

ERRORS, MEDICINE
AND THE LAW

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INTRODUCTION

Modern medicine is highly effective. It is also available to greater numbers of people than ever before, but preventable injury has been identified as a strikingly common occurrence in all aspects of modern healthcare. The term ‘epidemic of error’ has been coined. In the United States, the Institute of Medicine, acting under the National Academy of Sciences, has identified errors in healthcare as a leading cause of death and injury, comparable with that of road accidents.¹ The precise extent of this problem is open to question, but it is beyond argument that an unacceptable number of people suffer serious harm or die as a result of ‘avoidable adverse events’. Sometimes these events are attributable to negligence. However, it is often simple human error, operating in an intrinsically hazardous system, which results in an unnecessary death or serious injury. For the person concerned, and for the person’s family and friends, the consequences of a deceptively simple mistake may be a tragedy of the first order. In addition, there may also be grave implications for a doctor or nurse at whose door the blame for the accident is laid, with consequences for his or her family as well.

This book is a study of how mishaps occur and how people are blamed for them. In many areas of human activity there is a strong tendency to attribute blame for incidents which, on further investigation, may be shown not to involve any culpable conduct. This is a particular issue in medical practice, where the consequences of an error or a violation may be severe. The desire to blame leads to official inquiries and in many cases to legal proceedings. In many parts of the world this has gone hand in hand with a marked increase in medical litigation, reflecting heightened

¹ L. T. Kohn, J. M. Corrigan and M. S. Donaldson (eds.), *To Err Is Human: Building a Safer System* (Washington, D.C., National Academy Press, 2000).

public concern over the level of iatrogenic harm. The Institute of Medicine has set as a target the reduction of errors in healthcare by 50 per cent over five years, but as one commentator, writing in the *New England Journal of Medicine*, has pointed out, 'Any effort to prevent injury due to medical care is complicated by the dead weight of a litigation system that induces secrecy and silence.'²

This book presents an argument that many of these events do not involve moral culpability. This argument is supported by the extensive research which has been carried out into the principles underlying the generation of human errors and into failures in complex systems. We examine the moral and legal basis for the attribution of blame and conclude that in many cases where there is a finding of blameworthy conduct, this in fact may not be justified in respect of the individual, but may often reflect institutional failures or unavoidable human error. Paradoxically, by focusing on an individual, such inquiries or proceedings often fail to identify systemic deficiencies which predispose to error, or fail to protect the patient against the consequences of inevitable error. Blaming the person 'holding the smoking gun' may simply leave the scene set for a recurrence of the same tragedy.

A point which is often misunderstood is that human error, being by definition unintentional, is not easily deterred. Furthermore, to be effective, deterrence must be directed at those who are able to effect change within the system. For example, convicting two junior doctors of manslaughter after the incorrect injection of the drug vincristine into the spinal cord failed completely to prevent the same tragedy from happening again, with two more junior doctors some years later – a mistake which has in fact been made at least ten times in British hospitals. Violations are a different matter from errors. Violations involve choice. Not all violations are reprehensible, and some may be forced upon individuals by the system, but in principle violations can be deterred. The psychological mechanisms which underlie violations are quite different from those which lead to error. It is important to distinguish these different types of human behaviour if we are to make our healthcare systems safer for patients and our legal systems fairer for those whose well-intended care sometimes goes astray. Attempts to modify human behaviour by regula-

² T. A. Brennan, 'The Institute of Medicine report on medical errors – could it do harm?' (2000) 342 *New England Journal of Medicine* 1123–5.

tion or legal processes are entirely appropriate, but need to be well informed. The current standard by which negligence is assessed in the law is that of reasonableness in respect of knowledge, skill and care. However, a great deal depends on the way in which this is tested. If the line of questioning focuses on the action, many statistically inevitable errors appear unreasonable. An expert can hardly be expected to say that it is reasonable to give the wrong drug, for example. However, if the questioning focuses on the person, who is a human being, and asks, 'Was this the sort of mistake a reasonable practitioner might make?' the answer will be different. As we shall see, there is overwhelming evidence that in fact all doctors make slip/lapse errors at some time, including errors in drug administration. It follows that these are errors which can be made by the reasonable doctor. There are other actions, such as leaving an anaesthetised patient unattended, which no reasonable practitioner would do. In the latter case a punitive response may well be called for. This may be achieved through disciplinary procedures, or the criminal law, or indirectly through civil legal action. In the former situation, such a response may actually be counter-productive. This book is as much about understanding those situations in which blame *is* appropriate as about knowing when it is not. It has at its centre concern for the patients who are injured, but alongside that it makes the point that some doctors, by unwittingly contributing to such injury, become victims themselves – often quite innocently. The impact on the doctor is at times underestimated, and acknowledgement of its true extent should not be seen as diminishing the importance of the primary victim, the patient.

Ultimately, the best response for both patients and doctors is to make healthcare safer. Unfortunately, error will never be completely eliminated, and there will always be some doctors whose behaviour is frankly culpable. Some consideration of how to do better in handling the aftermath of medical accidents is appropriate. Unfortunately, there are no simple answers, but a better understanding of the factors which underlie the different types of human failing associated with iatrogenic harm is the fundamental requirement for improving the way in which we regulate medicine and compensate those who are harmed in the course of receiving treatment.

The problem affects all societies. The issues discussed in this book apply generally, although some of the examples relate to specific countries. The legal principles involved are discussed in the context of

common-law systems. While they may differ in detail, these systems share the same basic approach. Reference is therefore made to the decisions of courts in the UK, the USA, New Zealand, Australia and Canada. Because error and negligence raise issues of both civil and criminal liability, and may also fall within the scope of professional discipline, we have taken all these jurisdictions into account.

In chapter 1 we introduce the concept that the pervasive nature of blame in contemporary society is distorting reactions to adverse events in medicine and other activities. To illustrate this we give a number of actual examples of severe consequences that have followed relatively minor errors committed during normal medical practice. The cases are used to exemplify the concepts discussed in subsequent chapters. The language used to describe these events can be important. The term 'accident', for example, is exculpatory, and, may have value in distinguishing between situations of culpability and those not warranting blame.

In chapter 2 we discuss how human beings function, not in isolation, but in the context of today's complex technological organisations. Successful human endeavour in medicine and other fields has been the result of man's ability to communicate, co-operate, develop technology and function within a mechanised and skill-demanding world. The cognitive processes which have produced these successes are the same processes as those which predispose to certain forms of error. These should therefore be viewed as strengths rather than weaknesses, in comparison with the less error-prone but also less flexible attributes of machines.

A proper understanding of the human actions which lead to adverse events in medicine requires a knowledge of the nature of error. In chapter 3 a precise definition of error is followed by a detailed discussion of its underlying cognitive processes and a discussion of its taxonomy. The thesis is that errors should not necessarily be viewed as random acts or manifestations of carelessness, but rather that even inexplicable and bizarre actions or mistakes can often be understood, and even predicted from particular circumstances. Deterrence will not prevent errors – their reduction depends on understanding the processes involved. However, not all unsafe acts are errors. In chapter 4 we discuss violations, beginning with their definition. An understanding of violations facilitates the discussion of the difference between culpable and non-culpable failures in human activity.

The discussion now shifts to culpability. In chapter 5 we explore the

concepts of negligence, recklessness and blame, referring to the insights derived from our discussion of errors and violations. Negligence does not necessarily imply blameworthiness, but may carry considerable overtones of moral opprobrium. Drawing on the theory developed in the previous three chapters, we suggest a classification of blame into five levels ranging from pure causal responsibility to intentional harming. The implication of this for our response to adverse events is explored. Negligence in the law is based on the standard of care expected of the reasonable person. In chapter 6 we scrutinise how the standard of care is set by the law. To assist the courts in recognising failures to meet this standard, evidence of professional custom has been relied upon. This chapter explores how this test, while nominally adhered to, has tended to move from what can reasonably be expected to what ought ideally to have been done. This could be corrected if there were to be greater cognisance of the insights of psychology and accident theory discussed in the preceding chapters. The role of the expert witness in setting the standard of care is considered in chapter 7. Evidence provided by experts tends to reflect an ideal rather than a customary standard of care. This has contributed to the development of the unrealistic standard discussed in chapter 6.

In chapter 8, we consider a variety of possible reforms to shift the focus from blame with a view to improving the response of the law to the injured patient, to the need to promote safety in healthcare, and to the reduction of inappropriate findings of culpability in doctors. We address at some length the concept of no-fault compensation and consider various possibilities for improving the tort system.

We conclude, in the final chapter, that a failure to understand the role of blame, along with considerable contemporary enthusiasm for finding scapegoats, has led to what might be termed an inflation of blame. The consequences of this are particularly serious – and costly – in the area of medical mishaps. This chapter draws together the strands developed in the book and argues for coherent, rational and well-informed analysis of blame, in the interests of patients and doctors, and all others for whom safety in medicine is a priority.

Accidents

We begin with a chapter of accidents. The accident *par excellence* of the twentieth century was the loss of the *RMS Titanic*, which on the night of 12 April 1912 collided with an iceberg in the North Atlantic. Who, or what, was to blame for this incident, which was to become so enduring and potent a cultural symbol? There are numerous potential explanations: the iceberg might have been sighted in time, but was not. A warning message was sent, but not passed on. The metal used for the construction of the ship's rivets contained impurities, with the result that they gave under strain. The ship's architects had miscalculated the ability of sealed-off compartments to maintain buoyancy. A wireless operator on a nearby ship, which could have arrived on the scene to rescue the passengers, had turned off his set, only twenty minutes earlier, with the result that Mayday messages were not received. If the crew had been equipped with binoculars, the watch might have been alarmed in time. All of these played some role in the final disaster.¹

The equivalent in our own times of the loss of the *Titanic* – in the sense that it demonstrated the same essential vulnerability of grandiose human ambitions – was the explosion of the space shuttle *Challenger* in 1986, 73 seconds after launch.² It is clear that ring seals failed, causing the explosion of escaping fuel, but this failure would not have occurred had

¹ The literature on the *Titanic* disaster is extensive. Contemporary official documents include the British and American governmental inquiries, both recently reprinted: Great Britain, Parliament, *Report on the Loss of the SS Titanic* (reprinted 1998) and T. Kuntz (ed.), *The Titanic Disaster: The Official Transcripts of the 1912 Senate Investigation* (reprinted 1998).

² United States Government, *Report of the Presidential Commission on the Space Shuttle Challenger Accident* (Washington, D.C., US Government Printing Office, 1986). See also L. C. Bruno, 'Challenger explosion', in N. Schlager (ed.), *When Technology Fails: Significant Technological Disasters, Accidents and Failures of the 20th Century* (Detroit, Ill., Gale Research, 1994).

the seals not been exposed to low temperatures on the ground. The problem was not a new one: engineers had expressed concern over the issue but this concern had not been translated into action within the labyrinths of the space programme. The launch was approved, but this decision might not have been taken had a number of those responsible not been grossly sleep-deprived at the time of the crucial meeting, and under pressure to meet deadlines. The impact of sleep deprivation on intellectual processes is well understood, and decision makers had been deprived of normal sleep for many days. This, of course, was not necessarily a situation of their own making. They were under immense pressure to ensure that the launch proceeded according to schedule – a pressure which reflected the operational culture of NASA, and which led to managers overruling advice from engineers concerning the risk of ring-seal failure. And this, in due course, stemmed from budgetary pressure applied by politicians.³ The range of potential causes was therefore wide, and the points of possible responsibility for the accident somewhat scattered. Can any one person, or even group of persons, be said to be to blame for this loss of life and material? What is the liability of organisations involved in this project?

These are well-known, extensively documented incidents, the background of which has been closely scrutinised. Most accidents are considerably more mundane, occurring on the roads, in the home, or, as W. H. Auden observed in his poem on the fall of Icarus, against a backdrop of people simply going about their normal business.⁴ Many medical accidents fall into this category. They occur in the context of routine treatment and are frequently not the subject of inquiry or proceedings. The Harvard Medical Practice Study, for example, which investigated the incidence of such accidents in the state of New York, revealed a remarkably high rate of such incidents, but only a small proportion of them resulted in formal legal action.⁵ The question of

³ For an account of the human factors involved in the *Challenger* disaster, see R. Boisjoly, E. F. Curtis and E. Mellican, 'The *Challenger* disaster: organizational demands and personal ethics', in M. D. Ermann and R. J. Lundman (eds.), *Corporate and Governmental Deviance* (Oxford University Press, 1996), 207.

⁴ W. H. Auden, 'Musée des Beaux Arts', in his *Collected Shorter Poems* (London, Faber and Faber, 1966).

⁵ *Patients, Doctors and Lawyers: Medical Injury, Malpractice Litigation and Patient Compensation in New York* (Cambridge, Mass., President and Fellows of Harvard College, 1990); T. A. Brennan, L. L. Leape, N. M. Laird, L. Hebert, A. R. Localio, A. G. Lawthers, J. P. Newhouse, P. C. Weiler and H. H. Hiatt, 'Incidence of adverse events and negligence in

responsibility for these incidents may be as complicated as the question of responsibility for major, highly publicised accidents, and it is for this reason that medical mishaps can make an extremely useful case study for the general question of responsibility for untoward events.

In all incidents of this nature, whether they are spectacular disasters (*Titanic, Challenger, Chernobyl*), or whether they are small-scale incidents involving the injury or death of a single person, the same questions of causal complexity will be involved. Causal investigations are familiar territory now to the public, which has become accustomed to publicity given to the proceedings of committees of inquiry, coroners and criminal courts, and in general we are rather more sophisticated in our appreciation of the multi-factorial features of many of these incidents. Yet this ability to appreciate that adverse events may be caused by more than one factor has not necessarily been accompanied by a change in blaming behaviour. Locating causal responsibility for an event may precede blaming, but is not in itself sufficient for an attribution of blame. There is a marked tendency to look for a human actor to blame for an untoward event – a tendency which is closely linked with the desire to punish. *Things have gone wrong, and therefore somebody must be found to answer for it.* The crudity of this statement is apparent on the face of it, and yet, to an extraordinary extent, it represents a widely held view. It is this attitude which fuels media and political campaigns for the identification and punishment of those responsible for whatever tragedy or social problem has seized the attention of the public. It is the psychology of the moral panic and it threatens certain fundamental values of a liberal, humane society: namely, that censure and punishment should be reserved – as far as is possible – for those whose actions reveal morally relevant

hospitalized patients: results of the Harvard Medical Practice Study I' (1991) 324 *New England Journal of Medicine* 370–6; L. L. Leape, T. A. Brennan, N. M. Laird, A. G. Lawthers, A. R. Localio, B. A. Barnes, L. Hebert, J. P. Newhouse, P. C. Weiler and H. Hiatt, 'The nature of adverse events in hospitalized patients: results of the Harvard Medical Practice Study II' (1991) 324 *New England Journal of Medicine* 377–84; and A. R. Localio, A. G. Lawthers, T. A. Brennan, N. M. Laird, L. E. Hebert, L. M. Peterson, J. P. Newhouse, P. C. Weiler and H. H. Hiatt, 'Relation between malpractice claims and adverse events due to negligence: results of the Harvard Medical Practice Study III' (1991) 325 *New England Journal of Medicine* 245–51. The Harvard study is discussed in greater detail on p. 43 below. See also P. M. Danzon, *Medical Malpractice: Theory, Evidence, and Public Policy* (Cambridge, Mass., Harvard University Press, 1985) and P. C. Weiler, *Medical Malpractice on Trial* (Cambridge, Mass., Harvard University Press, 1991), 1–16.

wrongdoing.⁶ Such analysis is often conspicuously lacking from both moral and legal judgements – a situation prompting the moral philosopher Jean Hampton to remark: ‘Accusing, condemning, and avenging are part of our daily life. However, a review of many years of literature attempting to analyze our blaming practices suggests that we do not understand very well what we are doing when we judge people culpable for wrong they have committed.’⁷ Morally relevant wrongdoing can only properly be identified if the actions of those whose responsibility is in question are subjected to analysis designed to identify states of mind that are truly culpable. A refined system of criminal justice, with its elaborate notions of *mens rea* (guilty mind doctrine) and its carefully defined defences, is capable of achieving this degree of discrimination between the blameworthy and the blameless. However, many processes of calling to account – including many legal proceedings of both a civil and a criminal nature – fall far short of this goal.⁸

The central argument put forward in what follows is that the process of blaming, as it is practised in contemporary society, is in danger of losing sight of these moral values. It is a matter for remark that this should happen at a time when our understanding of human action, and therefore our ability to appreciate the full complexity of faulty human behaviour, has made substantial progress. The insights of psychology and accident theory are available to the law and to other institutions of blame; yet they are widely ignored. There are a variety of reasons why this should be so. To an extent, it is because of an understandable – and necessary – belief in

⁶ There will be some circumstances in which strict liability will be acceptable. In these cases punishment may be justified by the community’s interest in the protection of a value or interest which cannot otherwise be protected; road traffic offences provide an example of this. Offences which involve real moral opprobrium require correspondingly real moral guilt, a distinction formally recognised in some jurisdictions. For general discussion, see K. W. Simons, ‘When is strict liability just?’ (1997) 87 *Journal of Criminal Law and Criminology* 1075–1137.

⁷ J. Hampton, ‘Mens rea’, in E. F. Paul, F. D. Miller and J. Paul (eds.), *Crime, Culpability and Remedy* (Oxford, Basil Blackwell, 1990), 1.

⁸ In one view, this goal is practically unattainable and, in any event, is not defensible. In criminal-law theory there is a continuing tension between subjectivism and objectivism in the attribution of liability. In practice, most criminal justice systems place objectively determined limits on the extent to which certain conditions are capable of excusing those who cause actual harm to others. For recent discussion of the issue see A. Ripstein, *Equality, Responsibility, and the Law* (New York, Cambridge University Press, 1999), 172–217; and R. H. S. Tur, ‘Subjectivism and objectivism: towards synthesis’, in S. Shute, J. Gardner and J. Horder (eds.), *Action and Value in Criminal Law* (Oxford, Clarendon Press, 1993), 213–37.

individual accountability. But there are less acceptable reasons behind the phenomenon as well. These are the reasons which find their root in an atavistic human response of scapegoating. It is easier to blame others for mishaps than to accept the inevitability of human loss, and it is for this reason that crude solutions to the problem of human accidents strike a strongly responsive chord.⁹

Our investigation of the phenomenon of blame and negligence focuses predominantly on medical accidents. This is not only because of the frequency of such mishaps, but because such incidents occupy a central role in the contemporary drama of blame. Doctors and others in professions allied to medicine are frequently blamed for bad outcomes of medical treatment. In some of these cases, blame is justified; in others it is clearly not. Our aim is to examine the whole issue of blame in this context, in an attempt to show that the background to a mishap is frequently far more complex than may generally be assumed, and also to demonstrate that actual blame for the outcome must be attributed with great caution. It is our belief that society has become too ready to attribute blame without the discriminating, in-depth analysis which this process requires. This represents not only a moral affront but also threatens the very safety goals which we profess to embrace.

Medical accidents

When a patient unexpectedly dies or is harmed in the course of a medical procedure, a common reaction is to attribute responsibility for the death to the medical practitioner involved. Not only may this be done by the family, but often the hospital itself will tend to lay the blame on the individual doctor. There may be occasions when this will be entirely appropriate, and where the problem clearly does lie with the doctor. Very often, however, the situation is much more complicated. The inadequacies of the system, the specific circumstances of the case, the nature of human psychology itself, and sheer chance may have combined to produce a result in which the doctor's contribution is either relatively or completely blameless.

⁹ For discussion of blaming behaviour, see H. Tennen and G. Affleck, 'Blaming others for threatening events' (1990) 108 *Psychological Bulletin* 209–32. Also, J. Green, *Risk and Misfortune: A Social Construction of Accidents* (London, UCL Press, 1997). Scapegoating is discussed by T. Douglas, *Scapegoats: Transferring Blame* (London, Routledge, 1995).

Blame is rarely a simple matter. It is our view that the complexity of medical treatment and the human and technological systems involved are such that many of the allegations of medical fault are misplaced. Conversely, current processes may fail to identify the important lessons to be learned from a tragedy simply because they focus on blame. Thus the doctor's behaviour may not constitute a legally actionable wrong or sustain a criminal or disciplinary charge, but may nevertheless warrant constructive intervention.

What is required is an enhanced understanding of the underlying causes of iatrogenic harm. This necessitates a more sophisticated appreciation of how things go wrong. It is also important to distinguish between notions of best practice and the reality of how medical practice is actually carried out in the face of pressing need and limited resources. Finally, the ways in which the standard of care is assessed are themselves subject to a number of limitations: for example, expert evidence may be a very poor indicator of what should reasonably be expected in a particular case.

The case for reassessing our current approaches to harm of this nature is prompted not merely by concern that legal and disciplinary procedures should be properly founded on firm moral and scientific grounds; it is also motivated by the conviction that patients will be better served if the real causes of harm are properly identified and appropriately acted upon. A number of cases, drawn from practice, have been chosen to illustrate some of the issues at stake. They provide a starting point for an analysis of the nature of negligence and the difficulties of determining culpability when injury or death occurs as a consequence of medical intervention.

Illustrative cases

One theme of this book is that quite minor errors may have consequences completely out of proportion to their moral culpability. It is appropriate therefore that most of the cases dealt with involve the death of a patient. Many have been the subject of criminal prosecution, but could equally have resulted in a civil action (and indeed, the former does not rule out the latter). A disproportionate number of the cases are from New Zealand, where the issue of medical negligence has been the subject of particular scrutiny in recent years and where there has been an extended political debate about medical accidents and culpability. They occurred at a time when the New Zealand law provided (under certain circumstances,

including but not restricted to medical practice) that there could be criminal liability where death resulted from a relatively low level of negligence – a level no higher than that required for civil purposes. This law has subsequently been amended to allow for such prosecution only where there has been a ‘major departure’ from the required standard of care. This in effect means that gross negligence is now required and brings New Zealand law into line with the vast majority of common-law jurisdictions (including those of the USA and the UK).¹⁰ We shall return later to the place of criminal prosecution for negligent injury; what concerns us at this stage is the variety and complexity of the influences which contribute to the causation of unintended harm, particularly in medical practice, but also in other potentially hazardous activities. Many of these influences have not been adequately recognised by the law, with the result that there is frequently a gap between legal discussions of negligence and reality.

An anaesthetic drug error^{11,12}

Dr Yogasakaran was an anaesthetist who had recently immigrated to New Zealand and had been given provisional registration with the expectation that he would work in a hospital post under some degree of supervision for a year. He obtained a position in the small provincial town of Te Kuiti, where it seems he was probably the best trained anaesthetist in the hospital. While there, he undertook the anaesthetic of a ‘high-risk’ patient for gall bladder surgery. At the end of the operation an emergency developed. During emergence from general anaesthesia the patient began to bite on her endotracheal tube (by which oxygen is administered to the lungs), became unable to breathe and developed cyanosis. It seems that the help immediately available to Dr Yogasakaran might not have been optimal at this moment, the surgeon and scrub nurse having already left theatre, and the nurse who regularly assisted the anaesthetist having been relieved by someone less experienced in this role. Dr Yogasakaran decided to inject the drug *dopram*, an analeptic agent with the property of stimulating arousal of the central nervous system. Unfortunately,

¹⁰ P. D. G. Skegg, ‘Criminal prosecutions of negligent health professionals: the New Zealand experience’ (1998) 6 *Medical Law Review* 220–46.

¹¹ *R. v. Yogasakaran* [1990] 1 NZLR 399.

¹² D. B. Collins, *Medical Law in New Zealand* (Wellington, Brooker and Friend, 1992), 195–6.

someone (who was never identified) had placed an ampoule of *dopamine* in the section of the drug drawer labelled *dopram*. This is an inotrope (a drug used to stimulate the heart), and quite different from *dopram*. As presented, it would normally require dilution and administration as an infusion over time, not as a bolus injection. There was a similarity in presentation of the two agents, however, and in his haste to treat the developing crisis Dr Yogasakaran injected the entire contents of the dopamine ampoule in error. It has always been accepted that this dose of dopamine produced cardiac arrest and was responsible for the subsequent demise of the patient. Dr Yogasakaran succeeded in resuscitating her, and transferred her to the regional centre of Waikato, in Hamilton, where she was admitted to the intensive care unit for ventilation and further management. Unfortunately, it became clear over the next day or two that she had suffered irreversible brain damage, and she eventually died.

Dr Yogasakaran returned to Te Kuiti, went back to the operating room, and only then discovered (himself) the empty ampoule of dopamine. He realised what had happened and immediately informed the doctors at Waikato Hospital, and reported the matter to the authorities in his own hospital. It was his honesty in bringing to light the drug error which led to the laying of charges by the police and to his ultimate conviction for manslaughter.

At his trial the expert witness for the defence was asked whether he would ever administer a drug without checking it. He said that he would not, and that one should always check every drug before administration. He then sought to qualify this position by a description of certain well-known features of human psychology, including the concept of ‘mindset’ and the fact that people often see what they expect to see in any given situation, not what is actually there – especially when there is a similarity between the two. This further evidence was objected to on the grounds that the witness was an anaesthetist, not a psychologist, and was ruled inadmissible (personal communication, Dr H. Spencer). Dr Yogasakaran was convicted, and then discharged without sentence. It was acknowledged that the conviction alone was a serious punishment for a doctor in these circumstances. His conviction was upheld at the Court of Appeal; the Privy Council in London (the ultimate court of appeal from New Zealand) declined to interfere with what was seen as a policy decision of the New Zealand courts.

On the face of it, this was a straightforward example of negligence. Dr

Yogasakaran failed to check the drug, a requirement acknowledged even by the expert called by the defence. On closer inspection, a number of other factors emerge as important contributors to this incident. In the first place, a small provincial hospital was hardly a suitable place for a doctor deemed to require supervision, even if the level of supervision needed was fairly minimal. A system which sets such a requirement should also ensure that the arrangements actually made are appropriate. This therefore was a systems failure at a fairly general or high level. Similarly, it is questionable whether a high-risk case of this sort should have been dealt with at all in a hospital with limited expertise and resources. It is very likely that this death would have been averted had this patient been transferred to a major centre for her operation.

Many incidents involve a contribution from more than one person, and this case is an example. It illustrates the tendency to blame the last identifiable element in the chain of causation – the person holding the ‘smoking gun’. A more comprehensive approach would identify the relative contributions of the other failures in the system, including failures in the conduct of other individuals – in this case the unidentified person who placed the wrong ampoule in the relevant compartment of the drug drawer, for example.

On closer analysis, it seems compelling that Dr Yogasakaran’s error was a slip or lapse of the type well recognised as an inevitable part of human behaviour. As we shall discuss in chapters 2 and 3, there are ample data to show that all human beings make mistakes of this general type and that anaesthetists giving drugs are no exception. Stated simply, people frequently see what they expect to see rather than what is there. While the resolution of this problem is in fact very difficult, it seems reasonable to expect that the legal process would take greater account of current knowledge of normal human behaviour. The conclusion that Dr Yogasakaran’s act was culpable must therefore be open to question, particularly since his handling of the crisis, once it developed, appeared to have been both responsible and competent.

When attributing blame, we often concentrate on a single, discrete act without paying adequate attention to the overall performance of the individual in the context of the entire event. This is the way in which the law frequently operates. It does not necessarily concern itself with what happened before and after an isolated act of alleged negligence: it focuses upon a single act and draws conclusions as to culpability purely on the

basis of this act. It would therefore be quite misleading to describe Dr Yogasakaran as a 'negligent doctor' on the basis of one incident, just as it would be misleading to describe a driver as a negligent driver on the basis of one momentary lapse in attention. Indeed, in his summing up in the Yogasakaran case the judge alluded to this difficulty by saying: 'It is certainly not suggested by the Crown that Dr Yogasakaran is a poor doctor. The Crown says he is a highly trained, experienced, responsible man, whom the Crown says made a mistake, through carelessness, on this one occasion.'¹³

There are obviously times when it is appropriate to judge people on the basis of single acts. In the context of medical practice, though, it is particularly important that the cause of a problem is identified as soon as possible and the way in which the problem is then handled becomes highly relevant. It is often said in medical training that mistakes are inevitable, but that the important thing is to know that one has made them and to deal with them appropriately. Viewed from this perspective, Dr Yogasakaran appears to have met all the requirements that could reasonably be expected of an anaesthetist in the circumstances. His only failing appears to have been a normal human error of the type that all anaesthetists will inevitably make from time to time, particularly in an emergency.

The value of punishment in a case like that of Yogasakaran is far from clear. The need for compensation, of course, is a different matter, and there may well be justification for this. Punishing the last person in the chain, however, usually fails to address the underlying problems. It is doubtful whether deterrence is effective in preventing slips and lapses of this type. Even removing the individual without correcting the system simply creates a situation where his or her replacement will be vulnerable to a recurrence of the same problem.

*A matter of 'momentary carelessness'*¹⁴

Dr Morrison, a radiologist, was handed the wrong contrast medium by his assistant, an experienced radiographer, and injected it into a patient's spinal canal without first checking it. Death resulted two days later. Dr

¹³ Summing up of Justice Anderson, Case no. 56/88 (Hamilton Registry), p. 19.

¹⁴ *R. v. Morrison*, 23 April 1991, s. 7/91, High Court, Dunedin.

Morrison accepted that he had been negligent in injecting fluid without an adequate check, and pleaded guilty to manslaughter. He was convicted and discharged, the judge noting that the omission had been 'contributed to, indeed initiated, by the act of another person also qualified and experienced and with whom the accused was accustomed to work'. He also accepted that the omission 'was a matter of momentary carelessness in circumstances where he had no reason to be on guard'.

At a subsequent hearing the Medical Council placed certain requirements for supervision on Dr Morrison for a defined period, and also asked that guidelines be developed for such injections. These were published in the Medical Council newsletter,¹⁵ and, although headed as coming from the College of Radiology, the implication was that they were applicable to all injections of drugs. The key feature was a requirement for two people to check every injection by means of a 'chant' in which the key information was read out by one to the other. This approach has long been used by nurses, but has not always prevented errors.¹⁶ There is real doubt that it would be practical in other situations such as anaesthesia, where the frequency of injections and potential to disturb other activities is high, or general practice where doctors may give injections in the home without the availability of a suitable second person. Furthermore, a subsequent survey (involving anaesthetists) revealed that only a minority of practising clinicians were aware that the guideline existed.¹⁷

The negligence in this case is clearer than that in the Yogasakaran case. Unlike the latter, there was no urgency here. However, there was once again an important contribution by a second person, and once again at least part of the problem, not just on the part of Dr Morrison and his assistant, but also on the part of the wider radiological community, lay in the system and its lack of formal procedures for checking during the administration of drugs into the spinal canal. This was acknowledged by the Medical Council, and at least some attempt was made to address this safety issue through the development of guidelines. While this may have gone some distance towards improving the situation in radiology, it does seem that a greater effort to deal with wider problems of injectable drugs

¹⁵ Medical Council of New Zealand, 'Safe administration of drugs' (1992) 5 *Medical Council News* 4.

¹⁶ A. F. Merry and D. J. Peck, 'Anaesthetists, errors in drug administration and the law' (1995) 108 *New Zealand Medical Journal* 185-7.

¹⁷ A. F. Merry and D. J. Peck, Unpublished survey data.

across all specialities might have been warranted. In particular, guidelines are of little use if not adequately promulgated.

An important difference between this case and the previous one is the particular vulnerability of the spinal cord. Injections into the spinal canal require meticulous care. The central point of the whole procedure was the administration of a single drug into a hazardous site. Although the error in this case is entirely understandable – in the sense that it is easy to see how it came about – there does, nevertheless, seem to have been a degree of associated carelessness, albeit slight when taken in the context of contemporary practice. This example demonstrates that culpability has to be judged in the light of all aspects of the particular case, including the level of risk and the degree of urgency. Whether an incident of this sort, subsequently handled appropriately and with complete honesty, should merit the severity of a criminal prosecution is a more questionable matter, however, and we shall return to this point in the concluding chapter.

Both these cases also bring to the fore the crucial importance of result in the criminal law. Criminal justice focuses on the effects which wrongful conduct produces. These effects may sometimes be out of all proportion to the seriousness of the wrongdoing, and indeed may be a matter of chance or what in philosophical discussion is referred to as ‘moral luck’. A momentary lapse of attention while driving would often go unnoticed and unpunished, or if it were to be detected and punished, the punishment would be very slight. However, if moral luck dictates that a pedestrian is killed, the punishment is likely to be considerably more serious, *even though the wrongdoing is identical in each case*.

Similarly, we know that many, if not most, doctors have administered the wrong drug to a patient at some time.¹⁸ In most cases this is without serious consequence and attracts little comment. However, if a patient dies or is otherwise seriously harmed as a result, two factors may come into play. One is that the likelihood of legal or disciplinary proceedings becomes very high; the other is that the phenomenon known as ‘outcome bias’ will tend to induce a much harsher appraisal of the degree of negligence involved. This point is further explored in chapter 7.

¹⁸ Merry and Peck, ‘Anaesthetists’.

*Perverting the course of justice*¹⁹

A contrast can be drawn between the manner in which Drs Yogasakaran and Morrison responded to and dealt with the results of their errors, and that followed by a British general practitioner who inadvertently prescribed a beta-adrenergic blocking agent (beta-blocker) to a patient with asthma. Asthma is a known contra-indication to the use of beta-blockers, and predictably produced bronchospasm, which proved fatal. In the resulting criminal trial for manslaughter, the court took a lenient view of the doctor's medical error, but sentenced him to six months' imprisonment for falsifying the relevant records with the intent of perverting the course of justice.

This illustrates neatly the distinction in terms of culpability between an understandable mistake (prescribing the beta-blocker) and a deliberate and unacceptable violation (altering the evidence). The attribution of blame seems entirely appropriate in respect of the doctor's deliberate choice to commit the offence of falsifying evidence.

*Unsupervised junior doctors*²⁰

Malcolm Savage, a sixteen-year old boy, who had had leukaemia since the age of four (and was found at post-mortem examination to be in remission), was admitted to Peterborough District Hospital in 1990 for his monthly treatment with cytotoxic drugs. Under the supervision of Dr Barry Sullman (a house officer), Dr Michael Prentice (a pre-registration house officer) injected vincristine (which should have been given intravenously) into the patient's cerebrospinal fluid instead of methotrexate. It appears that Dr Sullman misunderstood his role, and believed himself to be supervising only the lumbar puncture while Dr Prentice believed his colleague to be supervising the overall procedure of administering the cytotoxic medication. The boy died two weeks later. In summing up, the judge said, 'It seems to me you could have been helped more than you were helped.' He also said, 'You are far from being bad men; you are good

¹⁹ D. Brahams, 'Medical manslaughter' (1994) 344 *The Lancet* 256.

²⁰ G. Korgaonkar and D. Tribe, 'Doctors' liability for manslaughter' (1992) 47 *British Journal of Hospital Medicine* 147; *R. v. Prentice* [1993] 3 WLR 927; C. Dyer, 'Doctors cleared of manslaughter' (1999) 318 *British Medical Journal* 148; *R. v. Prentice and another, R. v. Adomako, R. v. Holloway* [1993] 4 All ER 935; D. Brahams, 'Manslaughter and reckless medical treatment' (1991) 338 *The Lancet* 1198-9.

men who contrary to your normal behaviour on this one occasion were guilty of momentary recklessness.’ Both doctors were convicted of manslaughter, and given nine-month suspended prison sentences, but this conviction was overturned by the Court of Appeal.

In a very similar case, also involving junior doctors, vincristine was given intrathecally instead of intravenously once again, this time into a twelve-year-old child, Richie William. Charges against Dr John Lee, a specialist registrar in paediatric anaesthetics, and Dr Dermot Murphy, a registrar in haematology, were withdrawn on the grounds that failures in the system operated by Great Ormond Street Hospital for Children had played a significant part in the events. For example, the patient was admitted to a general ward instead of the ward which specialised in the treatment of malignancies. The injection was then deferred because he had eaten a biscuit. The result of this was that the senior registrar who should have administered the chemotherapy was off duty by the time the injection could be given. Vincristine was incorrectly sent to the operating theatre by a nurse against a rule which prohibited this. It was injected by Dr Lee, who had never previously administered chemotherapy into the spine, after Dr Murphy advised him, over the telephone, to administer the drugs which had been sent to theatre.

The case of Prentice and Sullman was of importance in the development of the English position on the criminal prosecution of negligence, and the decision of the Court of Appeal confirmed the requirement of gross negligence for this purpose. The striking feature of both cases, however, is the lack of any senior doctor or hospital authority amongst the defendants. A second feature is the fact that the very high-profile prosecution of Drs Prentice and Sullman appears to have had little if any benefit in avoiding recurrences of the same mistake. Finally, in both, it can be seen how factors in the system may contribute to the generation of an error.

*A highly complicated emergency*²¹

Dr Hugel, a specialist anaesthetist, was charged with manslaughter after a thirteen-year-old boy, Benjamin Thorne, died following a minor pro-

²¹ The details of this case are known to one of the authors (Merry), who acted as an expert witness. See also Skegg, ‘Criminal prosecutions of negligent health professionals’.

cedure on an infected knee. The child was fit and active, and the tragedy of this case was particularly poignant. His mother had expressed anxiety about the risks of anaesthesia, but had been told that the operation could not be done under local anaesthetic and that under the circumstances there was little to fear.

After some pre-trial proceedings, the charge was confined to an allegation that Dr Hugel had been negligent in failing to identify and remove a blocked filter. Expert evidence called by both prosecution and defence concurred that the preliminary problems in this case were nothing to do with the filter, but rather the result of aspiration of stomach contents into the larynx. This, it was thought, produced laryngospasm, which led on to the well-recognised syndrome of negative pressure pulmonary oedema and probably bronchospasm as well. Dr Hugel immediately called for the help of an anaesthetic colleague, but this was nearly thirty minutes coming and the contribution of various junior doctors who did arrive was relatively ineffectual. It was accepted by both sides that a filter used to protect the anaesthetic circuit from possible contamination by patient secretions was indeed blocked by the time the second anaesthetist arrived, and that its removal at that point did result in a rapid improvement of the boy's oxygenation and general condition. Unfortunately, he had suffered irreversible brain damage by this stage, and life support was discontinued the following day. The defence led evidence to the effect that it was unlikely that this blockage occurred until relatively late in the proceedings. None of the experts was able to say how the time that irreversible brain damage occurred related to the time at which the filter blocked. All four experts said that the general conduct of the resuscitation was adequate, and none was prepared to criticise without reservation Dr Hugel's failure to identify the problem with the filter. It was agreed that she had not followed a protocol known as 'COVER ABCD'²² in that she had not expressly eliminated the patient circuit and replaced it with a rebreathing bag. However, in the circumstances of the case none of the experts was able to say confidently that this would have made any difference. Furthermore, one of the witnesses, the author of the protocol, pointed out that the protocol had failed to anticipate this particular problem and, if followed to the letter, would probably have

²² W. B. Runciman, R. K. Webb, I. D. Klepper, R. Lee, J. A. Williamson and L. Barker, 'Crisis management – validation of an algorithm by analysis of 2000 incident reports' (1993) 21 *Anaesthesia and Intensive Care* 579–92.