



# The Medical Detectives

ALISON AND RICHARD GOODWIN EXAMINE HOW PATHOLOGY  
HELPS THE LAW SOLVE CRIME.

The body of a teenage boy, a non-swimmer, is found at the bottom of a suburban pool. An apparently healthy middle-aged woman collapses and dies while spraying the roses in her garden. A factory-worker is killed while using faulty equipment. An unidentified male found unconscious outside a city nightclub dies later in hospital.

These are examples of deaths with obvious legal implications. While grieving families demand answers, so does the law. In Australia, the justice system calls upon many experts to help piece together the jigsaw puzzle of sudden or otherwise unexplained death; among them are pathologists. At times, the law turns to their skills to identify the possibility of criminal action in such deaths. If a crime is found to have taken place, the justice system relies heavily on pathologists to analyse the cases and help detect the perpetrators.

The pathologist, in acting as an investigator for the coroner, plays a wider role than just the provider of an autopsy report, says Associate Professor David Ranson, deputy director of the Victorian Institute of Forensic Medicine. "The pathologist's involvement in examining the death scene and the dead body, combined with aspects of forensic science, means that they form part of an investigation team in which their expertise is that of medical detective," he says.

Australia's coronial system provides for coroners – who are legal officers, not physicians – to investigate all sudden and unexpected deaths. About 7,000 are reported annually in Australia. These include all suicides, homicides, traffic fatalities, workplace and sporting accidents, fatalities linked to the use of equipment, drownings and adverse events in hospitals and other places of care. The work of pathologists, initially during an autopsy and subsequently through laboratory and field investigations, forms the written and oral evidence on which coroners base their findings and from which any other legal action may stem.

"Although the pathologist works for the coroner and is primarily engaged to determine cause of death, it is axiomatic, that in so doing, the pathologist assists the police in determining whether or not a suspicious

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*Deputy director of the Victorian Institute of Forensic Medicine, Associate Professor David Ranson, prepares for an autopsy.*

death may in fact be a homicide," says Dr Tony Raymond, director of the National Institute of Forensic Science in Melbourne.

Forensic pathologists comprise just 1.9 per cent of the total active membership of the Royal College of Pathologists of Australasia – that's just a score of such medical detectives in a 2000-strong organisation. Their work takes in the field science of crime scene investigation; the medical sciences of pathology, psychiatry, forensic medicine and odontology; and laboratory sciences, which include chemistry, biology, toxicology, ballistics and fingerprints.

The relationship between police, courts and medical practitioners is far

more democratic than television dramas would have us believe. Each member of these three diverse workforces brings their own area of expertise to criminal inquiries. Working alone, each would be hampered in their quest to carry out a criminal investigation. Associate Professor Ranson notes: "Despite the media's portrayal of the forensic pathologist as a high-profile medical sleuth, the reality is that the forensic pathologist takes his place on an equal basis with all other specialist investigators in the team assisting the coroner." He says team members need not have a close working relationship but must have excellent communication and a respect for the other's role. "This is where the real value of a forensic

pathologist having legal training comes in, as it helps in communication and an understanding of the role of legal officials."

Crime only figures in a small proportion of deaths examined by pathologists. Most deaths result from natural causes. Of the suspicious death category, only 2 per cent to 5 per cent are homicides, 30 per cent are the result of traumatic accidents or suicides and the remaining 65 per cent are natural deaths. The more suspicious the case, the more likely it is that authorities will involve a forensic pathologist. Dr Raymond cites a case of three deaths on a farm in Geelong in 1993. The pathologist was needed to help unravel the order in which the three were shot because this impacted on a substantial will.

Forensic pathologists complete a medical degree and internship and then pursue their forensics qualifications in one of two ways. Would-be forensic pathologists study anatomical pathology for three years with a further two years

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study of forensics followed by examinations or complete a full anatomical pathology fellowship of five years and a Post Fellowship Diploma of one year along with exams. Such pathologists work within coronial services and hospitals.

The old ranks of police surgeons, as forensic pathologists were formerly known, would be astounded by today's technological investigative weapons, such as the world's first electronic national coronial database - the National Coroners Information System maintained at Monash University in Victoria - which stores data collated from all state coronial offices. This provides valuable death and injury prevention research material to scientists and law enforcement agencies.

Police rely heavily on pathologists to define the nature of initial investigations. The work of pathologists is a vital guide in homicide investigations, says Inspector Bernard Rankin of the Victorian homicide squad. "In the initial stages of a murder investigation, where a body has been recovered, police attend the post mortem examination to ascertain first hand from the attending pathologist the cause of death," he says. "In many homicide inquiries, the cause of death is not apparent to the investigator. The pathologist can not only accurately define the cause of death, but also other vital evidence such as bruising, signs of violence, sexual assault, defence wounds to hands, or tissue found under fingernails."

Inspector Rankin says the accused is often the only person who knows precisely how the fatal injuries were inflicted, and his or her admissions can be compared with autopsy results. "The evidence gleaned from the post-mortem can often corroborate what an eyewitness saw," he says. "For example, a bruise to the right side of the victim's face may corroborate a witness's statement that he or she saw the suspect punch the victim with his left hand."

An autopsy begins with a review of written evidence such as medical records and witness statements. Trace evidence may be collected from the surface of the body, and X-rays and specialised imaging procedures, including CT scans, infra-red and ultraviolet imaging, are used. A detailed external examination of the body checking eyes, ears, nose, mouth and skin surface is performed. An internal examination allows major organs to be removed and studied. Analysis of any body fluids and tissue samples by specialist chemists and toxicologists may take weeks to be completed. The autopsy report, accompanying specialist reports and witness statements are then sent to the coroner, whose task it is to determine the cause of death. The pathologist is often called upon to give evidence if, in the coroner's opinion, an inquest is needed.

## PATHOLOGY AND CRIME – FAMOUS CASES

### THE BACKPACKER MURDERS

Forensic pathologist Dr Peter Bradhurst performed autopsies on all seven victims whose bodies were found buried in the Belanglo State Forest in NSW in the early 1990s. Blood stains linked some victims of what became known as the backpacker serial murders with items found on the property of road worker Ivan Milat, who was convicted in 1996 on damning ballistics and forensic evidence.

### THE SNOWTOWN MURDERS

The most gruesome pathology investigation in Australian criminal history was undoubtedly conducted on eight dismembered bodies found in barrels in a disused bank building in the South Australian rural hamlet of Snowtown in May 1999. Another four bodies were found in suburban Adelaide, further victims of the pair John Bunting and Robert Wagner, who were convicted of the crimes last year.

### BALI BOMBINGS

Eighty-eight Australians were among 202 people killed when two bombs were detonated in Bali in 2002. Forensic pathology experts from the Australian Defence Force and Federal Police assisted local authorities to identify victims, retrieve detonating material, trace its source and apprehend the culprits. The enormous destruction wrought by the blasts meant that visual identification, fingerprinting and dental records were considered inadequate for victim identification, but DNA techniques were able to identify more than half of the victims within two weeks.

Dr Raymond says a pathologist may well be a critical witness in a case. But he cautions: "It is difficult to generalise as a pathologist does not necessarily know what the critical issues are in a specific case at the time of writing his or her report. (However,) there may be research that a pathologist is aware of that goes to the heart of a particular inquiry. For instance, is the death of a particular child consistent with a cot death or shaken baby syndrome or something more sinister? Did the victim die as a result of the alleged assault or hypothermia? This question would probably influence subsequent charges," he says. "Did the recreational drug taker die from an accidental oral overdose or may he have been given a 'hot shot' that in combination with alcohol and other drugs was sufficient to kill him?"

Associate Professor Ranson counts a good imagination as a useful attribute for a successful forensic pathologist. "Much forensic work is about construction rather than deduction - if you cannot imagine it, you are unlikely to consider it," he says. A meticulous attention to detail in regard to documentation rates highly, too.

Of course, pathologists do not always agree. Dr Raymond recalls that in a NSW case from the mid-1990s, the question was whether a mother killed all three children and then suicided or whether she was killed along with the children by her husband. The pathologists were in disagreement with one another on this issue. Similarly, scientific evidence is not always considered reliable. In the case of the disappearance of baby Azaria Chamberlain at Ayers Rock in 1980, the mother, Lindy, was initially convicted of murder until a special commission of inquiry cast doubt on a pathology finding. It turned out that "foetal blood" found in the family car was in fact a form of chemical spray common in that make of vehicle.

Prominent retired NSW barrister Chester Porter, QC, cautions in his book *Walking on Water* that scientific evidence should never be considered



*Inspector Bernard Rankin of the Victorian homicide squad says that post-mortems often give police the crucial information they need.*

definitive in the absence of motive. However, the Australasian Legal Information Institute says marked improvements have been made in the quality and accuracy of forensic analysis. Australia is soon set to become the first place in the world where a major mortuary is equipped with a Computerised Tomography (CT) scanner. This facility in Melbourne will allow for faster, safer and more intricate investigation of bodies.

One of the most important tools to be developed for forensic investigation has been DNA profiling - considered the greatest advance in crime work since the introduction of fingerprinting more than 150 years ago. It is widely used to link suspects with victims or crime scenes. DNA is also used in the identification of human remains where the body is too badly damaged for visual identification. Profiling is now so sophisticated that DNA samples from close relatives can be used in criminal investigations to narrow down a list of possible offenders.

War crimes and terrorism are emerging fields in which Australian forensic pathologists are involved. They

have built up a portfolio of victim identification expertise and, as a result, have been seconded to international efforts to work on victim identification in Kosovo, Bali and the Solomon Islands.

It is not surprising that investigative breakthroughs that clear up old murder mysteries tend to capture the general public's imagination - they constitute the main ingredients of television drama - but they tell only part of the story of forensic work. A forensic pathologist is essentially an interpreter of his autopsy subject's life and death story. Many times such revelations rate little more than a few paragraphs in a local newspaper, if that, but on occasion they can spark a national sensation or even mobilise international justice investigations.

Rigorous adherence to scientific principles and legal procedure guides the work of forensic pathologists, regardless of the dead person's status or circumstances. The aims of the work are summed up succinctly in the motto of the Victorian State Coroner's Office - "We speak for the dead to protect the living." 🔥