

FORENSIC SCIENCE REGULATOR
FORENSIC PATHOLOGY SPECIALIST GROUP

**AUDIT OF THE WORK OF FORENSIC PATHOLOGISTS
BASED IN THE UNITED KINGDOM**

2012

REPORT OF THE THIRD ANNUAL AUDIT

Issue 2 (January 2015)

FORENSIC PATHOLOGY SPECIALIST GROUP
AUDIT OF THE WORK OF FORENSIC PATHOLOGISTS – 2012

INDEX

INTRODUCTION	para 1
Service provision	5
Audit protocol	7
AUDIT RESULTS	
Introduction	16
7.2.1 General comments	21
7.2.2 Preamble	23
7.2.3 History	24
7.2.4 Scene of the death	26
7.2.5 The external appearance of the body	
7.2.6 Description of the injuries	
7.2.7 The internal examination	
'Drugs death' cases	28
'Second PM' cases	36
7.2.8 Supplementary examinations carried out	
Toxicology investigation	39
Substances implicated as the cause of death	43
Other examinations	51
7.2.9 Commentary and Conclusions	
'Drugs death' cases	52
'Second PM' cases	53
7.2.10 Cause of death	56
7.2.11 Retention of relevant samples during the examination	60
7.2.12 The layout and format of the report	61
Comments made by the coroner	65
Comments made by the police senior investigating officers	67
The timeliness of reporting	72
RECOMMENDATIONS	74
CONCLUSIONS	75
Appendix A – Compliance with the rules for expert witnesses	
England and Wales	A1
Scotland and Northern Ireland	A6
Appendix B – Drugs and drug combinations identified as primary cause of death	
Appendix C – Timeliness of reports	C1
Comparison with earlier audits	C4
Timeliness of toxicological examinations	C9
Appendix D – The effectiveness and limitations of the 'Second PM' cases	
The cases	D3
Circumstances in which the forensic pathologist became involved	D5
Disadvantages of not carrying out the first post mortem examination	D9
Further investigation of the audit cases	D12
Reasons for inadequate consideration of circumstances of death	D18
Conclusions	D23

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INTRODUCTION

- 1 The Forensic Pathology Specialist Group (FPSG) advises the Forensic Science Regulator on matters involving forensic pathology. The Group is responsible for the oversight of standards, and one of the steps taken to acquit this responsibility was the introduction of a programme of audit of the casework carried out by forensic pathologists. The 2012 audit is the third annual exercise in this series. Practitioners operating in England and Wales are registered with the Home Office and were required to participate in the audit. Forensic pathologists in Northern Ireland and Scotland were also invited to take part. As in previous years the former participated fully; there was also limited participation from pathologists operating in Scotland
- 2 The 2012 exercise focussed on two different types of post mortem examination. The first of these was a death due to use of an illicit substance. The second was one in which the forensic pathologist had to take over a case already started by a non-forensic specialist. Anecdotally such cases are often considered to give rise to difficulties in ascertaining the course of events leading to the death.
- 3 Each participating pathologist was asked to submit two specific case reports for audit. One was to be the first case involving illicit substance use examined after 1st August 2011. For the sake of brevity the individual cases in this series are henceforth referred to as the 'drugs death' cases. The second was to be the next case, following the drugs death, in which the forensic pathologist had to take over an examination already commenced by a non-forensic specialist. However, as cases of this nature are not all that common, cases completed on a range of dates were considered acceptable for the exercise. Cases in this series are referred to as the 'second PM' cases.
- 4 The request to submit material was made in October 2012. Only the report as issued to the coroner and/or police was requested, not notes or other supplementary material.

Service provision

- 5 The primary purpose of audit is to monitor the standard of the pathological examination, a service performed by the pathologist for the coroner and the investigating officer. The pathologist's case report contains information which has the potential to offer some indication of the efficiency of this service provision, for instance, issues such as timeliness of the report and whether it contains the prescribed statutory declarations.
- 6 In previous audits much of this peripheral information had been redacted before reports were submitted, thus losing any potential value it may have possessed. Accordingly, for this exercise participants were asked to submit unredacted reports with anonymisation of the material being carried out by the co-ordinator. The additional information which was obtained in this way is included as appropriate.

Audit protocol

- 7 The protocol for audit and the composition of the team remained as for previous exercises. Four forensic pathologists scrutinised the material for its technical quality. A coroner and two police senior investigating officers (SIO) provided a lay perspective on the material, each from their own specific viewpoint.

- 8 Each case was coded with a unique reference number on receipt by the co-ordinator of the audit, who maintained the sole key to the code. The current audit protocol provides that this key can be broken only if identification of the case is deemed essential to prevent a potential miscarriage of justice, and then only with the agreement of the Chair of the FPSG. This provision was not required in the current exercise.
- 9 Case reports (76 in total) were submitted electronically and passed by the co-ordinator to the auditors. Initially each case was given to two pathologist members of the team and to one of the SIOs. One case in two was assigned to the coroner.
- 10 The format of the audit also resembled that used in earlier exercises, in that the pathologists assessed reports against the technical standards laid out in the 2004 *Code of Practice and Performance Standards for Forensic Pathologists* issued jointly by the Home Office and the Royal College of Pathologists.
- 11 In previous exercises broad brush gradings of 'acceptable' or 'cause for concern' were assigned to each report scrutinised. Experience indicated this proved somewhat too black and white, and accordingly it was discontinued for this exercise. Instead auditors were asked to provide more descriptive comment on the way in which the content of the report related to each aspect of the published standard. It was agreed, however, that any example of work which was considered clearly unacceptable would be referred appropriately for further action.
- 12 A *pro-forma* was completed for each case assessed. The comments included on these *pro-formas* form the basis of both this audit report and the feedback provided to participants at the end of the exercise.
- 13 The non-medical auditors assessed the potential usefulness and comprehensibility of the report to the lay reader. While playing a somewhat more limited role in the exercise, the non-medical assessment was considered particularly important in relation to issues surrounding the value of the report to the end user. Assessments were recorded on a simplified *pro-forma* using an *aide memoire* to focus comments. All the forms were returned to the co-ordinator for collation and preparation of the final report.
- 14 In the event that any member of the audit team considered that a case raised issues which would benefit from wider discussion, it was agreed that the case in question should be recirculated so that other members of the team could assess the material. During the course of this exercise five such cases were identified for further consideration, as a result of which appropriate feedback was offered to the practitioners concerned.
- 15 At the end of the exercise every participant received a summary of the auditors' findings in relation to the cases which they had submitted. This was confidential to the practitioner concerned, and will at no stage be released to the public domain. The present report, which will be a public document, collates and summarises the findings, highlighting areas of particularly good practice as well as those which may require attention.

AUDIT RESULTS

Introduction

- 16 The various aspects of the report were assessed against the headings detailed in Section 7 of the 2004 Code of Practice '*The pathologist's autopsy report*', and are recorded under these headings in this final audit report.

- 17 The standard of the reports submitted for audit was consistently high. Those few deviations from best practice as recommended in the Code of Practice were noted. These comments should not be seen as condemnatory; rather they are intended to facilitate the raising of standards overall.
- 18 The general approach to the post mortem examination will be similar whatever the cause of the death and accordingly much of this report applies to both types of case submitted for this exercise. The standard of the examination was considered to be universally high, and elicited relatively little comment. Accordingly results on some sections of the Code of Practice have been run together.
- 19 Where appropriate the different issues raised by the two categories of case are separately reported. The 'second PM' case series identified the serious problems which may ensue when the forensic specialist is not the first pathologist to examine the body.
- 20 As in previous audit reports comments on each section of the pathologist's report are prefaced as appropriate by a summary of the requirements of that particular aspect of the examination.

Code of Practice - 7.2.1 General comments

The report or statement must be clearly laid out, section by section, in an easily read format. There are a number of statutory declarations to be made regarding the pathologist's status as an expert witness.

- 21 The requirements for the declarations regarding the pathologist's status, together with the findings of the present audit, are summarised in Appendix A. The Code of Practice does not specify any particular format and pathologists develop their own style.
- 22 Where statutory declarations were present they met relevant criteria. However, much of this information was absent, presumably having been redacted prior to submission in contravention of the guidelines issued for this audit. While there is no reason to suppose practitioners are not meeting their obligations, the extent of redaction rendered it impossible to assess whether the necessary information is actually being included on every occasion. Pathologists are reminded of their obligation to include the relevant information.

Code of Practice - 7.2.2 Preamble

The preamble should set out details of the deceased and of the autopsy.

- 23 The essential information was included.

Code of Practice - 7.2.3 History

In this section the pathologist is expected to summarise information provided before the autopsy is performed. The Code requires this information to be recorded in full with an acknowledgement that where the information has been obtained from others, rather than being the pathologist's own observations or experience, the pathologist cannot vouch for its accuracy or veracity.

- 24 The case histories were adequate although 7 (9%) were somewhat brief. A further 6 (8%) were very full and detailed.
- 25 It was considered that histories in two of these latter cases may have contained too much detail, some of which was irrelevant and might possibly have been prejudicial to the investigation. This has been noted in previous audits and further advice is to be issued.

Code of Practice - 7.2.4 Scene of the death

Under this heading pathologists are expected to note full details of the scene of discovery of the body. It is recognised, however, that in many cases the body may be removed for emergency medical treatment prior to death and the scene may therefore possess little of relevance to the pathologist.

- 26 The scene was visited in 2 cases (3% of the total). In a further 12 cases (16%) scene photographs had been provided and it was clear that examination of these images had proved useful to the practitioner.
- 27 Not all cases require the attendance of the pathologist at the scene of the incident. As the 'second PM' case type involved the taking over of an examination already started by another practitioner the opportunity or requirement for a scene visit was limited. There was no evidence in either case series that a pathologist had failed to attend a scene at which useful information might have been obtained.

Code of Practice - 7.2.5 The external appearance of the body

7.2.6 Description of the injuries

7.2.7 The internal examination

The pathologist should record in detail the external appearance of the body, including its state on arrival in the mortuary, and the presence and distribution of bloodstaining. An inventory should be made of clothing as it is removed from the body.

Injuries, however slight, must be described in detail, using recognised terms and appropriate measurements. Their location should be noted in relation to anatomical landmarks. Where there are many injuries a clear numbering system should be employed in the report to aid identification. Lack of suitable numbering could render subsequent reference to the report more difficult, for instance when giving evidence in court.

The internal examination must follow the Royal College of Pathologists' Guidelines on Autopsy Practice. Particular note must be made of diseased or injured organs. Report sub-headings may be useful in organising the information. Organ weights should be recorded.

'Drugs death' cases (43 cases)

- 28 Descriptions of the external appearance of the body were acceptable in every case. The use of headings to separate and record marks of note – for instance, old scars and tattoos – was considered helpful.
- 29 Twenty three (53%) case reports contained good descriptions of the injuries. Others were brief but nonetheless sufficient for cases in which the deceased had collapsed from drug use. However, the descriptions were considered too brief in 3 cases (7%).
- 30 Descriptions of the internal examination were acceptable although in 2 cases (5%) these were considered somewhat brief.
- 31 Urine volume had not been recorded in 6 (14%) cases, although this is required by the Code of Practice in cases in which urine is taken for analysis.
- 32 The Code also requires an estimate to be made of the proportion of the stomach content present that was recovered for analysis. Gastric volume had not been recorded in 3 (7%) cases, although in reality this was of little consequence in the context of these particular investigations.
- 33 Vitreous fluid may be less affected by post mortem changes than blood, and analysis of this should be considered in appropriate cases. It may be that practitioners should be reminded of this, perhaps by including a note to this effect when the Code is next reviewed.

- 34 In one case there was a particularly good exploration of the limb tissues for possible injection sites.
- 35 In another case internal examination had revealed pulmonary congestion with underlying chronic obstructive pulmonary disease and pneumonia. Lung histology had not been carried out even though pulmonary disease was included in the cause of death.

'Second PM' cases (33 cases)

- 36 The external appearance of the body was described in a satisfactory manner, taking into account that the forensic pathologist was not the first practitioner to examine the body. Descriptions of the injuries were also acceptable, although in 6 cases (18%) recording the location of injuries and bruises could have been more precise.
- 37 Detailed analysis of the effectiveness and limitations of these 'second PM' examinations is given in Appendix D.
- 38 No working scales for weighing the body were available in two mortuaries at the time of examination and no body weight could be recorded in these cases. However, both examinations had almost certainly been completed prior to the check on mortuary facilities carried out as a result of the previous audit.

Code of Practice - 7.2.8 Supplementary examinations carried out

The involvement of other specialists should be included under this heading, and the results of their examinations noted. Most cases will involve toxicological examination, and specialisms such as paediatric pathology, radiology, etc will be included where appropriate.

Toxicology investigation

- 39 All but 12 cases out of the total of 76 included some toxicological analysis although the findings did not necessarily contribute to the stated cause of death. Participants had been asked to submit copies of relevant toxicology reports. In only 10 cases, however, were the actual laboratory reports attached.
- 40 Reference was made to the toxicological findings in the pathologist's own report, although the extent of this reference was variable. Ten cases contained extremely detailed documentation of the findings and explanations of their significance.
- 41 One case caused particular concern in that there appeared to be confusion about the pharmacology of opiates. The impression given by the report was that 'morphine' and 'heroin' are the same substance, although heroin is actually diamorphine of which morphine is a metabolite. It was noted that the attached toxicologist's report clearly delineated these two compounds and included quantitation of 6-MAM (6-monoacetylmorphine), the first metabolite of heroin. Despite the confusion it was clear, however, that opiate use was implicated in the death.
- 42 It should be noted that where toxicology has been carried out the Criminal Procedure Rules indicate that the toxicologist's original report should be available to the Crown Prosecution Service. Toxicology results may be incorporated in the pathologist's own report, but there must be sufficient information to identify the scientist responsible and to demonstrate evidential continuity and the integrity of the procedure.

Substances implicated as the cause of death

- 43 Forty five reports, including 2 from the 'second PM' case series, specifically recorded substance use as a cause of death. In most cases more than one drug was involved. Appendix B records the substances which the pathologist specifically identified as contributing to the death; in several cases other drugs were also detected but not included in the pathologist's report.

- 44 Morphine and/or heroin use caused death in 44% of the cases scrutinised, with the level of free morphine ranging from 45 to 984µg/L. The lethal range is reported to be from 50 to 4000µg/L. Significant levels of alcohol were also present in most of these cases which would no doubt have interacted with the morphine.
- 45 When reporting drug levels care must be taken to use appropriate units. In one case 155 **mg/L** of morphine was recorded as being present. This equates to 155,000µg/L, an extremely high concentration of the drug, particularly as morphine was not even recorded as the cause of death. Other results quoted in the report suggested that the 'mg/L' unit was a typographical error. In another report the morphine concentration was recorded as 197 **mg/L** (equivalent to 197,000µg/L), and presumably the same conclusion should be drawn.
- 46 Methadone use was implicated in 29% of the cases, at levels of 160 to 980µg/L. The lethal range for methadone is reported to be from 400 to 2000µg/L. The majority of these cases also involved other drugs, particularly diazepam.
- 47 There were 3 cases (7% of the total) involving amphetamine. The remaining 20% of substance use deaths involved a range of other agents.
- 48 In the majority of deaths (34 cases or 75% of the total) a mixture, rather than a single substance, was directly implicated as the cause of the death. It has already been noted that other substances were also detected in many of the cases, albeit in lower concentrations. While the sample size is small (and thus perhaps not statistically significant) this information may be of interest to those concerned with substance misuse outside of the profession of forensic pathology.
- 49 In many cases pathologists make reference to their own experience when recording the effect on the body of a particular concentration of drug. The *CPS Guidance Booklet for Experts* indicates that pathologists should record 'details of any information upon which you have relied in arriving at your opinion'. This suggests that where reference is made to published work on the lethal dosage of drugs this fact should be included in reports. Nine (20% of the total) case reports actually included such information and pathologists are reminded of the need to include it where appropriate.
- 50 A range of service providers was employed for the toxicological investigations, about half of which were hospital clinical chemistry departments. It may be useful to seek further information on the availability of suitable toxicology analytical services, particularly in the light of the closure of Forensic Science Service laboratories.

Other examinations

- 51 Other specialist examinations had all been carried out as appropriate in both series of cases, Histology was universal, although it was noted that it had not been authorised in one 'second PM' case. Neuropathological examination was involved in 18 cases (24% of the total). Other specialist examination – cardiac pathology, microbiology, etc – was employed as appropriate.

Code of Practice - 7.2.9 Commentary and Conclusions

In the Commentary and Conclusions section the pathologist should explain the cause and mechanism of the death, using language which is precise and accurate in medical terms but also readily comprehensible to the lay reader. It is primarily from the commentary and conclusions that the police and prosecuting authorities will have to assess the relevance of the medical evidence to their consideration of the case.

'Drugs death' cases

- 52 Most cases included full and detailed commentaries and conclusions. Five commentary sections (12%) were considered to be rather brief, although all were to the point and adequate in the context of the case.

- 53 In one case it was considered that comment could have been included about incised wounds and bruises on a forearm.
- 54 In one case the presence of an enlarged heart did not appear to have been taken into account as a possible contributory factor in a death involving MDPV (methylenedioxypropylvalerone).

‘Second PM’ cases

- 55 In every case it was clear that the forensic pathologist had made the best of an unsatisfactory situation, and drawn appropriate and well argued conclusions wherever possible. Appendix D will address the effectiveness and limitations of these examinations.

Code of Practice - 7.2.10 Cause of death

The cause of death is normally expressed in the manner approved by the Registrar General, although it is often important to elaborate on the information for those who may be unfamiliar with the format.

- 56 The causes of death appeared to have been recorded appropriately in both series of cases.
- 57 Some concern was generated in a case in which the body which had suffered considerable decomposition. On a balance of possibilities hypothermia had been suggested as the cause of death. While auditors could not disagree with this, it was considered that ‘unascertained’ might have been a more appropriate conclusion. Auditors warn against possible over-interpretation, especially in situations in which decomposition of the body may obscure the clinical picture.
- 58 In one case the forensic pathologist had been asked by the coroner to perform a second autopsy in order to address possible issues of litigation. The first examination by a hospital pathologist appeared to have been very thorough. Accordingly the forensic specialist only carried out an external examination and reviewed the histology. Auditors were concerned that, having become involved, the forensic practitioner had not performed a full examination. In the report it was noted there was no ‘evidence of trauma or natural disease’ although this finding was not based on the pathologist’s own examination.
- 59 The comments which follow, which apply to the cases involving deaths due to illicit substance use, are not criticisms but are simply included as prompts for discussion of the best way to express results. For instance:

- Would mention of the specific drugs involved be better than ‘mixed drug toxicity’?
- Would such an approach enable more accurate statistics to be collected?
- Is use of the term ‘free’ morphine of value to the readers of the report?
- Is ‘the effects of butane’ specific enough where death was clearly due to inhalation of the gas? Might ‘toxic effects from the inhalation of butane’ be preferable?

Code of Practice - 7.2.11 Retention of relevant samples during the examination

Every report should record what materials or samples have been retained after the examination and where they are located. These samples may have been generated during the examination. There may also be ‘unused material’ – samples provided to but not subsequently examined by the pathologist.

- 60 Several reports clearly recorded this information, but in others it had presumably been redacted during anonymisation prior to submission for audit (see Appendix A). Pathologists are reminded that the CPS *Guidance Booklet for Experts* prescribes their responsibility in this respect.

Code of Practice - 7.2.12 The layout and format of the report

The forensic pathologist's report is intended for use by more than one audience. It must be technically sound and acceptable to other medical professionals, while remaining accessible for the lay reader who will need to understand its substance and implications.

- 61 Reports were checked for ease of reading and the logicity of presentation of the findings. All of the reports submitted were considered acceptable, and few general comments were made. Reports should be long enough to enable inclusion of all the appropriate information; it was considered, however, that focus was lost in one very lengthy document.
- 62 The point has been made in previous audits that, as a matter of best practice, reports should be laid out in logically arranged sections with appropriate headings; for instance, old and recent injuries should usually be clearly differentiated. It is appropriate to reiterate this comment with regard to the current audit.
- 63 Previous audit reports have also drawn attention to typographic errors. Several examples were noted in the current exercise; in fact, although counting of individual errors was not carried out, the impression gained was of a rather larger number of such errors being identified in this exercise. For instance, one report referred to an 'ECG' when clearly 'EEG' was indicated, and reference has already been made to incorrect units used for drug concentrations.
- 64 While not necessarily of major importance, nor always critical in the context of the report, such errors can induce an impression that the writer has not taken enough care with their work. In this respect it should be noted that the 'Dr Foster' organisation regards inaccurate recording as a significant pointer to low standards in medical practice. Careful editing and proof reading are obviously vital. The Critical Conclusions Check, as employed in Home Office pathology practices, should identify errors of this nature. It is imperative that the report issued by the pathologist is accurate.

Comments made by the coroner

- 65 Concern was expressed about the cases which had to be taken over by a forensic practitioner, the 'second PM' series. Properly assessing the need for forensic expertise is essential, taking into account all the known circumstances of the death and the potential for future requirements.
- 66 There is a need to ensure that the cause of death is set out properly using the 1a, 1b, etc designations. There appeared to be some confusion in the statement of the cause of death in a small number of cases.

Comments made by the police senior investigating officers

- 67 The SIOs performed a different, but equally valuable role, from that of the medical audit team. They assessed, from their own particular viewpoints, how useful the report might have been to them in furthering their understanding of the cause and circumstances of the death. In this regard the 'Commentary and Conclusions' section was usually found to be the most relevant section of the report.
- 68 The overall view was that the material submitted for audit was entirely satisfactory for investigators to use. Anecdotally, some reports were thought 'too short', offering limited information, for instance omitting other possible explanations for the death. Reports which were 'too long' were also noted; detail such as the design of clothing was often considered superfluous, as was excessive reporting of other witness evidence.

- 69 The cause of death should be stated in a separate section. Inclusion of such a section was considered important for the clarity of the report even where no clear cause could be determined, i.e. the death was recorded as 'unascertained'.
- 70 Medical terms should be explained in lay terms where appropriate. However, the inclusion of a lay explanation in inverted commas for every medical term was not considered to promote easy reading.
- 71 Medical terms should also be consistent. For instance, in one report the terms 'motor neurone disease' and 'amyotrophic lateral sclerosis' were both used. Although the cause of death clearly recorded that this was the same disease, it was considered that if just one term had been used throughout the body of the report it would have reduced any potential for confusion.

The timeliness of reporting

- 72 The information included in the current audit provided data not available in the previous exercise, one such parameter being the timeliness of reporting. Over the years the time taken for the practitioner to produce a report has been an issue of considerable contention between pathologists and those who instruct them.
- 73 The demand for the rapid issue of a report does not currently appear to be of such immediate concern. At the same time comparison with previous audits indicates that the time elapsed prior to issue has actually increased dramatically over the past ten years. There may be many reasons why the demand for a quick answer now appears to be less than it was. Perhaps more verbal feedback is being given; maybe through the use of email etc. Perhaps the users of pathology reports have come to the realisation that properly conducted scientific inquiry takes time. The analysis of the figures is included in Appendix C.

RECOMMENDATIONS

- 74 The Forensic Pathology Specialist Group will probably wish to:
- remind pathologists of their obligation to include all relevant statutory declarations in their reports (paras.21-22 and Appendix A).
 - issue advice on the appropriate content of the 'History' section of the report (para.25)
 - remind pathologists that vitreous fluid may be less affected by post mortem changes than other body fluids, and that the value of toxicological analysis of this material should be considered (para.33)
 - remind pathologists that original toxicology reports should be available to the Crown Prosecution Service. Where toxicology results are included in the pathologist's own report, sufficient information should be included to enable identification of the analyst and prove the continuity and integrity of the evidence (para.42).
 - publicise, as a public health message, the fact that the majority of drugs deaths involve the misuse of mixtures rather than a single substance (para.48).
 - remind pathologists of the need to cite in their reports references to published work where this has been used, for instance, to interpret the concentration of drugs detected by the analysis (para.49).
 - explore the availability of toxicological examination service providers now that Forensic Science Service laboratories are no longer in operation (para.50).
 - consider in detail the limitations imposed when a forensic pathologist has to take over a case started by a non-forensic specialist. This should generate discussion by pathologists and, more importantly, in the wider criminal justice community

about the importance of assessing cases properly before any post mortem examination is commissioned (paras.55 and 66).

- remind pathologists that full information should be included on the identity of the samples retained together with reference to their location (para.60 and Appendix A).
- remind practitioners of the need to pay attention to editing and proof reading before the issue of a report (paras.61-64). In this respect it may also be appropriate to review the remit of the 'critical conclusions' checker (Appendix A).
- remind practitioners that the cause of death should follow the proper 1a; 1b, etc designations, and that it is most helpful to readers if this is clearly set out in a separate section of the report (paras. 66 and 69).

CONCLUSIONS

- 75 This was the third in the series of audits of the work of forensic pathologists carried out on behalf of the Home Office Forensic Pathology Specialist Group. Case reports were submitted by Home Office registered pathologists plus forensic practitioners operating within Scotland and Northern Ireland. The reports submitted for this exercise were generally of a high standard. However, this audit has highlighted the problems found when a post mortem examination has been started inappropriately by a non-forensic specialist and these problems will need to be addressed.

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Appendix A

Compliance with the rules for expert witnesses

England and Wales

- A.1 The Criminal Procedure Rules provide guidance for the format and content of reports prepared by expert witness reports operating in England and Wales. Certain declarations relating to the status of the pathologist must be included in every report prepared for use in the criminal justice system.
- A.2 These rules are encompassed within the *Guidance Booklet for Experts Disclosure: Experts' Evidence, Case Management and Unused Material*, based on the Criminal Procedure Rules and issued by the Crown Prosecution Service in May 2010. This booklet was available at the time the reports submitted for this audit were prepared and accordingly practitioners would be expected to have complied with this guidance.
- A.3 The information which must form part of every forensic pathologist's report includes:
- A **declaration** that the pathologist understood and accepted the guidelines which apply to expert witnesses. This was referred to, or included in full, in 66% of the reports submitted.
 - A summary of the **qualifications** which permit the practitioner to act as an expert in forensic pathology – effectively a 'mini-CV'. This was referred to, or included in full, in 69% of reports. The length of these summaries varied considerably; some consisted of two or three sentences while others filled a page or more with what appeared to be superfluous detail of every post held and job done.
 - An **index of unused material** – materials in the possession of the pathologist which remained unused during the examination, and which may be relevant to other interested parties. Such an index was present, or referred to, in just 22% of the reports submitted.
 - A **list of retained materials** – samples generated during the course of the pathologist's examination, and which have been retained for further examination either by the pathologist or another individual such as a forensic scientist. This list was present in 37% of the reports submitted.
- A.4 Reports issued by a Home Office registered pathologist must also have been subjected to a Critical Conclusions Check by a colleague, who should indicate that such a check has been carried out. There was reference to this check in 59% of the reports.
- A.5 It was noted with some concern that the various factual and typographical errors identified during the audit had either not been picked up or not corrected during the Critical Conclusions Check. The remit of the checker should be reviewed and if necessary redefined.

Scotland and Northern Ireland

- A.6 Broadly similar rules apply to those pathologists who operate outwith England and Wales. For instance, guidance for expert witnesses within the Scottish criminal justice system is contained in the *Guidance booklet for Expert Witnesses* issued by the Crown Office and Procurator Fiscal Service. However, only reports originating from Home Office registered practitioners were scrutinised in this aspect of the audit.

Appendix B

Drugs and drug combinations identified as primary cause of death

Substances are listed as 'Drug 1', 'Drug 2' etc; this is simply for clarity of tabulation and does not indicate the relative importance of the substance in the death.

Drug 1	Drug 2	Drug 3	Drug 4	No of cases	'Cause of death' as recorded in report
Morphine/heroin				2	Heroin
"	+ alcohol			11	Heroin and alcohol; morphine and alcohol; alcohol plus opiate
"	+ alcohol	+ cocaine		2	Morphine and alcohol; mixed drug toxicity
"	+ alprazolam			1	Morphine and alprazolam
"	+ cocaine			2	Morphine; morphine and cocaine
"	+ diazepam			2	Morphine and diazepam
Methadone				1	Methadone
"	+ alcohol			1	Methadone and alcohol
"	+ citalopram			1	Methadone and citalopram
"	+ diazepam			2	Methadone; methadone and diazepam
"	+ diazepam	+ alcohol		1	Mixed drug and alcohol
"	+ diazepam	+ alcohol	+ cocaine	1	Complex drug misuse
	+ diazepam	+ alcohol	+ morphine	1	Alcohol, methadone, heroin, diazepam
"	+ diazepam	+ amphetamine		1	<i>(still awaiting full tox results)</i>
"	+ diazepam	+ amphetamine	+ morphine	1	Polydrug toxicity
"	+ diazepam	+ codeine		1	Methadone, codeine, diazepam
"	+ morphine			1	Narcotic intoxication
Amphetamine				3	Amphetamine; amphetamine toxicity with terminal drowning
Butane				1	Butane
"	+ methadone			1	Solvent inhalation plus methadone
Diazepam	+ alcohol			1	Diazepam plus alcohol

Drug 1	Drug 2	Drug 3	Drug 4	No of cases	'Cause of death' as recorded in report
MDMA				2	MDMA
MDPV				1	<i>(still awaiting full tox results)</i>
Mephedrone				2	Mephedrone; mixed drug toxicity
Potassium chloride				1	Effects of potassium
Temazepam				1	Temazepam
				45	

Appendix C

Timeliness of reports

- C.1 Although participants were asked to redact no more than their own name and that of the deceased, many participants had also removed the date of issue of the report. Thus in only 48 (63%) of the total of 76 cases submitted was this information available.
- C.2 The median time taken from the date of the post mortem examination to the issue of the final report was 101 days, with a range of 11 to 234 days and a mean of 98 days.
- C.3 Practitioners issue interim or preliminary reports where requested to do so. This was the situation in 7 cases; the median time in which these were issued was 10 days, with a range of 4 to 41 days and a mean of 16 days.

Comparison with earlier audits

- C.4 It may be of interest to compare the 2012 timeliness figures with those obtained in earlier audits carried out by the Policy Advisory Board for Forensic Pathology in 1996 and 2002. The data collection method was comparable for all three exercises, although only limited data was available for the 1996 audit.

Proportion of case reports issued within:

	< 20 days	21 - 50 days	51 - 100 days	> 101 days
2012	4%	16%	31%	48%
2002	57%	24%	11%	8%
1996	70%	30% longer than 20 days		

It will be noted that the time elapsed before a report is issued has increased dramatically over this period, from a median of 16 days in 2002 to 101 days in 2012.

- C.5 During the 1990s the Home Office had particular concerns about the reasons why coroners were delaying the release of bodies for burial, and the time taken to issue a pathologist's report was under active discussion. The *'Review of Forensic Pathology Services in England and Wales'* (completed by the Home Office in 2002) refers to Crown Office contracts including the provision of financial penalties to be incurred where the target of 21 days for the issue of the pathologist's report was breached without prior warning. This contractual arrangement applied in Scotland, but the implication of the review was that such a sanction might be built in to Home Office pathologists' service agreements.
- C.6 There are many reasons why the issue of a report may take longer than in the past. In 2002 the Royal College of Pathologists issued guidance that histological examination should be undertaken in all cases unless the coroner ruled otherwise. The audit carried out that year revealed such an examination had been employed in only about half of the cases submitted. Histology is now universal. Neuropathology and toxicology investigations are very time consuming. No doubt the proliferation of procedures adds to the time taken to complete the investigation.
- C.7 A small number (15%) of practitioners supplied preliminary or interim reports which may have been helpful to the investigator.
- C.8 While the change in reporting times over ten years is interesting, presumably pathologists are still satisfying the current requirements of those for whom they provide services. In an exercise such as this no account can be taken of any verbal information offered by the pathologist before the final report is issued, and which may have deferred the need to commit findings to paper. It may, however, be useful to explore whether current service provision is adequate in addressing the needs of investigators.

Timeliness of toxicological examinations

- C.9 Over the years the need to pursue other investigations such as toxicology and neuropathology has often been cited as a reason for delay. Therefore, an attempt was made to assess the time taken to carry out toxicological investigations.
- C.10 It was possible to deduce relevant information about the timeliness of toxicological examinations in 46 (72%) of the 64 cases involved. The median time to issue a toxicology report was 37 days, with a range of 9 to 145 days and a mean of 45 days. These figures actually overstate the time taken to carry out toxicology, as the figures are in most instances calculated from the date of the post mortem examination rather than the submission of samples to the laboratory, this being the only information available.
- C.11 For some reason, in 5 (11%) of these cases the pathologist did not receive the toxicology report at once. In 4 cases it was received some six weeks after it had been issued by the laboratory; in the most extreme instance the pathologist did not receive the report until more than three months after its date of issue.
- C.12 It may be concluded from this limited survey that in the majority of cases the time taken to complete toxicology (median of 37 days) did not appear to bear any relationship to the time taken to issue the pathologist's report (median of 101 days). However, in the 5 cases noted above the pathologist's report was issued immediately after receipt of the toxicology findings, suggesting that in these specific instances practitioners were awaiting this information before issuing their report.

Appendix D

The effectiveness and limitations of the 'Second PM' cases

- D.1 One of the case types included in the 2012 audit involved a situation in which the forensic practitioner had to take over from a non-forensic pathologist. A common scenario is that a non-forensic pathologist carrying out a 'routine' post mortem examination discovers something which appears unusual or suspicious; the examination will then be stopped and a forensic practitioner asked to take over the case. Not every practitioner had a case of this type to submit carried out within the prescribed dates, and a total of thirty three such cases were submitted for audit.
- D.2 In this situation the condition of the body when the forensic pathologist takes over may limit the conclusions which can be drawn. Anecdotal evidence suggests that in such circumstances homicide may be missed, with the consequent potential for miscarriage of justice. Accordingly, the Forensic Pathology Unit (FPU) of the Home Office agreed to pursue further research into the cases submitted for this audit.

The cases

- D.3 Deaths took place in a range of situations which might have been expected to trigger a demand for forensic expertise, for instance:
- severely wounded deceased found in a remote rural location
 - stabbing of a young male
 - large volume of blood at the scene
 - death of a mentally disturbed young male whose behaviour had necessitated considerable restraint three days prior to death.
- D.4 When submitting their case for audit, each pathologist was invited to comment as to whether the circumstances were such that – in their opinion – a forensic practitioner should have been involved from the outset. Of those who responded, 70% believed that they should have been involved. Thus, in nearly one third of the cases the pathologist considered the original decision, not to involve a forensic practitioner, had been correct.

Circumstances in which the forensic pathologist became involved

- D.5 In 4 cases (12% of the total of 33 cases submitted) the coroner's pathologist did not actually commence the examination, because either they or an anatomical pathology technologist noted the presence of 'suspicious' marks on the body prior to any dissection taking place.
- D.6 In 16 cases (48%) the pathologist terminated their examination when the findings appeared to become suspicious – for instance, finding a tear to the liver, head injuries, or neck bruising.
- D.7 In the remaining 13 (39%) cases the post mortem examination had been completed. The forensic practitioner had then been instructed to carry out a second examination. In some instances further police investigation had suggested the death may be suspicious. In other cases the coroner's pathologist had second thoughts when reviewing the post mortem examination findings.
- D.8 Three of these second examinations were ordered by the coroner, for instance because of family concerns about the quality of care immediately prior to death. Presumably there was concern about the possibility of litigation, and it was considered that a full forensic examination would contribute to a more comprehensive investigation.

Disadvantages of not carrying out the first post mortem examination

- D.9 The material submitted for this audit included a range of circumstances in which a non-forensic pathologist had been instructed to undertake an examination which should properly have been given to a forensic specialist. In most instances the first practitioner had recognised their lack of appropriate expertise and the forensic pathologist had subsequently been asked to take over the examination. The fact that some dissection has already taken place, however, can compromise the work of the forensic pathologist and severely limit the conclusions which can be drawn.
- D.10 In 10 case reports (30%) the forensic pathologist noted that as they were not the first individual to examine the body their own examination may have been compromised. The extent of this interference varied considerably, although in each case it potentially limited the conclusions to be drawn, for instance:
- organs had already been harvested for transplantation and consequently only a very limited internal examination could be performed
 - the nature of the first examination prevented a full and detailed dissection of the neck
 - the provenance of samples taken at the first examination could not be proved
 - a mortuary technician had (apparently) probed a deep hole in the skull prior to the first examination
- D.11 Accordingly, it is abundantly clear that all those involved in making arrangements for a post mortem examination should make every effort to assess fully the nature and circumstances of the death before any physical examination is commenced.

Further investigation of the audit cases

- D.12 In view of the potential for miscarriage of justice should a homicide not be identified at post mortem examination, the FPU commenced research into the 33 cases. The primary purpose was to probe the thinking which led to the decision not to instruct a forensic pathologist from the outset.
- D.13 It was anticipated that such a study might lead to policy recommendations to improve the initial investigation of unexplained death. It could also suggest a need for further research in the area of suspicious death and homicide investigation.
- D.14 With the agreement of the Chief Coroner, the National Police Lead for Forensic Pathology, and the Pathology Delivery Board, a questionnaire was prepared and sent to the forensic pathologists, police forces and coroners involved in these cases.
- D.15 One of the cases (a road traffic death, for which there is no national guidance in respect of post mortem examinations) was removed from the study, leaving a final set of 32 cases.
- D.16 Analysis of the data contained in the returned questionnaires showed that there were 10 confirmed homicides and a further 5 possible homicides¹. This equates to nearly one third (31%) of these cases being confirmed homicides. Including the possible homicides brings the total to 47%, or almost half of all the cases submitted for audit in the 'second PM' category.
- D.17 Of the 10 confirmed homicides the failure to identify them as such was seen to be a consequence of police decision making in 7 cases. Of the 5 possible homicides, failure to identify them as such was as a consequence of police decision making in 2 cases. Therefore in 9 of the 15 cases responsibility for failure lay with the police. This is not an unexpected finding, but demands consideration of possible explanations.

¹ The assessment of whether a case was deemed to have been a possible homicide was a subjective one based on the available information.

Reasons for inadequate consideration of circumstances of death

- D.18 Inevitably there will be instances in which police officers do not initially regard the circumstances of the death to be suspicious. Poor inspection of the deceased by the first attending officers may be significant; in some of these cases there would appear to have been no inspection at all. It is suggested that where alcohol and/or drugs is a feature of death scenes 'cognitive bias' may influence an investigator's decision taking.
- D.19 Budgetary considerations may be a factor. This reason was cited by a number of the forensic practitioners themselves. However, recent group discussions involving senior investigating officers have indicated that finance is not an issue when deciding to instruct a forensic pathologist.
- D.20 In a number of cases police were not initially involved in the investigation, did not attend the scene, and thus could not assess its relevance. These included cases where for example, the victim had been conveyed to hospital and died there.
- D.21 A further significant finding was that there were 10 (31%) instances in which there was no reason to consider the death as suspicious from the information available at the scene. This included 3 of the confirmed homicide and 1 of the possible homicide cases. This finding highlights just how difficult it can be at some incidents to assess the scene and take correct decisions.
- D.22 Overall, there appears to be an over-reliance on the use of non-forensic (usually hospital) pathologists to act as a filter for cases in which death is unexplained.

Conclusions

- D.23 Although only a limited survey it does offer some legitimacy to forensic pathologists' own anecdotal experiences. It reveals a potentially serious situation which could have considerable implications for the Criminal Justice System. The research has identified at least some of the possible reasons for the failure to take appropriate decisions when commencing an investigation involving death. The FPU will continue to pursue research in this area and collect information about such instances as they occur.
- D.24 A number of important recommendations² flow from this exercise. The need for ongoing research has already been noted. It also appears clear that police officer training should be reviewed, particularly for those at the start of their careers who may well be first on the scene. There may also be implications for the Approved Professional Practice guidance – the successor to the 'Murder Investigation Manual'.
- D.25 The decision as to whether to instruct a forensic pathologist at the outset of an investigation is clearly crucial. It must always be the responsibility of both the investigating team and the coroner to look not just at the obvious aspects of the case, but to consider seriously other possible scenarios before the post mortem examination is started. If there is any doubt at all then the experience of a forensic specialist should be sought. Not undertaking the initial post mortem examination may severely limit the conclusions ultimately drawn by the forensic pathologist.

² All the recommendations will be found in the full FPU report which will be published in due course.