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Does organ donation impact on forensic outcomes: a review of coronial outcomes and criminal trial proceedings

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Abstract

Despite increases in organ donation rates, there continue to be waiting lists for patients in urgent need of transplantation. Where a death is reportable to the coroner, donation can only proceed where a coroner consents to donation. The coronial decision is generally influenced by advice sought from a forensic pathologist. In deaths that are reportable under the Coroners Act, concerns about compromising autopsy evidence with respect to potential legal proceedings, or about creating difficulties in determining the cause, manner or circumstances of death can be barriers to gaining coronial consent for retrieval.

We examined 177 records of reportable deaths referred for organ donation over a four year period in Queensland Australia. We also reviewed records of any criminal proceedings which were commenced in relation to these deaths. There were 10 cases in which the forensic pathologist recommended restrictions to organ donation with the loss of a number of organs to transplantation. We did not identify a case where organ donation altered the outcome of criminal proceedings or significantly impacted cause of death findings.

The request to a forensic pathologist or coroner to permit organ donation occurs before a completed police or other investigation, at a time when details about the circumstances of death may be evolving. A time-critical decision is required with incomplete information. Our results may assist that decision making process by demonstrating that organ donation, where permitted, had limited impact on autopsy evidence and any subsequent court proceedings. Where organ donation was not permitted, autopsy evidence did not significantly alter coronial findings or judicial outcomes.

Introduction

Both organ donation for transplantation and coronial investigation have undeniable benefits to the community. For some causes of organ failure, transplantation of a cadaveric organ is the only therapeutic option without which the potential recipient will die. Despite increases in donation rates in the UK, Australia and other jurisdictions there is an ongoing shortfall between the number of donated organs and the number of patients waitlisted for life saving transplantation.[1]

In Queensland and other Australian jurisdictions the laws relevant to donation consist of a Coroners Act and a Human Tissue Act or its equivalent. As per the Transplantation and Anatomy Act 1979(Qld), if the death is reportable to the coroner, organ donation can only proceed with the consent of the relevant coroner (s24(2)).

The *Coroners Act 2003 (Qld)* prescribes the circumstances in which deaths are reportable, namely where: the death was violent or unnatural, happened in suspicious circumstances, was a health care related death; was a death in care, in custody or in the course of or as a result of police operations; where the identity of the deceased is unknown – or, where the cause of death has not been determined such that a cause of death certificate has not been issued (s8(3)).

The purpose of the Qld Coroners Act 2003 includes helping “to prevent deaths from similar causes happening in the future” (section 3). This clearly benefits the community[2]. Coronial investigations and autopsies help families with medical, psychological and legal processes, contribute to the accurate registration of deaths and hence mortality statistics, and are critical to detection and investigation of crime.

The Coroner’s Order for autopsy obliges the pathologist to perform a particular type of examination of the body (section 19, *Coroners Act 2003* Qld), to fulfil requirements regarding tests and tissue removal (ss. 23 and 24), and to provide an autopsy certificate and report to the coroner (ss. 24A and 25). In complying with the legal requirements, the pathologist must also meet professional standards, such as the Australasian Royal College’s Policy on Autopsies, including the duty “to record the positive and relevant negative observations and findings in such a way as to enable another forensic pathologist at another time to independently come to his or her own conclusions”.[3] These legal and professional obligations apply to pathologists performing all types of coroner’s autopsy.

In reportable deaths, there is an inherent tension between organ donation and coronial autopsy, as both require access to the body of the recently deceased. The coronial process may constitute a legal barrier that restricts life-saving organs available for transplantation, while the donation process may impair forensic examination of the deceased. This may hinder the efforts of the Forensic Pathologist (FP) and create uncertainty regarding the cause and circumstances of death. The impact of that uncertainty may vary depending on the nature of death. In many circumstances it may have little effect other than what is potentially recorded on a death certificate. However in circumstances where a criminal investigation is possible, that uncertainty could have very significant consequences. The magnitude of that consequence is likely to be a factor in the FP’s decision making when deciding whether or not to permit organ donation.

This study seeks to measure the impact of organ donation on both the coronial process and the judicial process, by retrospectively reviewing all deaths referred for donation over a four year period in Queensland Australia where the manner of death was reportable to the coroner.

A special situation exists where the deceased may have died as a result of an act or omission of another person. In cases that may lead to criminal charges, compromising autopsy evidence has the potential to lead to miscarriages of justice, such as wrongful conviction or acquittal. In our study we have more closely focused on that group of reportable deaths that resulted in criminal proceedings.

In Australia, while it is the coroner whose consent for donation must be sought, most coroners are not medically qualified and must rely on pathologists' expertise and advice. The forensic pathologist's advice is important but not determinative. Coroners may accept the pathologist's advice but are not obliged to do so.

Methods

Ethics approval was obtained from the Human Ethics Committee of Forensic and Scientific Services, Health Support Queensland.

A retrospective analysis was performed of all potential organ donors whose death was subject to coronial investigation from the period 1/1/2009 to 31/12/2013. This period was selected to allow sufficient time for majority of coronial and criminal proceedings to have completed. In the state of Queensland Australia, a single agency (Donate Life Queensland, DLQ) is the central referral point for all potential organ donors. Details of all referral calls are recorded, including whether or not the death is reportable.

The first part of our study was a review of the coronial records for all cases referred to the Queensland organ donation agency where death was reportable, whether organ donation had or had not taken place. Data was collected on whether there had been coronial refusal or restrictions. The FPs report was reviewed to determine whether donation, where it did occur, was mentioned.

A total of 196 reportable deaths were referred to DLQ in that period. Coronial or judicial records were able to be retrieved for 177 of those cases. Data were retrieved from the donation agency file and the coronial record using a standardised data form and entered in a Microsoft Access database. Only descriptive analysis of data was performed.

The second part of our study looked more closely at those reportable deaths where the death may have resulted from criminal action. Names of potential donors were linked to perpetrators who went to trial, and trial proceedings reviewed to identify whether autopsy evidence was material to the outcome and whether organ donation had an impact.

The authors (LN, CD, NS, BC) reviewed the circumstances of death of all 196 reportable deaths to identify those deaths likely to lead to criminal action.

Those matters were examined in greater detail to determine whether there was a potential connection between organ retrieval and the conduct or efficacy of prosecutions arising from those investigations. For each matter identified by QPS, a search was made in the relevant court registry to determine whether a trial had taken place and if so, the outcomes were recorded. Where trials were conducted, relevant reports and decisions related to those matters, published by the Trial Division of the Supreme Court of Queensland and the Queensland Legal Updater service (maintained by the Supreme Court of Queensland Library) were analysed. A search was also conducted for any matter which subsequently went to appeal.

There were 30 cases where criminal action was initially considered a possibility and records existed. Of these 30 cases, 27 had coronial records while three had judicial but not coronial information. Police investigation actually commenced in 13 of the 30 cases where criminal action was initially considered possible.

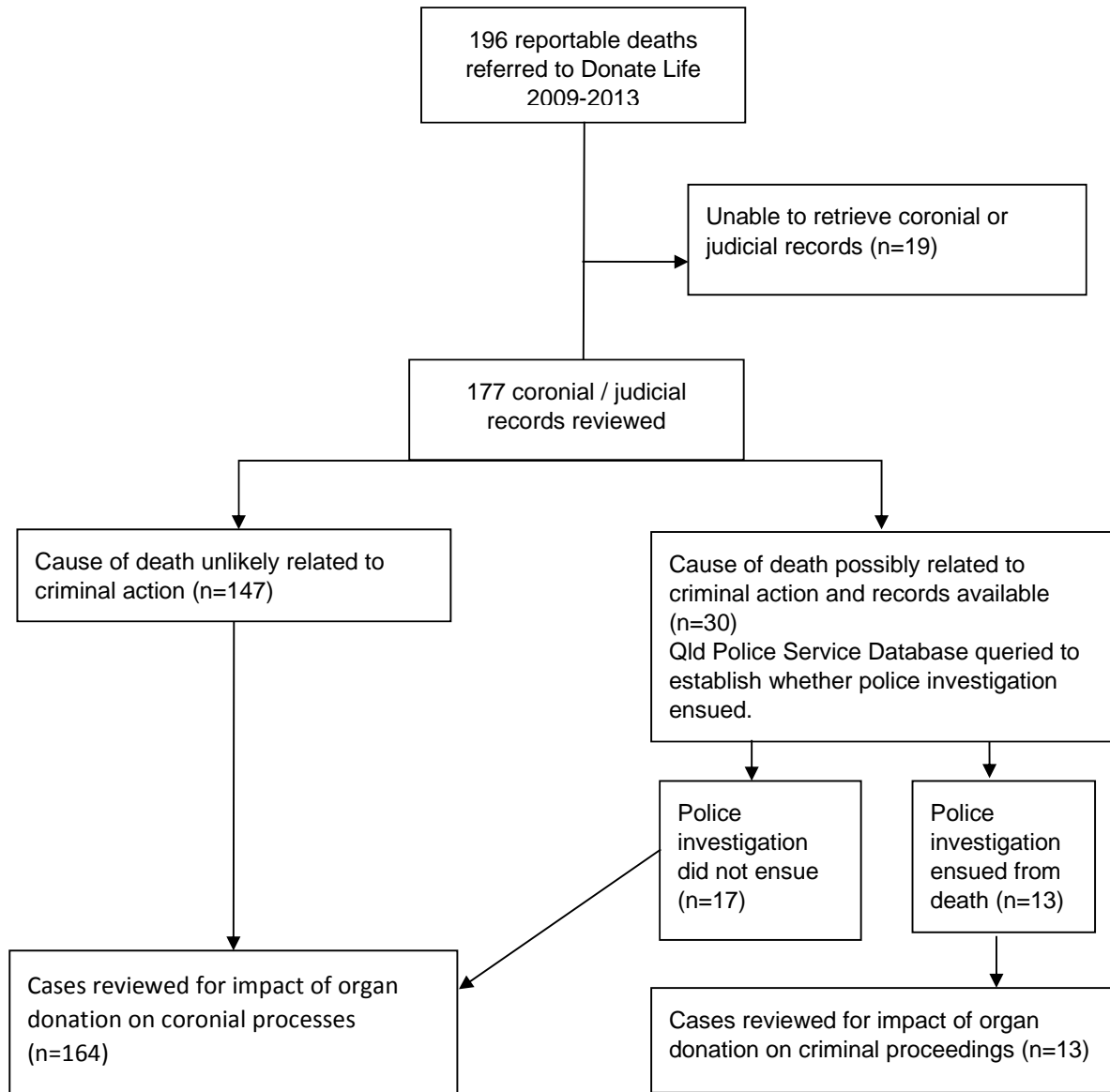


Figure 1: Details of Cases Reviewed

Results

For the sake of clarity we have subdivided our results section into two sections. Firstly we analyse all coronial cases (including those triggering criminal proceedings). Then we present a detailed analysis of that subset of cases where criminal investigation ensued.

Results: All Reportable Cases

The 177 potential donors ranged in age from 3 months to 72 years of age, with a median age of 35. There were 24 cases under 18 years of age. Identified causes of death were categorised as follows in Table 1.

Table 1: Coronal cause of death for reportable deaths referred for organ donation

Category	Number (Percent of total)
Blunt Head Injury (Non MVA)	45 (26%)
Blunt Head Injury (MVA)	28 (16%)
MVA (cause of death other than head injury)	16 (9%)
Gunshot wound to the head	8 (5%)
Hypoxic encephalopathy following hanging	31 (18%)
Hypoxic encephalopathy (other causes)	15 (9%)
Intracerebral haemorrhage (non-traumatic)	5 (3%)
Drug toxicity	4 (2%)
Burns	3 (2%)
Other	19 (11%)
Incomplete data	3
TOTAL	177

Forensic Pathologist Denial or Restrictions

Of the 177 cases reviewed, 142 proceeded to donation of any organ and 35 did not. Where donation did not occur it was for a variety of reasons – for example no medically suitable organs to donate or withdrawal of family consent.

Where there was forensic restriction of donation, the decision was based on the Coroner’s acceptance of a recommendation by the Forensic Pathologist (FP). There were two cases where the FP recommended that donation not proceed at all and eight cases where the FP recommended that particular organs should not be donated.

There were nine cases where the FP made specific requests that permitted donation to occur despite initial hesitation – eg FP examination prior to donation occurring, including two cases where the FP attended or planned to attend the donation procedure.

Table 2: Nature of death where FP recommended restriction of donation

Nature of Death	Age	Organs limited by FP			
		Heart	Lungs	Liver	Kidneys
Hypoxic encephalopathy (hanging)	10-19	L	L	L	L
Cardiac arrest post LSCS	20-29	NS	L	NS	L
Unexplained out of hospital cardiac arrest	20-29	L	NS	NS	D
In hospital cardiac arrest (Type 1 DM)	20-29	L	L	D	D
Out of hospital cardiac arrest	30-39	L	NS	NS	NS
Cardiac arrest post minor surgery	40-49	NS	L	NS	L
Found unresponsive (?drug toxicity)	40-49	L	L	NS	NS
Subdural haematoma	50-59	L	L	L	D
Fall while a hospital inpatient	50-59	L	L	NS	NS
Fall on a cruise ship	50-59	L	NS	NS	NS

Organs sought: L = Limited/excluded by pathologist’s recommendation; NS = Not Sought; D=Donated

Of the ten cases where the FP recommended restriction of donation, post mortem examination of those organs which could have been donated did not significantly alter the determination of cause of death. For example in one case of FP refusal (young adult with hypoxic encephalopathy) a full internal autopsy was performed. Examination of the heart, lungs, liver and kidneys which could have been donated did not reveal any abnormality. It is acknowledged that the absence of identified pathology may be an important finding.

Other Investigations Performed

For all cases, the coronial records were reviewed to identify what investigations had been performed to assist with determination of the cause of death whether or not donation had occurred.

Table 3: Investigations performed to assist with determination of cause of death

Method		Number of cases (%)
Autopsy	Full Internal	50 (29%)
	Partial Internal	22 (13%)
	External Only	94 (54%)
	No Autopsy	8 (5%)
CT scan	Premortem CT only	28 (16%)
	Postmortem CT only	78 (45%)
	Both Premortem and Postmortem CT	28 (16%)
	No CT	40 (23%)
Toxicology Testing		152 (87%)

The authors (LN, CD, BC, NS) reviewed the Coroner's Reports to identify which investigations / information appeared to have been important in determining cause of death. Multiple modalities were identified in most cases – there were only 8 cases in which one single modality appeared to have been determinative. In 67 cases where an external autopsy was performed, it appeared to have been the main determinant of cause of death. In 44 (out of 50) cases where a full internal autopsy was performed it was identified as the main determinant of cause of death. In 30 cases where an autopsy was done, it was not identified as the main determinant of cause of death – rather the post-mortem CT scan appeared to have been more important. Subsequent to the study period, it has become routine practice for a post-mortem CT scan to be performed in reportable deaths.

Reportable Deaths Where Organ Donation Did Proceed

Where organ donation had occurred, the autopsy report was reviewed to establish whether organ retrieval had an impact on the autopsy findings. The FP commented on organ retrieval in 116 of 139 cases that proceeded to donation. Comments generally merely reflected the presence of surgical scars or the absence of organs.

In only one case (an assault victim) did the FP comment that organ retrieval had a significant impact on autopsy findings, as follows: '...an organ donation procedure had taken place. This involved the removal of the heart and lungs from the body. This means that any soft tissue injury to the chest region could not be accessed by radiology or post-mortem. However, it was noted in the medical records that the deceased had sustained pneumothoraces.' This case progressed to criminal proceedings and notwithstanding the FP's report the perpetrator was found guilty. In another case

(gunshot wound to the head), the FP commented that the ‘...presence of underlying natural disease (was) unable to be determined but is unlikely to have contributed to the cause of death’

Results: Police Investigations

There were 30 reportable deaths referred for organ donation where the mechanism of death was identified as possibly the result of criminal action. Of those, police investigations commenced in 13 cases.

Of the 13 cases, 11 resulted in criminal charges with commencement of a criminal trial. Two were subsequently abandoned due to lack of evidence unrelated to the cause of death and a third trial was terminated following a guilty plea. Thus 8 trials were carried out to conclusion. In none of those completed trials was there any indication that evidentiary facts were impacted by donation. Only one of the trials went to appeal, with the grounds of appeal not related to donation.

Table 4: Outcomes of police investigation where the victim was a potential organ donor

Nature of case	Charges Laid / Trial commenced	Trial Completed	Donated	Autopsy evidence relevant at trial?	Trial outcome
Head injury sustained in robbery	No	No	No	No	Assaulted during robbery. Insufficient evidence. No charges.
Man-slaughter	Yes	Yes	No	No	Single punch head injury, captured on CCTV. Convicted.
DOoVCD	Yes	Yes	Yes	No	Motor vehicle incident. Trial based on assessment of driving competence of accused vs deceased. Acquitted.
Failure to remain	No	No	Yes	No	Motor vehicle incident. Investigation terminated prior to prosecution.
Grievous bodily harm	Yes	Yes	Yes	No	Single punch head injury, captured on CCTV. Jury not convinced of intention. Acquitted.
Man-slaughter	Yes	Yes	Yes	Yes: head area only	Single punch head injury. Accused argued self-defence not intending to cause death. Supportive autopsy evidence: force applied not severe. Acquitted.
Murder (altercation & assault)	Yes	Yes	Yes	Yes: head area only	Punch injury during argument. Acquitted of murder. Plead guilty to manslaughter.
Man-slaughter	Yes	No	Yes	No	Shovel injury to head during argument. Guilty plea without trial.
Man-slaughter	Yes	Yes	Yes	Yes: head area only	Single punch head injury. Convicted.
DOoVCD; Failure to remain	Yes	No	Yes	No	Traffic incident. Charges dismissed due to lack of evidence.
DOoVCD	Yes	No	Yes	No	Alleged hit and run. Trial abandoned by prosecutors due to lack of evidence.
Murder	Yes	Yes	Yes	No	Shooting murder during robbery. Convicted of murder.
Murder	Yes	Yes	Yes	Yes: head area only	Shooting murder of ex partner. Convicted of murder.

DOoVCD Dangerous operation of vehicle causing death

Several cases illustrated that although the cause of death was relevant in the criminal trial, no critical material fact was impacted by organ retrieval. The defence generally did not contest the cause of death, rather some more uncertain element (such as intention to cause a particular injury), or did not contest the injuries which caused the death, but the extent to which the accused contributed to

those injuries. Where autopsy evidence was important, in these cases it exclusively derived from examination above the neck – ie would not have been impacted by donation of abdominal or thoracic organs or tissue, bone or skin.

Discussion

The decision by the coroner and the provision of advice by the forensic pathologist with regard to organ donation occur in a time critical fashion, often outside of business hours. These decisions must invariably be made with incomplete information. It is often unclear at this early stage whether death could be the result of criminal action. Nevertheless, the coroner and forensic pathologist are asked to make an early and rapid assessment of the importance of autopsy evidence and the likelihood that evidence will be impacted by organ donation.

In this dataset, the coroner did not independently restrict organ donation in any case. Where restriction or denial of organ donation occurred it did so only on the Forensic Pathologist's recommendation. FP recommendation of restriction occurred in 6% of referrals, with loss of a small but significant number of transplantable organs. The heart and lungs were the organs most often lost to transplantation due to FP restriction recommendations.

Given the small number of these cases, it is difficult to extract a statistically meaningful theme regarding age or mechanism of death likely to result in an FP recommendation against donation. Cardiac arrest is notable as the mechanism of death in five out of ten cases of restriction recommendations.

Although falling short of the 'zero denial' for organ donation target advocated by the National Association of Medical Examiners,[4] FP restriction was infrequent. It is worthwhile to identify those factors that may have contributed to the low rate of refusal. Real-time communication between the organ donation agency and the coroner / FP is standard practice. A pre-mortem and/or post-mortem CT scan occurred in 77% of cases, reducing reliance on the post-mortem examination as the key source of physical findings. After the end of the study period, use of post mortem CT scan has become routine. FP attendance at the donation procedure did occur, albeit rarely (1% of cases).

With regard to judicial cases, there was no evidence of impact on trial outcomes from the organ donation process despite six of the seven cases where autopsy evidence was important involving an organ donor. Based on this data set, it appears that evidentiary facts can be adequately ascertained to a standard likely to satisfy an adversarial criminal trial, even where organ retrieval has taken place. Although it is theoretically possible that the process of organ retrieval could erode or destroy the probative value of any potential evidentiary facts disclosed by medical reports, in practice it did not occur in these cases where criminal proceedings were commenced.

The differing roles of the coroner and the FP are worthy of consideration. In Australia the coroner is generally legally qualified, the FP medically qualified. The FP's role could narrowly be seen as determination of the cause and circumstances of death in the individual case. The coroner may consider their role more broadly, bearing in mind societal needs and expectations and the consideration of community benefit arising from organ donation.

In Queensland we have observed several notable outcomes from the process of performing research in this area. The communication process between organ donation agency, coroner and forensic pathologist has improved as a consequence of dissemination of research findings. Additionally, coroners are increasingly comfortable in overriding organ donation restrictions advised by the forensic pathologist. Although this may lead to some uncertainty regarding cause and circumstances

of death in an individual, where this is not materially relevant then the benefits of organ donation are considered superior. The coroner thus assumes decision making responsibility taking into consideration the broader benefits to society.

Conclusion

In Queensland Australia, there was a 6% incidence of Forensic Pathologist recommendation for refusal or restriction of organ donation. This led to the loss to potential transplantation of a small but significant number of organs over a four year period. Cases of cardiac arrest were common amongst cases of FP refusal.

In 177 reportable deaths there were no cases where organ donation was demonstrated to have a significant impact on coronial determination of cause of death. Where organ donation was restricted, subsequent post-mortem examinations did not identify any unexpected findings.

Of those cases where death was possibly the result of criminal action, there was no case where organ donation had a manifest impact on trial proceedings. These findings may assist the decision making of the coroner / forensic pathologist who is asked to provide consent to organ donation in a case where death is reportable.

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