
Outcome Bias in Clinical Negligence Medico-legal Cases

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Independent medical experts provide reports in clinical negligence claims brought against doctors and other health care professionals. They are asked to provide an opinion on whether the doctor has breached their duty of care to the patient, commonly described as the “Bolam Principle”. By the time a patient litigates against a health care professional, the clinical sequence and outcome are known. Experts provide their opinions with the benefit of this knowledge. To determine whether knowledge of the outcome affects the expert’s opinion, 42 independent general practice experts were asked to indicate whether a general practitioner had breached their duty of care in six clinical case scenarios. 21 were told the clinical outcome. Experts who knew the outcome were less likely to support the general practitioner’s course of action, although this did not reach statistical significance. General practitioners demonstrated considerable “dove” or “hawk” variability when giving opinions on the same scenario.

Keywords: *negligence; claim; expert; outcome; hindsight bias*

I. INTRODUCTION

It is commonplace around the world for independent medical experts to provide reports in clinical negligence cases commenting on a wide range of issues. In particular, they provide their opinions on breach of duty and causation. In England and Wales, experts act in accordance with the Pt 35 of the *Civil Procedure Rules* and their expert opinion is provided for the benefit of the court.¹ This overrides any duty to the party instructing or paying the expert. The United Kingdom regulator of doctors, the General Medical Council, reiterates this obligation.²

In clinical negligence cases, experts are asked to comment as to whether a doctor’s actions were a breach of their duty of care to a patient. Under United Kingdom law, this is judged in accordance with the “Bolam principle”.³ An expert must answer the question as to whether a doctor’s actions would be supported by a responsible body of doctors. In addition, experts may also be asked to consider other issues such as causation; condition and prognosis; and life expectancy.

Inevitably, when experts provide an opinion on cases they do so once the events under scrutiny have occurred. The outcome of the clinical case is known. This is very different from the situation in which

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The authors would like to extend their gratitude to Professor Tim Cole, Professor of Medical Statistics, Institute of Child Health, University College London, for his assistance with the statistical analysis in this article. Dr Thom Petty is a former employee of the Medical Defence Union. Dr Pierre Campbell is a current employee of the Medical Defence Union.

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¹ Ministry of Justice (UK), *Civil Procedure Rules: Part 35 – Experts and Assessors* (January 2017) <<https://www.justice.gov.uk/courts/procedure-rules/civil/rules>>.

² General Medical Council (UK), *Acting as a Witness in Legal Proceedings* (2013) <http://www.gmc-uk.org/guidance/ethical_guidance/21191.asp>.

³ *Bolam v Friern Hospital Management Committee* [1957] WLR 582.



an individual doctor finds him or herself “on the day” when they do not have the ability to foresee the outcome. Previous work has suggested that knowledge of the outcome of a case may influence an expert’s opinion on a case.⁴ It has been suggested that an adverse outcome may result in a higher likelihood that an expert is critical.

There is therefore a risk of “outcome bias” when experts are asked to review medical cases for evidence of clinical negligence. By the time the expert is asked for a view, the outcome is already known and the expert will be informed whether the patient has died, survived with impairments or is healthy. This may lead experts to scrutinise those cases with a poor outcome with a prior bias that something must have gone wrong when the expert looks to attribute an error where they might ignore the same issue had the patient survived unharmed. This study explored the hypothesis that knowledge of the outcome of the case biased the expert’s opinion on breach of duty.

II. METHODS

A search of self-employed general practitioners who identified themselves in the public domain as medico-legal clinical negligence experts was undertaken and were subsequently contacted directly by the Academy of Medical Royal Colleges. In total 42 experts were identified. (The Medical Defence Union (MDU) was not identified at this stage, to avoid any associated instruction bias.) The 42 experts who were identified were sent six invented general practice clinical cases and asked whether, in their opinion, negligence by way of a “breach of duty” had occurred. The experts were randomly allocated to two groups. Twenty-one were told the outcome of the invented case at the time their opinion was sought, as would happen with real medico-legal cases, and 21 were not.

A. Case Scenarios

The case scenarios were based on real cases from the MDU archive, suitably modified and anonymised so as not to be identifiable. The length of the case narrative given to the experts therefore matched closely the contemporaneous general practitioner record, often brief, which would be provided to experts in real cases. Appendix I provides further information about the clinical scenario in each of the cases. Appendix II shows an example of a case used (Case 1 with outcome present) as an example of the information provided to the expert. Where the outcome was provided to the experts, it was done as a statement of clinical diagnosis at the top of the case, and as a one-line descriptor of the outcome in purely clinical terms within the case itself. No further narrative was provided about the patient’s outcome or condition, to avoid bias that might arise out of feelings of empathy for the patient.

The experts were told that this was a study to increase our understanding of how experts approach clinical negligence medico-legal cases. However, the covering information letter clearly could not explain the underlying hypothesis. To do so would have entirely invalidated the study through the “Hawthorne effect”, that is, the very behaviour under scrutiny would be altered by the participants knowing why they were being asked for their views. If the participants were made aware that outcome bias was being investigated, we postulated that they would respond to these clinical vignettes differently than when engaged in real medico-legal practice.

The participants were paid an honorarium of £100 for their time in reading the clinical cases and formulating their medico-legal opinion. This payment, and its value, is entirely in keeping with normal practice within clinical negligence cases, where experts undertake this as paid work. The respondents were undertaking the work in their own time and, without payment, the response rate was likely to have been extremely low.

⁴ TB Hugh and SWA Dekker, “Hindsight Bias and Outcome Bias in the Social Construction of Medical Negligence: A Review” (2009) 16 JLM 846; TB Hugh and G Douglas Tracy, “Hindsight Bias in Medicolegal Expert Reports” (2002) 176 *Med J of Australia* 277; L Berlin, “Malpractice Issues and Radiology – Hindsight Bias” (2000) 175 *Am J Radiol* 597; P Campbell, “I Knew It All Along” (2012) 28 MDU J 7.

The primary outcome was the response of the experts to the following question about each case:

Please consider the case carefully. In your opinion, were the general practitioner's actions consistent with a responsible body of doctors?

YES []

NO []

B. Sample Selection and Size

The sample size was determined (and limited) by the total number of general practitioners who identified themselves in the public domain as medico-legal experts in the United Kingdom. Despite a full and thorough search being undertaken, no further experts could be identified. It was considered that to use general practitioners who did not regularly undertake medico-legal work and would not be familiar with the remit of Pt 35 of the *Civil Procedure Rules*, may negate the study. To use other specialists, rather than general practitioners, would be inappropriate since all six imaginary clinical vignettes were based in general practice. Experts in, for example, orthopaedics, neurology or paediatrics would never be invited to give opinions to defendant or claimant representatives on the management by general practitioners as they are not considered as a body of peers within clinical negligence law.

C. Data Analysis

The completed questionnaires were returned directly to the Academy of Medical Royal Colleges and the MDU played no role in the receipt or analysis of the data. The data were analysed using mixed-effects logistic regression, including a random effect for expert.

D. Ethical Approval

The study was approved by University College London, Research Ethics Committee.

III. RESULTS

Twenty-five of the 42 general practitioners approached agreed to take part and completed the study (60% response rate); of the responses, 12 had been advised of the clinical outcome and 13 had not.

Fitting a binomial mixed-effects model, the impact of the intervention (ie knowing the outcome of the case) is an odds ratio of 0.75 (95% confidence interval [CI] 0.28–1.89). The experts knowing the outcome were less likely to accept the general practitioner's course of action, though this did not reach statistical significance.

Of the 12 respondents who were told the outcome, they responded "yes" in 42/72 (58%) cases to the question "In your opinion, were the general practitioner's actions consistent with a responsible body of doctors?" Of the 13 respondents who were not told the outcome, 49/78 (63%) responded "yes".

Table 1 shows a summary of response given across the six different cases. A further case-by-case breakdown is provided in Appendix III.

TABLE 1. Expert responses by case scenario to the question "In your opinion, were the general practitioner's actions consistent with a responsible body of doctors?"

Case number	1	2	3	4	5	6	TOTALS
Response: YES	23	24	19	8	8	9	91
Response: NO	2	1	6	17	17	16	59

Table 2 shows the response given by each of the individual experts and suggests that there is considerable variation between the opinions for different experts.

TABLE 2. Table to show the spread of each of the 25 experts’ six responses to the question “In your opinion, were the general practitioner’s actions consistent with a responsible body of doctors?”

Response: YES	6	6	5	5	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	2	2	2
Response: NO	0	0	1	1	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	4	4	4

IV. DISCUSSION

This study did not demonstrate a statistically significant difference between the group of experts who knew the clinical outcome and those who did not. There are a number of possible reasons for this finding. First, it is possible that there is really no difference that is medico-legal general practitioner experts judging clinical scenarios do not demonstrate the kind of outcome bias which radiologists showed in Hugh’s study.⁵

Second, the finding may be due to a so called type 2 statistical error. That is there might truly be a difference between the two groups but because the numbers in our groups were too small, this did not reach statistical significance. The width of the CI (odds ratio of 0.75 [95% CI 0.28–1.89]) does indeed suggest that the study is underpowered. As described previously, we performed an exhaustive search to identify general practitioner experts whose details were available in the public domain. This included expert databases, lists, online CV and personal websites. We had no way of increasing the power of the study since there were no more experts to recruit in the United Kingdom over and above the 42 we wrote to. If all 42 had responded instead of 25, a different result might have occurred.

Third, it is possible that the cases were not sufficiently discriminatory that it was so obvious that there was or was not breach of duty that knowing the outcome did not influence the experts’ decision-making. On a different set of cases, perhaps the outcome would have been different.

Table 1 shows that there is considerable variation between the responses of the 25 experts depending on the case. Overall, 60% (91/150) of responses stated that the general practitioner’s actions were consistent with a responsible body of doctors. However, for cases 1 and 2, 92% and 96% respectively of respondents concluded that the general practitioner’s actions were consistent with a responsible body of doctors, irrespective of whether they knew the outcome of the case or not. It would seem these two cases were particularly poor discriminators.

Finally, Table 2 shows that there is considerable inter-observer variation between the six responses of the 25 experts. At one extreme, four experts could be described as “doves”, concluding that in at least five case scenarios the general practitioner’s actions were consistent with a responsible body of doctors. In contrast, the three most “hawkish” experts concluded that in four of the six scenarios, the general practitioner’s actions were not consistent with that of a responsible body of doctors. The other 18 experts all agreed more closely with each other, in that they thought the general practitioner’s actions were consistent with a responsible body of doctors in either three or four of the scenarios. This is important. If the 28% (7/25) of experts who were outliers were the sole expert instructed, there is almost a 50:50 chance of receiving diametrically opposed opinions.

It is important to remember the context in which these expert opinions are used. Ultimately, a judge must form a view on the case and find in favour of either the claimant or the defendant. The expert’s role is to assist the court and this study suggests that there is a very real possibility that a judge will form their judgment in the context of diametrically opposed opinions.

V. FURTHER WORK

As the pool of general practitioner experts practicing medico-legal medicine in the United Kingdom appears to be small in number, a further study with a different, larger group, for example general

⁵ Hugh and Dekker, n 4.

practitioners (who are not trained experts), should be considered. In addition, the inter-observer variability in this study should be explored further.

VI. CONCLUSION

In this study, medico-legal general practitioner experts who knew a case's adverse clinical outcome were less likely to support a general practitioner's management than those who did not, although this did not reach statistical significance.

However, over a quarter of the experts were "doves" or "hawks". The opinion obtained on a particular case could be very different depending on which of these experts was instructed. This demonstrates considerable inter-observer variability among medico-legal experts asked to give an opinion on the same scenario.

APPENDIX I – CONTENTS OF CASES

The six cases presented to the experts in the study involved the following clinical scenario.

- (1) Baby presenting with viral symptoms. Subsequently diagnosed with *meningitis*.
- (2) Male adult presenting with back pain. Subsequently diagnosed with *cauda equina syndrome*.
- (3) Female adult presenting with concerning mole. Subsequently diagnosed with *malignant melanoma*.
- (4) Male child presenting with knee pain following exercise. Subsequently diagnosed with *slipped femoral epiphysis*.
- (5) Child presenting with ongoing (upper) respiratory symptoms. Subsequently diagnosed with *encephalitis*.
- (6) Male adult presenting with rectal bleeding. Subsequently diagnosed with *colonic tumour*.

In the cases where the outcome was not provided to experts the condition shown in *italics* above was removed from the case.

APPENDIX II – CASE EXAMPLE (WITH OUTCOME PRESENT)

Case 1 – A General Practitioner Assessment of an Eight-Month-Old Child: Meningitis

Telephone Triage Note:

20.34

Baby unwell today and a temperature. Mum worried about infection. Told to attend the Treatment Centre, for doc appt.

Consultation note:

S: Parents concerned not himself and temp. Off food but milk and nappies OK, wet. Calpol Infant twice past 2/7. No tummy upset. No cough or ear discharge. Family well. Recently started childminder.

O: Fed up, consolable, looking around. T37.9, hr 125 well perf no rash. MM fine, diff Ex of mouth. L TM normal, R TM ref? inf no disch. chest clear, abdo NAD.

A: viral inf poss OM

P: Adv not for antibx at pres. Ensure fluids, cooling, adv appr Calpol dose, r/v OoO or usual GP inb or sos.

The child was later diagnosed with meningococcal meningitis.

The Doctor's Factual Account:

This account is based on my recollection of the consultation alongside my clinical record.

The out of hours record show that I saw Thomas at 10.02 pm. I remember that he was with his mum and dad. They were concerned that he had not been himself over the past couple of days and wasn't taking as much solid food as he normally did. I made sure that he was taking adequate milk and that he was still having the usual wet nappies. His mum told me that he felt like he was burning up at times but I established that they had only given a couple of doses of Calpol Infant.

I remember him looking fed up but reasonably consolable. He was looking at everything going on around. I stripped him down to his top and nappy. That particular out of hours centre was always on the cold side and I didn't want him to get too chilly, even though his temperature was 37.9°C. He was warm to touch but there were no rashes. His heart rate was around 125 bpm but his mucous membranes were moist. It was difficult to get a proper look in his mouth so I asked the parents if they had seen anything and they said not. There was no history of him coughing. It was difficult to listen to his chest as he was crying a bit but it sounded clear. In any case, his breathing pattern was normal and there were no signs of respiratory distress. I looked in his ears and there was some redness on the right hand side but no discharge. I felt his abdomen and it was soft and didn't appear to give him any discomfort.

It was a difficult assessment, but my working diagnosis was possible otitis media. Equally I considered a non-specific viral illness. The parents were keen for antibiotics and I explained that they weren't indicated as it was most likely a viral infection. I advised the parents to give a regular dose of Calpol appropriate for his age and to keep him cool and hydrated. They had the out of hours number already and I gave them my usual advice that they could telephone or come back if they had concerns or he was getting worse. I suggested they might want to take him to their usual GP for a review in the next couple of days. I can recall that Thomas' dad didn't look particularly happy but mum seemed clued up.

Please consider the case carefully. In your opinion, were the first general practitioner's actions consistent with a responsible body of doctors?

YES [...]
NO [...]

APPENDIX III – RESULTS, ACCORDING TO CASE AND KNOWLEDGE OF OUTCOME. YES OR NO REFERS TO THE QUESTION “IN YOUR OPINION, WERE THE GENERAL PRACTITIONER’S ACTIONS CONSISTENT WITH A RESPONSIBLE BODY OF DOCTORS?”

	Outcome NOT known	Outcome known	TOTALS
Case Number 1			
Response: YES	13	10	23
Response: NO	0	2	2
Case Number 2			
Response: YES	12	12	24
Response: NO	1	0	1
Case Number 3			
Response: YES	11	8	19
Response: NO	2	4	6
Case Number 4			
Response: YES	4	4	8
Response: NO	9	8	17
Case Number 5			
Response: YES	3	5	8
Response: NO	10	7	17
Case Number 6			
Response: YES	6	3	9
Response: NO	7	9	16
Total YES	49	42	
Total Yes (%)	62.8	58.3	