

# The autopsy in modern undergraduate medical education: a qualitative study of uses and curriculum considerations

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**Aim** Medical education has undergone dramatic changes over the past decade. In the UK, the General Medical Council (GMC), the driving force behind curriculum reform, now requires curricula to be founded on a base of educational theory and research. This qualitative study investigated the roles of the autopsy within the context of the modern medical curriculum.

**Methods** Using a phenomenological methodology, a non-representative 'theoretical sample' was selected to include medical educators with a wide range of teaching experience and responsibilities and disparate views both for and against the autopsy. Semistructured, tape-recorded interviews were undertaken to investigate the roles of the autopsy within the medical curriculum. Anonymised interview transcripts were subjected to a themed content analysis.

**Results** Theoretical saturation was reached after 9 interviews. No new themes were added by a further 5

interviews. All the interviews were polythematic. In all, 43 themes were identified. In addition to confirming overt uses of the autopsy reported in previous studies, educators identified issues of curriculum design and development, the impact on the hidden curriculum, and a range of disadvantages and alternatives to the autopsy.

**Conclusions** Educators continue to perceive the autopsy as having a multifactorial role in providing the doctors of tomorrow with the appropriate knowledge and attitudes needed for the practice of medicine in the 21st century.

**Keywords** education, medical, undergraduate/\*methods; \*curriculum; autopsy/\*methods; interviews; Great Britain.

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## Introduction

Undergraduate medical education has undergone dramatic revisions in the past decade.<sup>1</sup> This process, in the UK largely initiated by the General Medical Council (GMC) and its 1993 publication *Tomorrow's Doctors*,<sup>2</sup> has been characterised by a reduction in factual content and staff–student contact time. Such changes have been achieved by adopting curricula in which a core curriculum is delivered alongside student-selected special study modules, thereby increasing student choice and opportunities for self-directed learning. Several such curricula have been proposed and adopted,<sup>3–8</sup> although confusion still exists amongst medical teachers as to what a 'curriculum' actually is.<sup>9</sup> The 2002

edition of *Tomorrow's Doctors*<sup>10</sup> reiterated the principles laid down in 1993, and emphasised the need to ensure that medical curricula are focused on outcomes and supported by a strong foundation of educational theory and research.<sup>10,11</sup>

The autopsy has long been regarded as important in medical education. Previous studies exploring the views of educators and/or students, most of which predate 1993, have suggested a variety of roles for the autopsy in the undergraduate curriculum.<sup>12–16</sup> All of these have adopted a positivistic methodology and quantitative method, and tend to focus on syllabus issues of *what* the autopsy can teach.<sup>12–16</sup> Such studies offer little illumination as to *why* the autopsy is of educational value, although Benbow's questionnaire-based study<sup>15</sup> allows the voices (and therefore the explanations) of the participants to be heard to a large degree. While we do not hear the voices of the participants in the work of DeRoy<sup>12</sup> or Hill and Anderson,<sup>13</sup> these authors present the open responses of participants in themed groups. These allow some insight into why the autopsy is perceived to be of value. Unfortunately, these studies

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### Key learning points

Autopsies continue to have a multifactorial role in the delivery of modern undergraduate medical education, despite the radical educational reforms and decline in autopsy rates over the last decade.

In addition to overt educational uses, the autopsy has a marked positive impact on the hidden curriculum.

The autopsy is expensive, time-consuming, unpleasant and frightening and may give students an unrealistic view of medical practice.

Alternatives to the autopsy, such as demonstrations, videos and CD-ROMS, are available but are felt to lack the immediacy of the autopsy seen at first hand.

do not consider the impact of autopsy-based teaching on the curriculum as a whole.

When the GMC first published *Tomorrow's Doctors*, the autopsy was widely perceived to be of educational value.<sup>17</sup> The dramatic restructuring of the last decade renders the relevance of such studies to the modern curriculum at best uncertain. The present study investigated the role of the autopsy in the modern undergraduate medical curriculum, using a phenomenological methodology and a qualitative method.

## Methodology and method

### Methodology

An inductive phenomenological methodology was chosen over the traditional, objective, positivist methodology commonly regarded as the 'scientific method'.<sup>18</sup> Phenomenology seeks insight into the meaning(s) attached to events by individuals, and places less emphasis on generalisations.<sup>19,20</sup> It seeks disparate views, rather than looking to determine the most commonly held view. This permits qualitative exploration rather than reductive quantitation (answering questions of *why* rather than *what* or *how*). The researcher who adopts a phenomenological methodology is an intrinsic part of the research process, who collects (through methods such as in-depth interviewing) and analyses qualitative data. This flexible approach allows the investigation to become 'grounded' in the emergent data.<sup>21</sup>

### Sample selection

Given the exploratory nature of the study, no attempt was made to obtain a representative or comprehensive sample of medical educators. Instead, a 'theoretical sample'<sup>20</sup> was deliberately selected from staff affiliated to the University of Sheffield Medical School, UK, to include individuals with widely disparate views both for and against the autopsy, and individuals whose views were unknown prior to the study. The sample included a mixture of histopathologists (both trainees and consultants) and non-pathologists, including a biomedical scientist, a general practitioner, surgeons and physicians, one of whom had spent time working in histopathology. These individuals worked in both the National Health Service (NHS) and academic arenas and were selected because they had a wide range of teaching experience and responsibility in undergraduate medical education.

### Data collection and analysis

Interviews were selected as the data-gathering tool because, although they effectively limit the number of respondents who can be reached, they provide the opportunities required for the individualised, probing and open-ended questions needed in an explorative study.<sup>18,20</sup>

All interviewees were invited to participate in the study by means of a standard letter. The sample size was not predetermined but was instead derived by a sequential process. Interviews were planned until it was felt that further interviews would not add any new information. Once this 'theoretical saturation' was reached, further interviews were undertaken to attempt to break this saturation.

Semistructured interviews lasting approximately 45 minutes took place in private at a time and location convenient to the interviewee, and efforts were made to prevent interruptions. An outline of the interview format is shown in Table 1. All interviewees gave consent for the interviews to be tape-recorded and the recordings were subsequently transcribed verbatim into anonymity. The transcribed data were subjected to a content analysis in which similar statements within the responses were aggregated into themes.<sup>9,22</sup>

### Results

All the subjects invited into the study agreed to participate. Theoretical saturation was achieved after 9 interviews. No new themes were added by a further 5 interviews. All interviewees had experience of

**Table 1** The structure of the interviews

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1	Introduction Thank you for agreeing to be interviewed Permission sought to tape-record interview Anonymity confirmed
2	Context: background of interviewee Current position and duration in post Previous experience First autopsy experience – observed/performed Perceptions of first autopsy experience
3	Role of the autopsy in teaching Does the autopsy have a role in teaching medical students? Could the autopsy be replaced by other methods of teaching? Are there any objections to the autopsy as a teaching tool? Should students be required to see autopsies?

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autopsies, either as medical students or in their professional life. Eight interviewees had personally performed autopsies and their experience ranged from 6 to 1000 cases. The remaining 6 interviewees had never performed an autopsy. All but one of these had seen approximately 12–100 autopsies performed. One interviewee had never witnessed a complete autopsy examination but had encountered autopsy demonstrations.

### Content analysis

All the interviews were complex and polythematic. A total of 43 themes were identified. These could be broadly grouped into 8 ‘metathemes’: curriculum considerations; a tool to promote learning; the requirement for autopsy exposure; explicit educational uses of the autopsy; disadvantages of the autopsy; the autopsy and the hidden curriculum; alternatives to the autopsy, and pastoral care.

#### **Metatheme A: Curriculum considerations**

*Theme a:* The autopsy is under-utilised in the curriculum (6 interviewees). For example:

‘We should perhaps do more with the autopsy material that we currently get...’

‘It’s a grossly underused tool as a way of anatomy teaching...’

*Theme b:* Exposure to autopsies must be relevant and integrated with other activities (6 interviewees). For example:

‘...[the autopsy is] a valuable adjunct to clinical teaching and clinical practice so I’m not too enthused about ... the department of pathology conducting

autopsy sessions as pathologists if there aren’t clinicians involved...’

*Theme c:* Autopsy-based teaching should have specific teaching aims and learning objectives (5 interviewees).

For example:

‘[Students] should know why they’re going to see it, where it fits in, and what they’ll learn from it – and learn from it, not just have it ticked off in their key skills booklet that they’ve seen an autopsy.’

*Theme d:* Consent from the relatives of the deceased (5 interviewees). For example:

‘...I don’t think it would necessarily serve the public well to have them be asked to give consent to someone watching the autopsy being performed...’

Conversely:

‘[Some] might not like the idea of the body of someone very dear to them being viewed by a large number of young people.’

*Theme e:* Students should be prepared for the mortuary experience (4 interviewees). For example:

‘We should do more to prepare our students ... we take it for granted, we’ve been doing it for years.’

*Theme f:* The time allocated to autopsy teaching in the curriculum must be proportional to its importance to clinical practice (3 interviewees). For example:

‘There are a lot of doctors out there at the moment who have probably not seen autopsies ... They function perfectly well...’

*Theme g:* There must be sufficient opportunities for students to see autopsies (2 interviewees). For example:

‘...[by] mak[ing] full use of the educational experience that’s available in district general hospitals...’

*Theme h:* Students must be actively encouraged to engage with autopsy-based teaching (2 interviewees).

For example:

‘... we’re asking them to be too self-directed and they need a little bit more direction as to what they need to do.’

*Theme i:* Autopsies should not be included for ‘empire-building’ purposes (1 interviewee). For example:

‘...everything should be developed within a clinical context ... and not because the pathologist wants to do it because he hopes that 1/1000 students will become a pathologist.’

**Metatheme B: Autopsy is a tool that promotes learning**

*Theme j:* The visual and emotive nature of the autopsy makes for a memorable learning experience (10 interviewees). For example:

‘...to see it for yourself has enormous impact...’

‘...it just comes alive – it makes pathology as real as medicine...’

*Theme k:* The autopsy is an example of problem-based learning in action (6 interviewees). For example:

‘It is to me the epitome of problem-based learning ... patients’ bodies don’t come to autopsy unless there is a problem in terms of reliably ascertaining the cause of death either under the coroner’s jurisdiction or because of clinical uncertainty and curiosity.’

**Metatheme C: The requirement for autopsy exposure**

*Theme l:* Medical students should be required to see autopsies (12 interviewees). For example:

‘I think that everyone should see an autopsy’, [if students object to seeing autopsies] then I think they are probably doing the wrong degree course...’

‘...every medical student should see at least one autopsy from start to finish so that they can explain to relatives about the processes that go on...’

*Theme m:* Attendance at autopsies should not be compulsory (8 interviewees). For example:

‘I wouldn’t want to be in a profession which forced people to go and do something against their will if they’ve thought it out deeply ... I think that breaches their human rights.’

**Metatheme D: Explicit educational uses of the autopsy**

*Theme n:* The autopsy can be used as a tool to teach and revise anatomy (11 interviewees). For example:

‘...it brings anatomy into the clinical years of the course...’

‘I couldn’t see it ever as a replacement for teaching anatomy. I think it’s of value for revision.’

*Theme o:* The autopsy teaches students about pathology and the macroscopic appearances of disease (9 interviewees). For example:

‘You can get a much better picture of oedema of the lungs from somebody holding up a very wet piece of lung and watching it simply drip water than you can just trying to do that as a sort of theoretical exercise.’

*Theme p:* The autopsy encourages students to develop skills of clinicopathological correlation (7 interviewees). For example:

‘It’s a good way of teaching students how to correlate information from a variety of sources ... looking at the whole picture including the clinical history and the post mortem findings.’

*Theme q:* The autopsy teaches about the fallibility of medicine (7 interviewees). For example:

‘...it also reveals the fallibility of clinical practice including the fallibility of pathologists.’

*Theme r:* Autopsies teach a holistic approach to medicine (6 interviewees). For example:

‘People tend to think ... too much on one individual part of the patient and not the whole patient ... whereas at autopsy one can demonstrate that there was very severe disease at [other] sites.’

*Theme s:* The autopsy provides an opportunity to discuss medical ethics (4 interviewees). For example:

‘...discuss ... the ethics ... of retaining tissues...’

‘...the importance of confidentiality...’

*Theme t:* Students learn about the processes of death and what happens to the dead in our society (3 interviewees). For example:

‘...very useful to give students an idea of death generally – teaching about death and what happens to people after they die.’

*Theme u:* Autopsy provides an opportunity for students to learn how to perform invasive clinical procedures (3 interviewees). For example:

‘...chest drain insertions or doing lumbar punctures ... you could ... practise on cadavers...’

*Theme v:* The autopsy provides a focus for discussions about medical law and the coronial system (2 interviewees). For example:

‘...I use it as an opportunity to discuss with them [students] the authorisation for doing this particular autopsy – whether it comes from ... relatives or from the coroner.’

*Theme w:* Autopsies demonstrate the importance of health and safety at work (1 interviewee). For example:

‘...one of the most important things about it is that we could get the whole thing completely wrong ... but as long as none of us come out with ... HIV then I think that’s an important issue...’

***Metatheme E: Disadvantages of the autopsy as a teaching tool***

*Theme x:* The autopsy is physically unpleasant and frightening (12 interviewees). For example:

‘...there is no way that a human body that is ripped open, organs hanging out ... is a pleasant sight...’

‘... an autopsy in human terms is a horrendous thing to do...’

*Theme y:* The autopsy is a time-consuming method of small group teaching (10 interviewees). For example:

‘...very labour intensive...’

‘...slows up the autopsy...’

*Theme z:* The mortuary room is a dangerous place. Efforts to minimise the risks may impair teaching (3 interviewees). For example:

‘...risk of infection...’

‘actual communication can be difficult ... if you’re wearing a facemask or visor then [students] can’t hear you.’

*Theme aa:* Autopsy demonstrations present an artificially sanitised view of the autopsy (3 interviewees). For example:

‘...by the time the students are there the mortuary’s usually clean, all the bits are nice and tidy ... it looks nice and clean and clinical, but it’s not.’

*Theme bb:* Autopsies are unsophisticated (2 interviewees). For example:

‘...most of the things you do in an autopsy are a bit rough and ready...’

‘...huge big saws going “erk erk erk” [makes saw noises] ... It takes a bit of getting used to when you’ve been and seen a surgeon ... doing little tiny nicks every now and again...’

*Theme cc:* Autopsy-based teaching gives a biased view of the prevalence of disease (1 interviewee). For example:

‘...you’d be selecting an artificial population – people who’d died in uncertain circumstances because they’re coronial deaths...’

***Metatheme F: The autopsy and the hidden curriculum***

*Theme dd:* Autopsy exposure encourages students to develop a sense of clinical detachment (9 interviewees). For example:

‘...hardening people up to see these horrors so that they can deal with them from a medical viewpoint in the future.’

*Theme ee:* Attending an autopsy is a ‘rite of passage’ (6 interviewees). For example:

‘It was one of those initiation rituals wasn’t it? A bit like the anatomy dissecting room for the first time.’

*Theme ff:* The autopsy gives students an opportunity to discover pathology as a discipline (3 interviewees). For example:

‘I don’t think I would have ever really known what pathology was [without seeing autopsies].’

*Theme gg:* Attending autopsies encourages students to treat patients and the deceased with respect (3 interviewees). For example:

‘...it forms this social link between the cadaver and the real patient...’

‘...so that the patient doesn’t become a sort of a bag or a thing that you see only in terms of black and white MRI images...’

*Theme hh:* Autopsies encourage students to recognise their own mortality (2 interviewees). For example:

‘You did wonder, is that what becomes of us at the end of our lives?’

*Theme ii:* Autopsies give students an opportunity to witness teamwork (1 interviewee). For example:

‘Postmortems ... are multidisciplinary ... the pathologist working with the clinician ... and the mortuary staff. It’s definitely a team thing isn’t it?’

*Theme jj:* The autopsy may increase the credibility of clinical teachers (1 interviewee). For example, it gives students:

‘...a reassurance that you had got the diagnosis right and in fact there wasn’t anything more that you could do...’

*Theme kk:* Autopsies may encourage students to view the body as an object (8 interviewees). For example:

‘I didn’t really see him as a person – he was just a case...’

‘...a patient ... that was almost plastic...’

*Theme ll:* Autopsy-based teaching may discourage students from subsequently becoming histopathologists (3 interviewees). For example:

‘If pathologists always use the autopsy for teaching material rather than resected specimens then it always looks as though they’re doing something after the event that wasn’t particularly useful.’

*Theme mm:* Autopsy teaching may discourage students from requesting autopsies (1 interviewee). For example:

‘I wonder whether if I knew what an autopsy entailed I would have been as happy requesting as many as I did.’

#### ***Metatheme G: Alternatives to the autopsy***

*Theme nn:* Demonstrations are more efficient than the complete autopsy for student teaching (8 interviewees). For example:

‘[Demonstrations are] an efficient use of the student’s time...’

‘...teach more people at once...’

*Theme oo:* Technological alternatives (videos, video-links and CD-ROMs) are more efficient than the autopsy but are more expensive (11 interviewees). For example:

‘...wider distribution...’

‘...a lot cleaner...’

‘...students can learn at any time they like.’

However, referring to technological alternatives:

‘...takes a lot of resources...’

‘...lacks the immediacy of the autopsy...’

*Theme pp:* Museum specimens can be used instead of the autopsy (3 interviewees). For example, museum specimens allow students to see:

‘...the natural history of disease at a more advanced stage...’

‘...in more comfortable surroundings.’

However:

‘...anything that’s been embalmed or pickled is nothing like as good as the real thing...’

#### ***Metatheme H: Pastoral care***

*Theme qq:* Autopsy-based teaching may detect students with attitudinal problems (2 interviewees). For example:

‘I’m not sure if we shouldn’t have a very careful look at the students who are self-selecting to see lots of autopsies to see if there’s something wrong with them.’

## **Discussion**

The autopsy has been central to medical education for centuries.<sup>23</sup> Recently, however, there has been a marked reduction in the number of hospital (‘consent’) autopsies being requested.<sup>24,25</sup> This decline not only calls into question the need for medical students to learn about and from autopsies; it also reduces their opportunities to do so. Many medical students now graduate without ever having witnessed an autopsy.<sup>26</sup> These facts, coupled with the emerging trend driven in part by the GMC<sup>10</sup> for undergraduate medical education to be based on a foundation of educational research, demand an evaluation of the autopsy and its inclusion (or otherwise) in the modern curriculum.

It has been established by previous positivistic, quantitative studies<sup>12,13</sup> that the autopsy has multiple educational uses, and can teach students about pathophysiology, clinicopathological correlations, anatomy, gross anatomy of disease, sharpening of visual skills, the autopsy in forensic medicine, death certification, death statistics, the autopsy and public health measures, clinical audit, the inherent fallibility of medicine, problem-based approaches in medical education, dealing with bereaved relatives, and monitoring of new drugs/technology. These studies provide information on *what* staff might choose to teach during the autopsy, and so help us to address issues pertaining to syllabus delivery. Indeed, such was their aim. Consequently, they give little insight into issues of curriculum design that will influence whether or not the autopsy is included. Furthermore, their reductive approach gives little insight into *why* medical educators perceive the autopsy to have such roles.

The present study sought to take a global view of the autopsy within the undergraduate medical curriculum, exploring issues of both curriculum design and syllabus

delivery. The voices of the participants are heard throughout the themes. However, as a consequence of the adoption of a phenomenological method, the investigator is not separate from the study; the process of thematisation is an intervention that links the data and the investigator. Each theme develops as a combination of the interviewees' statements and the investigator's interpretations and groupings of them. We do not overtly hear the voice of the investigator within the themes, but it manifests in the words selected to title each theme. Thus it is always possible that another investigator might choose to cluster the themes differently within the metathemes.

In contrast to previous studies, this study explores the attitudes of medical educators from a variety of clinical and non-clinical disciplines, rather than just seeking the opinions of pathologists. Non-clinical staff were included because of their extensive involvement in the design and delivery of the undergraduate curriculum at this university. Given that the curriculum is managed by a team of educators from a wide variety of disciplines, the study aimed to discover the views of *educators* rather than to compare, for example, the views of pathologists and surgeons. Because the study aimed to discover the attitudes of those involved in the design and delivery of the medical curriculum, it has necessarily focused upon the views of staff. Consequently, while the data illustrate the perceived uses and drawbacks of the autopsy as a teaching tool and learning opportunity, they do not permit investigation of differences between the 'delivered' curriculum and that 'received' by students. The views of students would indeed be interesting, but fall outside the boundary of this study. Nonetheless, as we shall see below, previous work exploring the attitudes of students<sup>15,27</sup> indicates that they perceive the autopsy to have similar uses to those indicated by educators.

### The autopsy and curriculum design

Participants recognised a number of general factors that pertain to the inclusion of autopsies in the medical curriculum. For example, autopsy teaching must be relevant, have aims and objectives, be integrated with other teaching, and should benefit students (metatheme A). Over-zealous attempts to emphasise the autopsy may lead to allegations of pathology empire-building (*theme i*). Metatheme A largely reflects the criteria set out by the GMC<sup>2,10</sup> and the various models that have been proposed for modern medical curricula.<sup>5,6</sup> This is hardly surprising. Indeed, given that *Tomorrow's Doctors*<sup>2</sup> has been available to educators for almost a decade, it would be a matter of concern if

these themes could not be readily identified in the interviewees' responses.

Interviewees indicated that they felt the autopsy was underused in the curriculum, both in terms of what it can teach and how often it is used for teaching (*theme a*), and some expressed concern that there were not enough opportunities for students to see autopsies (*theme g*). Given the constraints placed on the amount of contact time within the UK curriculum,<sup>2,10</sup> any increase in autopsy exposure risks losing time spent on other learning activities. This risk could be minimised if the curriculum were designed to allow the inclusion of the autopsy to facilitate problem-based learning and so replace other forms of didactic teaching.

### The autopsy and the hidden curriculum

The hidden curriculum has been variously defined. Hafferty<sup>28</sup> refers to it as 'a set of influences that function at the level of organisational structure and culture.' Kelly<sup>29</sup> notes that 'implicit in any set of arrangements are the attitudes and values of those who create them, and these will be communicated to pupils in this accidental and perhaps even sinister way.' Thus, the hidden curriculum refers to attitudes and values unwittingly transmitted to students both by what is (and is not) taught and how such teaching features in the curriculum. Only one previous study has raised issues of the hidden curriculum with regard to autopsy teaching.<sup>15</sup> In the present study, the autopsy was seen as a rite of passage – an unpleasant experience that prepared students for entry into the 'select' medical fraternity (*theme ee*). Witnessing the (unpleasant) autopsy may encourage students to develop the clinical detachment needed to practise medicine (*theme dd*). That the autopsy gives students an opportunity to witness the work of pathologists, and witness respect for the deceased (*themes ff and gg*), further echoes the findings of Benbow.<sup>15</sup> Students in his study noted that '...having been shown autopsies ... may help me overcome the initial fear [of a seriously injured crash victim] more quickly,' and 'it is a very good opportunity to see one side of the pathologist's work, if considering pathology as a career.'<sup>15</sup> The present work identifies additional positive contributions to the hidden curriculum, notably a sense of one's own mortality (*theme hh*), the value of teamwork (*theme ii*), and the opportunity to reinforce the credibility of tutors (*theme jj*).

These themes exemplify the hidden curriculum. The influence of the autopsy upon the attitudes of students will depend not only upon what they are overtly taught in the mortuary, but also on the manner in which the teaching is conducted. However, as a teaching tool to

deliver the hidden curriculum, the autopsy is a double-edged sword. As students in Benbow's study<sup>15</sup> noted, '...the technicians treated the evisceration of a human being with the same feeling and tact as if gutting a fish...' and '...there seemed to be a lack of respect ... it was carried out at great speed, viscera were thrown about and the organs stuffed in a bag...' Interviewees in the present study recognised that careless autopsy practice may encourage students to objectify the deceased (*theme kk*), with one interviewee citing Benbow's study<sup>15</sup> as supporting evidence.

It was recognised that students should be prepared for the experience before attending the mortuary (*theme e*). Even so, students may find autopsies so unpleasant that they are actively discouraged from considering pathology as a career (*theme ll*) or from requesting autopsies (*theme mm*). The former should not directly influence curriculum planning as the purpose of including autopsies should not be '...because the pathologist wants to do it because he hopes that 1/1000 students will become a pathologist...' (*theme i*, but note also *theme ff*). The latter is of concern. Students discouraged to request autopsies may be less likely after graduation to seek these investigations for their patients; this would aggravate the decline in the autopsy rate.

#### What can the autopsy be used to teach?

It is interesting that a qualitative method identified similar overt uses for the autopsy in the curriculum as the previous quantitative studies<sup>12,13</sup> (metatheme D). Notably, participants in the present study identified that autopsies could be used to teach students anatomy (*theme n*), gross anatomical pathology (*theme o*), clinicopathological correlation (*theme p*), the fallibility of medicine (*theme q*), a holistic approach to medicine (*theme r*), medical ethics (*theme s*), the processes of death and the handling of the deceased (*theme t*), invasive surgical procedures (*theme u*), medical law (*theme v*), and issues of health and safety (*theme w*). The autopsy fulfils these functions because of its visual nature and the systems-based (and problem-orientated) approach adopted by many pathologists during its execution (metatheme B). Such a similarity with positivistic studies is perhaps understandable given that the interviewees came from a positivist background. It is remarkable, however, that these uses of the autopsy in medical education have survived the past 25 years, despite radical educational reforms.<sup>3-8</sup>

At the same time it is notable that while theoretical saturation was reached and could not be broken, other studies have identified roles for the autopsy in under-

graduate medical education that were not voiced by the participants in this study.<sup>13</sup> These include sharpening of visual skills, the purpose of death certification, the importance of death statistics, audit, the implications for public health, dealing with bereaved relatives, and monitoring of new drugs and technologies. Why should this be so? That such uses of the autopsy were not identified in the present study may reflect the different methodologies used in the present and past studies, changing attitudes to the autopsy over the last decade, or different educational aims in different medical curricula. Other teaching modalities are currently employed to teach these skills to medical students in Sheffield.

It was generally felt that students should be exposed to autopsies (*theme o*), but some tutors who held this view were nonetheless reluctant to make such exposure compulsory (*theme p*). The autopsy is costly, unpleasant, frightening, dangerous and unsophisticated, and carries an inherent risk that students will develop a sanitised view of autopsies and a biased picture of the prevalence of terminal diseases (*themes x-cc*). Suggested alternatives to the complete autopsy included demonstrations, video-conferences, videos, CD-ROMS and museum specimens, although these were all felt to lack the immediacy of exposure to the autopsy in the mortuary (*themes nn-pp*).

Does the autopsy have a place in the modern medical undergraduate curriculum? Given its multitude of teaching applications, the disadvantages of the suggested alternatives, and the positive contributions that the autopsy can make to the hidden curriculum, it seems likely that it does. One cannot be dogmatic about this, however. The evidence presented in this study and by previous investigators<sup>12,13,15,27</sup> demonstrates that the issues are not clear cut. No theme was evident in all of the interviews. Some interviewees would not agree with the concepts proposed by some of the themes. This is an inevitable consequence of seeking out individuals with disparate views to canvas as wide a range of opinion as possible. It is notable, however, that all of the interviewees, regardless of their views on the autopsy in clinical practice, considered the autopsy to be valuable (if not essential) in undergraduate education (*themes l and m*).

The hospital autopsy continues to decline, despite good evidence of its clinical value and relevance (the medicolegal rate remains relatively constant).<sup>24,30</sup> At the same time, histopathology in the UK faces serious staff shortages and increasing workloads. Thus it may be that the unavailability of autopsies and a lack of staff to teach about them makes autopsy teaching impractical. Other, more efficient (although perhaps less

immediate) alternatives might then be used. In deciding whether or not to include teaching based on and about the autopsy, each institution will ultimately have to weigh up the benefits and uses of the autopsy against its negative aspects within the context of its own curriculum. This exploratory study provides evidence of the pros and cons of the autopsy to assist in this process.

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