

AUTOPSY REPORTS

Of the patients autopsied, NCEPOD received reports, complete or partial, on 59% (85/144) and it was not possible to identify the source of one. Table 79 shows that 90% (76/84) were ordered by a coroner and 10% (8/84) followed consent from relatives.

	Total	(%)
Coronial	76	(90)
Consent	8	(8)
Undetermined	1	(1)
Total	85	

Clinical History

All the reports of consented autopsies contained a clinical history, whilst 86% (65/76) of the coronial reports did so. These were graded as satisfactory or good in 74% (54/73) and all the 18 unsatisfactory reports were in coronial cases.

One third of the unsatisfactory cases were so categorised because they failed to mention the pre-mortem endoscopy procedure or the insertion of a PEG feeding tube (even in cases where it was also mentioned in the external description). Failure to note important documented peri-mortem infections such as MRSA and *Clostridium difficile* were also unsatisfactory. The remaining unsatisfactory histories were telegraphic and too brief.

The absence of a clinical history in autopsy reports is a long-running complaint in NCEPOD reports, particularly in coronial autopsy reports. In 2001, a similar proportion also had no such history. It is counter to established and more recent autopsy reporting guidelines, but the pathologists are not helped by an instruction given by many coroners to omit clinical histories from reports. One reason given is that the pathologist may easily make a simple factual transcription or interpretation error such as the date of an operation. This can lead relatives, if they are seeking substance for a complaint against a hospital or clinician, to cast doubt on the rest of the report and raise further and often irrelevant issues. Relatives are increasingly receiving and studying autopsy reports, and so the issue of how much detail to include about what may have been a very complicated clinical situation requires further consideration.

Description of external appearances

The majority of external cadaveric descriptions (89%, 67/75) were graded as good or satisfactory. The eight unsatisfactory cases were marked as such because descriptions were absent, perfunctory, or did not mention a PEG tube or a stent.

43% (36/83) of reports did not give the height of the patient and 51% (42/83) omitted the weight. These are the same proportions as noted in 2001³. Many mortuaries, anecdotally, still do not have body scales – though all have rod measures for height – and this persistent omission deprives the reports of significant detail, particularly when concerned with a group of patients who are, by definition, malnourished (i.e. candidates for PEG insertion).

Gross descriptions of organs and operation areas

All but 10 of the autopsies were full standard procedures, examining all the body cavities. In nine cases, the head was not opened, and in one case the thorax was not inspected, so that the autopsy was focussed on the abdomen. This is not necessarily a critical issue, since the purpose of the autopsy is to answer questions relating to a death and if, for example, the patient is mentally alert and neurologically normal until the time of death, little is generally to be gained by examination of the brain.

All autopsy guidelines indicate that organ weights must be included in reports. The justification is not so much the intrinsic usefulness of organ weights, which apart from that of the heart, is not necessarily high. It is a surrogate marker of quality, in that if weights are presented then the organs must have been inspected to a certain extent. Excluding the limited autopsies, as outlined above, one or more organs were not weighed in 9% (7/75) of cases. This is a higher proportion than noted in 2001².

13% (11/82) of the internal organ descriptions were unacceptably poor, mainly on account of excessive brevity.

Case Study

A patient who died of liver cirrhosis (although no histology was undertaken to confirm that gross diagnosis), was found to have a gut full of blood but there was no evaluation of where the source of bleeding might have been.

Autopsy histopathology

Taking histological samples at autopsy is now an even more contentious subject than hitherto, with the well-publicised repercussions of pathologists taking organs at Bristol⁶ and Alder Hey Hospitals⁷ without the knowledge of the relatives of the deceased children. In consented autopsies, tissue sampling is explicitly agreed in effectively all cases, whereas in coronial autopsies it is matter of agreement between coroner and pathologist. The Coroners' Rules⁹ governing tissue taking are not precise, and the net effect is a huge variation across the 127 coronial jurisdictions of England & Wales; the range being from nearly zero to 100% of cases with tissue samples being taken.

Many coroners expressly forbid taking histological samples unless it is absolutely necessary to determine a cause of death or the case is one of suspected unlawful killing. This non-standardisation should change with the presaged reform of the coronial system – see below.

The Royal College of Pathologists indicates that best practice involves systematic histological sampling in all cases, but the situation is complex: the need and subsequent usefulness depends on the actual questions being raised by a death. An example is death from peritonitis following perforation of previously documented benign gastric or duodenal ulcer, where autopsy histopathology provides limited additional information concerning the sequence of events leading to death. However, it must be emphasised that the highest quality autopsy reporting can only come from repeated observations and deep understanding of autopsy histopathology, which in turn demand regular and systematic tissue sampling.

	Number	(%)	Comparative % in 2002 NCEPOD report	Comparative % in 2001 NCEPOD report
Organs retained	3	(4)	n/a	n/a
Tissue histology taken	31	(36)	27	28
No samples taken	49	(58)	n/a	n/a
Unclear whether samples taken	2	(2)	n/a	n/a
Total	85			

n/a = not available

In only three autopsies were whole organs retained (Table 80), but there is no current database against which to compare this figure.

In two reports, it was unclear whether or not histological samples had been taken, and in only 37% (31/83) of evaluable cases was histology performed. This is actually higher than the 28% rate noted in the 2001 report but the overall sample is smaller. A histology report was returned to NCEPOD in 77% (24/31) of the cases where histology was taken. In terms of quality, i.e. the usefulness in explicating the circumstances of death, 21 were good or satisfactory and three (13%) unsatisfactory. In the latter were:

- kidneys not studied although the cause of death related to renal failure
- the primary origin of metastatic carcinoma not fully explored.

Did the lack of histological sampling detract from the quality of the autopsy in the non-sampled cases? The advisors considered this to be the case in 24% (12/49) of cases.

Case Study

A patient had therapeutic endoscopy to dilate a stricture of the oesophagus of unknown cause. The patient died of pneumonia and the stricture was noted at the autopsy but no histological sample was taken to determine whether it was benign or the result of a malignancy.

Case Study

A patient with pancreatic disease required an ERCP. The autopsy report suggests that the underlying disease was carcinoma, but no histology was taken to confirm this.

National statistics on gastro-intestinal cancer are not well served by this non-investigative approach.

Case Study

The pathologist specifically noted that the Coroner had not permitted taking histology to investigate the aetiology of previously undiagnosed cirrhosis of the liver, which had resulted in upper GI tract bleeding, requiring banding of the oesophageal varix. However, the report was also compromised by a poor appreciation of the circumstances of death, as evidenced by lack of mention of the oesophageal varices and of the endoscopic procedure. The resulting cause of death was stated:

- 1a.** *ischaemic heart disease*
- 2.** *decompensated cirrhosis.*

As will be discussed below, this is the wrong cause of death (cirrhosis should be in Part 1) and a misuse of the term ischaemic heart disease.

Clinico-pathological summary

Key point

Nearly half the autopsy reports (44%) had a poor, or no, clinico-pathological summary.

While it is critical that a systematic autopsy and report are essential to identify and consider all aspects of a death where there has been uncertainty, it is increasingly emphasised in guidelines⁴ that the construction of an overview clinico-pathological summary, containing all the essential features of a case, is an essential part of an autopsy report. The summary is there to answer (if possible) the questions raised by a death, more descriptively than the necessarily compressed formulation of the ONS standard death certification lines.

In this sample, the proportion of autopsy reports that included such a summary was the same (63%, 53/84) as that reported in 2001². Of these 11% (6/53) were graded as unsatisfactory, making a grand total of 44% (37/84) of reports that had either no clinico-pathological summary or an unsatisfactory one. In addition to examples quoted above and below, other poor summaries included a lack of discussion on the significance of a colon stent that had evidently moved after insertion and the contribution of ERCP in causing fatal sepsis of the biliary tree.

ONS cause of death formulation

Key point

Depiction of the cause of death sequence (i.e. the death certificate) by pathologists was not consistent with the clinical and pathological data in one third of cases.

A constant lament from the Office of National Statistics¹⁰ is the poor quality of construction and completion of the Medical Certificate of Cause of Death (MCCD). This relates not just to the actual diseases indicated (although the Home Office considers that about 30% of death certificates are significantly incorrect in that respect⁷), but also to the logical depiction of disease states and sequence, ending with the main clinical pathology as the lowest line of 'Part 1' of the MCCD. 'Part 2' of the MCCD should include only additional diseases that contributed to death or the timing of death, but not the main disease that resulted in death. Diseases listed in 'Part 2' are not included in the annual ONS tabulations of causes of death for the nation. So placing the main disease in this part inevitably distorts the statistical appreciation of disease burden.

In consented autopsies, the MCCD has already been completed and registered by the time of autopsy. In coronial autopsies, the pathologist is effectively writing the death certificate, since the coroner will take his/her formulation (sometimes modified by an inquest) and copy it into the death certificate.

Table 81. Evaluation of the content and structure of death certificate statements in autopsy reports.

	Evaluable reports	Number incorrect	(%)
Depiction of circumstances of death	85	29	(34)
Structure of the MCCD	76	10	(13)

All but five autopsy reports included an ONS standard formulation, and these were consented autopsies where there is no necessity to include an ONS cause of death if the clinico-pathological summary has already discussed the circumstances of death. However, guidelines⁴ do recommend the formulation in all autopsy reports, in part because it should concentrate the mind of the pathologist on what really happened.

13% (10/76) of the evaluable causes of death were incorrectly structured (Table 81), and 34% (29/85) were considered by the panel not to reflect correctly the real circumstances of the death as evidenced from the autopsy reports.

The following case studies illustrate typical examples of incorrectly completed MCCDs.

Case Study

A patient dies following stent and resection of a colon cancer, with metastases to the liver. There was moderate coronary artery disease in the heart. The cause of death was stated to be:

- 1a.** *Cardio-respiratory failure*
- 1b.** *Ischaemic heart disease*
- 2.** *Surgically resected carcinoma of colon.*

The carcinoma was obviously the major determinant of the patient's final illness and death. Better would be:

- 1a.** Disseminated carcinoma
- 1b.** Cancer of colon (operation and date)
- 2.** Ischaemic heart disease.

Case Study

In an otherwise excellent report, including histology, of a patient who died of cholangio-carcinoma, and who also had documented 60-70% stenoses of the coronary arteries, the cause of death was stated to be:

- 1a.** *Myocardial insult due to anaemia following ERCP (August 2002)*
- 1b.** *ischaemic heart disease.*

The mention of the operative procedure and its date fulfils the updated guidelines on MCCD formulation, but the non-inclusion of what was the main actual cause of death – the carcinoma – is odd. Better would be:

- 1a.** Cholangio-carcinoma (ERCP August 2002)
- 2.** Ischaemic heart disease.

The ischaemic heart disease (if the 60-70% coronary artery stenoses were significantly obstructive) perhaps contributed to the timing of the death, but was not the fundamental cause.

Case Study

A patient with myasthenia gravis was progressively malnourished and required a PEG for feeding, but died. At autopsy he had "severe coronary atheroma", but no evident acute myocardial infarction. A clinico-pathological summary was not included, and the cause of death was stated to be:

- 1a.** Myocardial infarction
- 1b.** Coronary artery atheroma.

The myasthenia gravis was not mentioned, yet must have been the major underlying disease that resulted in the patient's death; the ischaemic heart disease should be in Part 2 as a contributor to the timing of death. Therefore in our opinion the certificate should read:

- 1a.** Malnutrition
- 1b.** Myasthenia gravis (PEG tube inserted and date)
- 2.** Ischaemic heart disease.

Case Study

A patient died of dysphagia and malnutrition due to a large obstructing thyroid goitre. No clinico-pathological summary was included. The cause of death:

- 1a.** Pulmonary embolism
- 1b.** Septicaemia
- 1c.** Bronchopneumonia
- 2.** Multinodular goitre.

Better would have been:

- 1a.** Sepsis and malnutrition
- 1b.** Multinodular goitre obstructing the oesophagus
- 2.** Deep vein thrombosis and pulmonary embolism.

The fundamental cause of death was the large thyroid, not the pulmonary embolism.

Case Study

A patient had gall stones. Following ERCP they developed sepsis and heart failure. The report states "Biliary tract patent. Hepatic duct dilated with abscess formation. Gall bladder normal". There was no clinico-pathological summary, but the cause of death was stated:

- 1a.** Ischaemic heart disease
- 2.** Hepatic duct abscess.

There was no mention of the underlying cause of hepatic duct abscess – gall stone disease – and no discussion of the role of ERCP in the development of an abscess and fatal sepsis. Better would have been:

- 1a. Cholangitis and sepsis
- 1b. Gallstones in bile duct (ERCP and date)
2. Ischaemic heart disease.

These examples demonstrate a consistent tendency throughout the autopsy reports studied of this sample, and in general observation of autopsy reports by the review panel, to pick on a readily observable pathology as the cause of death, rather than consider more deeply the relative contribution of all pathologies and procedures that resulted in the death. In an elderly population, a high proportion of patients has a degree of coronary artery disease that, according to circumstance, could be consistent with causing an acute cardiac arrest or arrhythmia. But the real causes of death are often elsewhere, and this practice reflects lazy thinking among pathologists. It contributes to blurring of national statistics on cause of death, with over-emphasis on common cardiovascular disease and under-representation of the necessarily more complicated multiple pathologies found in an elderly population.

Mention of the endoscopic procedure in the autopsy report

Only 18% (15/85) of the autopsy reports mentioned the procedure in the cause of death formulation. Updated guidelines⁴ indicate that relevant pre-mortem interventions should be listed and dated in the cause of death, but there is no clarity on what constitutes a relevant intervention. Does a PEG feeding tube that has caused no direct complication (e.g. peritonitis) count as a mentionable procedure, in contrast to a stent that perforates a viscus, which evidently does? NCEPOD considers that it does.

Overall quality of the autopsy examination and report

Taking all aspects of the autopsy reports into consideration, the advisors judged that 71% (60/85) of the reports were satisfactory to excellent (Table 82). The small number of unacceptable reports indicated circumstances in which the pathologists could find themselves open to criticism from a professional body for producing low standard, uninformative and incorrect work.

The distribution of quality scores is broadly similar to those noted in the recent NCEPOD reports^{1,2}.

Table 82. Overall quality of autopsy examination and report				
	Number	(%)	Comparative % in 2002 NCEPOD report <i>n</i> = 499	Comparative % in 2001 NCEPOD report <i>n</i> = 346
Excellent	5	(6)	5	5
Good	27	(32)	19	21
Satisfactory	28	(33)	40	43
Poor	18	(21)	33	28
Unacceptable	4	(5)	2	2
Unevaluable	3	(4)	-	-
Total	85			

Overview of the available autopsy reports

Most of the advisors' criticisms of the autopsy reports are familiar repeats from previous reports:

- lack of clinical history
- imperfect description of external and internal appearances
- lack of mention of pre-mortem endoscopic procedures
- lack of histological sampling where it matters
- lack of a clinico-pathological summary
- omitting mention of the intervention procedure on the cause of death statement
- imperfect formulation of the cause of death in terms of structure and content.

What is particularly striking from this review is the very small number of cases that actually had an autopsy. 27% (442/1,654) of the deaths were reported to a coroner, who accepted only 31% (131/416) of them for further examination, and a further 0.8% (13/1,654) of cases resulted in a consented autopsy.

The categories of deaths that should be reported to a coroner are not laid down in statute, but it is generally agreed that the following principles apply¹¹ :

- if the death occurred during an operation or before full recovery from the effects of an anaesthetic or was in any way related to the anaesthetic (in any event a death within 24 hours should normally be reported)
- if the death may be related to a medical procedure or treatment, whether invasive or not
- if the death may be related to lack of medical care.

Following these criteria, a greater proportion of the deaths in this sample should have been reported to a coroner; the lowest rate of referral was among patients endoscoped by physicians (only 22%).

It is the responsibility of clinicians, who themselves may be liable to criticism concerning their care of a patient, to report a death under his care to the coroner if that death is related to a procedure he has undertaken. The anomalies of the current system should be addressed in the reform of the 'Coroner and Death Certification Service' which is discussed below.

Previous NCEPOD reports have not considered this issue since the data on reporting rates were not requested. There may be an increase in reporting and further investigation of deaths following procedures if the recommendations of the review of the coronial and death certification systems develop into actual practice.