be equally acceptable, and we would not wish to dictate which to use in any given circumstances. But, however it is carried out, it should be done in such a way that it reinforces the forensic scientists' role as objective and even-handed.

Presentation of evidence

We conclude by suggesting that the Working Groups offer advice on best practice in the presentation of evidence, both written and orally. Much will clearly depend here on the requirements of individual countries and their criminal justice systems, but we feel that certain principles are common and can be recommended.

Health and safety

We also accept that if we are adopting best practice we have to consider the health and safety of others and ourselves who might be affected by what we do, so we advise the Working Groups to consider this as well.

References and bibliography

Finally we are putting together a list of useful literature that the Working Groups might find helpful.

CONCLUSIONS

I hope that I have been able to describe how we have responded to the challenge set us by ENFSI to suggest a systematic framework and to advise other Working Groups on the relevant quality considerations to help them comply with the international standards.

We have produced a Guide to Format and Content for the Best Practice manuals which suggests a consistent approach covering: the aims and scope of the manual; QA considerations; establishing the customer requirement; case assessment; the prioritisation and sequence of examinations; examination of the scene, victims and suspects; laboratory examinations; evaluation

and interpretation of the evidence; presentation of the evidence; and health and safety considerations.

We cover the entire forensic process, from examination of the scene to presentation of evidence in the courts. It is our opinion that if each of the Working Groups addresses all the issues we have raised and brings their own knowledge and experience to bear, then we will truly be able to say we can produce Best Practice manuals.

I would once again like to thank the Fibres Working Group and would point you in their direction to see how they have responded.

The Guide we have shared with you today is still in draft form. It is not a tablet of stone. It is just a starting point and will have to be developed further. I fully expect that there will be diverse views on the approach we have taken and in particular the decision not to produce a separate QA manual, so as to allow the Working Groups to concentrate just on their technical considerations. And we have not really considered its applicability to the range of Working Groups we now have in ENFSI.

So, we would now welcome your comments on our approach and your views on how we can make it better meet your needs.