

A hand holding a magnifying glass over a grid of medical scans. The background is a collage of various medical images, including MRI and CT scans of the brain, and a person wearing glasses. The magnifying glass is held over a large, central brain scan, which is the most prominent image in the collage. The overall color palette is dominated by blues and greys, with a warm, golden glow emanating from the magnifying glass.

By Graham Segal OAM

# CORONIAL POST-MORTEMS

## The demise of an antiquated process

Legislation and case law relevant to coronial post-mortems are described in this article, along with medical and technological advances that are relevant to determining the cause and manner of a person's death. Some thoughts are also offered about the roles of these matters in the conduct of litigation.



**T**he conduct of coronial post-mortems plays an important role in society and a significant role in the conduct of litigation arising from death.

Until about 1995, the almost invariable position throughout Australia was that if a person died in circumstances that came within the definition of 'reportable death' a full three-cavity post-mortem would be carried out. The brain would usually be retained and subsequently incinerated. Using the cadaver for experimental purposes was not unknown.

The law, the practice and the science have progressed, but less so in some jurisdictions than in others.

### CHANGES IN THE LEGAL FRAMEWORK

All the Australian states and territories have Coroners Acts, but there are differences among them. Because of my familiarity with it, and because it is one of the most comprehensive Acts, I will primarily refer to the NSW legislation – namely, the *Coroners Act 2009 (NSW)* (the Act) – but I will also mention relevant differences in the legislation of some of the other states and territories.

The power to direct the holding of a post-mortem investigation is contained in s89 of the Act. Such a direction can be given only 'if the coroner considers that it is necessary or desirable to do so for the purpose of assisting in the investigation of a death of a deceased person under this Act'.<sup>1</sup>

Furthermore, such an order can be made only in circumstances in which the coroner has jurisdiction under the Act. Commonly, jurisdiction depends upon a death being a 'reportable death'. Although the definition of that term does vary between the states and territories, the defined circumstances most commonly include those in which a person died a violent or an unnatural death; or had a sudden death, the cause of which is unknown; or died in suspicious or unusual circumstances, or in circumstances where the person had not seen a medical practitioner during a period of six months immediately before death; or where a person's death was not reasonably expected as an outcome of a health-related procedure carried out on that person. In addition, there are special provisions dealing with deaths in custody.

It does not follow that merely because the coroner has jurisdiction that he or she must, or even can, order a post-mortem investigation. This is so in part by reason of the coroner's discretion, in part by reason of the objection provisions (which are discussed below), and in part because of the existence of specific provisions. Section 89(6) provides that the coroner may decide to dispense with a post-mortem examination if he or she is satisfied, after consultation with medical practitioners and the senior next-of-kin, that the person died of natural causes (where the precise cause of death is known) and the senior next-of-kin has indicated to the coroner that it is not the wish of the deceased person's family that a post-mortem investigation be carried out.<sup>2</sup>

By s38 of the Act, a medical practitioner must not certify cause of death if the death is a reportable death; that is, a death occurring in one of the circumstances mentioned above. However, by subsection (2) of that section, a medical

When family members are deciding whether to object to an autopsy, it is worth remembering that future medical negligence claims might be prejudiced by the absence of the most complete post-mortem examination.

practitioner may give a certificate in respect of a person who died over the age of 72 in circumstances where that person died 'after sustaining an injury from an accident, being an accident that was attributable to the age of that person, contributed substantially to the death of the person and was not caused by an act or omission by any other person'.

In regard to the general discretion of the coroner, it was once the practice that, whenever a reportable death occurred, the deceased was taken to the relevant mortuary and the coroner would almost invariably order a full post-mortem. It was thought by the coroner that his or her decision to have a post-mortem was totally within his province and without the prospect of review. But that view was demonstrated to be wrong by the NSW Court of Appeal in *Deitz v Abernathy*,<sup>3</sup> a case decided before the introduction of the statutory right to object. The Court of Appeal held that the decision of the coroner was 'Wednesbury unreasonable' and that there was a discretion which had to be appropriately exercised having regard to the particular circumstances of the case and the objective of the legislation. Included among the circumstances that ought to be taken into account were the objections of the family of the deceased, based upon such matters as religious observance.

Since the decision in *Deitz*, there has been considerable development in both legislation and case law.

Of particular importance in the development in the case law was the decision of Woods CJ at CL in *Krantz v Hand*.<sup>4</sup> That case concerned an elderly lady found dead in her apartment where the police had found no grounds for suspicion. Of particular importance was the following statement made by Woods CJ at CL:

'I can see no possible benefit in determining which, if any, of those events (cardiac failure or vascular accident) brought about death or indeed whether she suffered from some occult malignancy... and I can see no public benefit in determining the precise cause of death in a person of her age, even if it could be ascertained by post-mortem examination.'<sup>5</sup>

### Statutory right of objection

Legislative changes soon ensued. Those changes began with the introduction of the right of objection on the part of appropriate relatives described in the legislation as 'senior >>

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next-of-kin'. In broad terms, this type of provision is now to be found in s96ff of the NSW Act and in similar provisions in some of the other states and territories.<sup>6</sup> Effectively, these provisions confer a right on the senior next-of-kin to provide an objection to the coroner. If the objection is made, no investigation can proceed until at least 48 hours after the coroner has notified his or her decision to proceed with that examination. During that 48-hour window, an application can be made to the Supreme Court to, in effect, review the decision of the coroner. If such an application is made, the post-mortem cannot proceed until the determination of the application by the Supreme Court. The test that the Supreme Court is to apply is whether the performance of that procedure is 'necessary or desirable in the circumstances'. The court may order that the examination not be conducted or order that it be conducted subject to such limitations as it may specify in its order.<sup>7</sup>

Subsequent court decisions in NSW and other states are not particularly informative in terms of any further statement of principle. The courts have, however, repeatedly affirmed the relevance, although not always the critical consideration, of religious and cultural beliefs.<sup>8</sup>

The decision of the Supreme Court of South Australia in *Pope & Anor v State Coroner*<sup>9</sup> illustrates the problems that arise when there is no statutory right of objection. This difficulty was overcome in *Deitz* but not in *Pope*.

In practice, these matters, the vast majority of which are resolved by communication between the representatives of the family and the coroner's office, involve the provision of adequate historical medical evidence, the views of the police, a consideration of the surrounding circumstances and the application of non-invasive or minimally invasive techniques of investigation.

It will be noted that the legislature has given recognition to these types of considerations.

Section 88 of the NSW Act provides: '(1) When a post-mortem examination or other examination or test is conducted on the remains of a deceased person under this Part, regard is to be had to the dignity of the deceased person.' Further, by sub-section (2) the coroner is, in effect, required to use the least invasive procedure that is appropriate in the circumstances. Sub-section (3) goes on to provide examples of less invasive procedures, such as external examination, radiological examination, blood and tissue sampling and partial post-mortem examination.<sup>10</sup>

In some jurisdictions there is specific reference to the religious and cultural beliefs held by the deceased, and those held by the relatives.<sup>11</sup>

### THE ROLE OF POST-MORTEM INVESTIGATIONS IN DETERMINING THE CAUSE AND MANNER OF DEATH

The post-mortem examination is not the only source of information for the coroner or for information affecting other legal consequences that may flow from the death, such as criminal sanctions, claims for compensation, entitlements to insurance, and professional sanctions on the part of relevant professional bodies exercising control over members of their profession.

In considering whether a post-mortem investigation ought to be ordered, the coroner is constrained to look to the purpose of the Coroners Act. The situation is not, as was thought for some time, that procedures may be performed (apparently in consequence of a coronial order) where the purpose was only scientific or educational (see the report of B Walker SC).<sup>12</sup> The necessity of examinations being confined to the coronial purpose is made clear by s89(1)(b)(iii) of the NSW Act. Therefore, the function of the coronial process or coronial post-mortems is not to provide evidence for the purpose of assisting families, medical or other healthcare professionals or insurance companies in a consideration of civil matters. This is not to say, of course, that the material that arises in the course of the coronial inquiry or coronial post-mortem examination may not provide significant evidence in those other areas.

The relationship between criminal investigation and the coronial process is clear. A coroner must, when holding an inquest in a relevant case, consider the question of whether the evidence is capable of satisfying a jury beyond reasonable doubt that a person has committed an indictable offence, whether there is a reasonable prospect that a jury would convict a known person of the indictable offence and, if so, whether the indictable offence would raise the issue of whether the known person caused the death. If the requirements are satisfied, the coroner must terminate the inquiry and refer the matter to the Director of Public Prosecutions. All jurisdictions forbid coroners finding or even commenting on the guilt of a particular person.

### THE ROLE OF NEW DEVELOPMENTS IN MEDICINE AND TECHNOLOGY

There are always ongoing advances in the various sciences associated with the forensic process. It is outside my scope of knowledge to deal with developments in such areas as histopathology, ballistics and crime scene investigation.

However, one area of particular interest has been the development of forensic imaging. It involves such things as three-dimensional photogrammetry-based surface scanning, computed tomography (CT) scans, magnetic resonance imaging (MRI), CT-guided postmortem angiography and CT-guided post-mortem biopsy.

In recent times, the institution that has produced the most extensive research and writings on forensic imaging has



been that under the directorship of Professor Michael Thali, initially at the University of Bern, Switzerland, and more recently at the University of Zurich. The term 'virtopsy'<sup>13</sup> was coined there to describe this process. The International Society of Forensic Radiology and Imaging (ISFRI) is now well established and publishes a most informative journal. The first international conference on the subject was held in Sydney in 2004.

In Australia, attempts to bring this area of investigation into day-to-day practical application have been limited and not altogether welcomed by some in the world of forensic pathology. In NSW from time to time there have been ad hoc post-mortem investigations by way of forensic imaging. Recently, there has been a limited study conducted at Royal Prince Alfred Hospital, the results of which are not as yet published. However, in Victoria, thanks to the efforts of Dr Chris O'Donnell, a radiologist and consultant to the Victorian Institute of Forensic Medicine, there is a CT scanner now in operation in that institute with the result that every deceased brought into that institution is now examined by that scanner. A CT scanner is now in operation at the mortuary in Newcastle and similar advances have been made in Brisbane, but Sydney still lags a good deal behind.

Forensic imaging is not confined to CT scans. From time to time, MRI examinations are appropriate and have been conducted even in Sydney.

More recently, post-mortem angiography has been shown to be a valuable means of investigation. Appropriate pumping equipment overcomes the absence of blood flow.

Forensic imaging can serve a number of purposes. Commonly, it can be used to determine a cause of death without the need for any invasive procedures. In some circumstances, appropriate imaging can reveal important factors demonstrating the cause of death that can be missed in autopsies. There are of course circumstances in which it is not an adequate means of investigation. Each case has to be considered on its merits. This technology enables the complete and permanent recording in real time of the images it produces and these images can readily be transmitted

to courts, practitioners and other experts anywhere in the world. Further, the process occurs before the body is subject to surgical intervention. Alternative scenarios relating to such things as the trajectory of bullets can be demonstrated.

One of the most common causes of sudden or apparently unexplained death is some form of cardiac disease or failure. Dr Christian Jackowski and others have published important research demonstrating that in some cases certain cardiac diseases can be identified by using magnetic resonance imaging in circumstances where it may not be discoverable at autopsy.<sup>14</sup>

Another important development has been the use of surface scanning. This type of investigation has been used to demonstrate the relationship between injury to the person and damage on motor vehicles. Software developments combined with the engineering of surface scanning equipment has been used to recreate the events that occurred at fatal road accidents.

Surgical navigation is another notable development. It enables the anatomical orientation of axial post-mortem CT images to be mapped on to the physical body.<sup>15</sup> This technology is most useful in communicating the results of investigation to jurors and generally for presentation in the courtroom scene.

These and other areas of scientific development are of enormous benefit in understanding the causes of death. They are modalities which could be used in combination with other well-known means of investigation such as ballistics. In Switzerland, I have seen a combination of some of the skills and disciplines that I have mentioned used to resolve an important issue in a criminal case; specifically, whether the defendant fired the first shot.

Forensic imaging and related disciplines are now playing an important part in investigations into the manner and causes of death in many places around the world. Aside from overcoming various issues to do with religious, cultural and emotional difficulties experienced by some in relation to the common method of post-mortem investigation, >>

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there has been a significant improvement in the armoury of those concerned with forensic investigation. The images are available for examination anywhere in the world at short notice. The images are permanent and can be produced in the courtroom.

I am not suggesting that forensic imaging is about to replace the autopsy. In some cases, it may serve instead of the historical method of post-mortem investigation but, more commonly, it will serve as a valuable adjunct and prove its value in cases where the standard autopsy may be less informative than imaging, particularly in circumstances where such imaging might be usefully combined with the other methods of investigation to which I have referred.

The capacity of imaging to demonstrate the nature and extent of traumatic injury is significant as is its ability to discount such injury.

### IMPLICATIONS FOR LEGAL PRACTITIONERS

Legal practitioners involved in coronial inquests need to have an understanding of the array of medical and scientific tools available to assist in determining the cause and manner of death.

Those involved in the practice of criminal law need to have an understanding of the type of medical evidence that might be brought against an accused, particularly when police might have imaging evidence available to them, as they now do in Victoria. Similarly, it may be useful for the defence to have a good knowledge of possible defects in forensic evidence relied on by the prosecution.

Similar considerations can arise in the context of claims for damages (whether arising by reason of medical negligence or otherwise) and matters going before professional tribunals.

For many years, practitioners involved in all of these areas have been accustomed to receiving post-mortem reports detailing examinations conducted in the usual way, together with pathology reports. As time progresses, forensic reports will not be so limited. It will not be long before the method of presenting forensic findings to the court will consist of more than still photographs and the oral evidence of forensic pathologists. Practitioners, both solicitors and barristers, will need to have an understanding of these processes.

There may be circumstances in which instructions are received while the deceased is still in the mortuary with the result that, in appropriate cases, it may be of value to request that the coroner direct a particular type of examination, possibly including imaging. As has been pointed out, the

coroner has the power to give such a direction. So far, the practice in NSW remains that in the absence of any objection, formal or otherwise, full post-mortems are ordered and radiological investigations as an alternative to invasive autopsies are not ordered. I am only aware of the making of directions for both invasive autopsies and radiological examination by CT scan or MRI in the circumstance of a controlled study recently undertaken at the Glebe facility. I am not yet aware of the publication of the results of that study. However, there is no reason in principle why such a direction should not be sought in other circumstances in which it might assist a better understanding of the cause and manner of death.

Sometimes – for example, when members of a family are deciding whether to object to an autopsy – it will be important to have in mind that future medical negligence claims might be prejudiced by the absence of the most complete post-mortem examination.

It is always critical for legal practitioners, when considering the manner and cause of death, to appreciate the context in which the consideration arises. Different contexts will of course involve a consideration of different standards and onus of proof. ■

**Notes:** **1** Compare with the relevant sections in the Acts of the other jurisdictions: *Coroners Act 2008* (Vic) s25; *Coroners Act 2003* (Qld) s19; *Coroners Act 1995* (Tas) s36; *Coroners Act 1996* (WA) s34; *Coroners Act 1997* (ACT) s21; *Coroners Act 1993* (NT) s20; *Coroners Act 2003* (SA) ss21, 22. **2** Also see *Coroners Act 2008* (Vic) s17. **3** *Deitz v Abernathy* (1996) 39 NSWLR 301; at first instance BC9602510. **4** *Krantz v Hand* 1999 NSWSC 432. **5** *Ibid.* **6** *Coroners Act 2008* (Vic) s26; *Coroners Act 1996* (WA) s36; *Coroners Act 1993* (NT) s23. **7** *Coroners Act 2009* (NSW) s98(3). **8** *Green v Johnston* (1995) 2 VR 176; *Unchango v R* (1997) 95 A.Crim.R 65; *Evans v Northern Territory Coroner* [2011] NTSC 100. **9** *Pope & Anor v State Coroner* [1998] SASC 6526. **10** See also *Coroners Act 2008* (Vic) s3. **11** *Coroners Act 1997* (ACT) s28; *Coroners Act 2003* (Qld) s19(5); *Coroners Act 2008* (Vic) s8. **12** Bret Walker SC, *Report on Matters Arising From Post Mortem and Anatomical Examination Practice Institute of Forensic Medicine*, NSW Government 2001. **13** M Thali et al (eds), *The Virtopsy Approach*, 2009, CRC Press Inc. **14** *Journal of American College of Cardiology*, Vol. 62 Issue 7; pp 617-29, 13 August 2013. **15** See the article by Ebert LC, Rudder TD, et al (as yet unpublished), *Institute of Forensic Medicine*, University of Zurich, 2013.

**Graham Segal** practises as a barrister at Selborne Chambers, Sydney. He is a member of the International Society of Forensic Radiology and Imaging. **PHONE** (02) 9223 5688.  
**EMAIL** gsegal@selbornechambers.com.au.

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