IN THE COUNTY COURT AT CANTERBURY

Claim no. D51YX049

BETWEEN

THE EXECUTORS OF THE ESTATE OF THE LATE GEOFFREY CHARLES IVORY

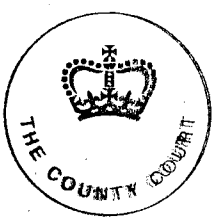
Claimants

-and-

SWALE BOROUGH COUNCIL

Defendants

JUDGMENT



1 This is a claim about a tripping accident which happened on 14 May 2014 when Mr Ivory fell over a kerb in a car park in Sittingbourne, and suffered injuries to his head and face. He was then 82 years old.

2 Mr Ivory died from unrelated causes on 25 January 2020. He played an active part in the community, and is very much missed by his family. The claim is pursued by his executors, Timothy Ivory and Amanda Humphrey.

3 The Defendant local authority admits liability for the accident, but alleges that there was contributory negligence by the Claimant in that he failed to keep a proper lookout for the kerb, which was there to be seen.

4 The Claimants allege that the medical consequences of Mr Ivory's fall were very serious, leading him to develop severe dementia; the Defendant denies that and maintains that he suffered only relatively minor injuries.

5 The Claimants are represented by Mr Pitchers KC and the Defendant by Mr Maclean. I am grateful to both of them for their comprehensive and very helpful submissions.

6 The trial took place between 7th and 10th November 2022. Counsel then made sequential written submissions on 25 November 2022 (for the Defendant), 13 December 2022 (for the Claimant) and 5 January 2023 (the Defendant's rejoinder).

7 I heard evidence from four lay witnesses and four expert witnesses.

8 The lay witnesses were: Paul Good, who saw the accident, and three members of the Claimant's family: his son Timothy ("Tim") Ivory, his daughter Amanda ("Mandy") Humphrey, and her husband Christopher Humphrey. I will refer to the deceased as Mr Ivory or as the Claimant, and, where he might otherwise be confused with his father, to his son as Tim Ivory.

9 I have considered two witness statements made by the Claimant's wife Evelyn Ivory, dated 26 September 2018 and 29 July 2019. Sadly, Mrs Ivory died on 14 September 2019.

10 Both parties instructed a neurologist and a psychiatrist, and both pairs of experts gave evidence. The Claimant's neurologist was Dr Steven Allder; the Defendant's neurologist was Dr Pamela Crawford. The Claimant's psychiatrist was Professor Tony Elliott; the Defendant's psychiatrist was Dr Hugh Series.

11 Written expert evidence was provided by two jointly instructed experts: Dr Paul Butler, a neuroradiologist, and by Professor Saul Myerson, a cardiologist.

12 This judgment is divided into eight parts, as follows:

1. THE ACCIDENT AND CONTRIBUTORY NEGLIGENCE

13 The accident happened at about 10pm. It was dark. The Claimant had attended a meeting at the Freemasons' Lodge in Sittingbourne, of which he was a longstanding member. He was returning to his car, walking across a car park situated off Park Road, Sittingbourne. He tripped over what the Particulars of Claim describe as a small wall. The Defendant admits primary liability but avers that the Claimant failed to keep a proper look out: if he had done, he would have noticed the obstacle.

14 Although "wall" is used in the Particulars of Claim, what Mr Ivory fell over is more accurately described as a raised kerb.

15 Several colour photographs of the car park and the area of the accident appear in the bundle. They show that the surface of the car park was paved with brick. The kerb ran around an island of vegetation in the middle of the car park, in which stood a substantial tree and, surrounding it, some bushes of roughly one metre in height. The island was of an irregular elongated shape, much longer than it was wide. The area where the Claimant fell was towards one end of the island, at a point where the bushes ceased and the kerb enclosed only bare earth. At that point it enclosed a narrow strip of land, which I would estimate from the photographs to have been just under one metre wide, tapering to a rounded point at the end of the island.

16 The colour photographs include an image of the kerb with a ruler placed next to it to show its height, which was about 3.5 inches.

17 The Claimants rely mainly on the evidence of Mr Good as to liability; beyond that, Tim Ivory dealt with the frequency of visits to the car park, and I have also considered the comments apparently made by the late Mr Ivory himself. The Defendants did not call any witnesses.

Geoffrey Ivory

18 There is no witness statement from the late Mr Ivory. On 25 April 2016 he gave an account of the accident to Dr Allder, which is summarized in Dr Allder's first report, dated 6 June 2016. It is however very brief:

> "The accident occurred at 22.00; as Mr Ivory was walking across a car park to return to his car to return to his car he appears to have tripped, fallen and hit his face.
>
> Mr Ivory has got a very poor memory of what happened surrounding the accident and in fact he was found lying on the floor by a member of his 'Lodge'."

19 It is not possible to be certain to what extent even this basic account came from the late Mr Ivory himself, as Dr Allder's report noted that he was accompanied to the examination by his wife and son in law, and that *"Mr Ivory is hard of hearing and clearly lost track of what was being said occasionally, which made the consultation challenging."*

20 The Defendant's neurologist Dr Crawford saw Mr Ivory with his wife and son-in-law on 29 January 2018. Her report dated 5 February 2018 gave a brief history of the accident. She noted that

> "At times when giving an account of what happened, Mr Ivory had problems remembering but on the whole he was able to give a good account of the accident and his subsequent progress, albeit with prompts and confirmation from his son-in-law."

21 The description of the accident which Dr Crawford included in her report was:

> "After the meeting Mr Ivory went across the freemasons' car park to the public car park. Mr Ivory does not remember tripping; the next thing he remembers is being on the floor. There was a kerb around the base of a tree and a light in the tree which unfortunately was not on. Mr Ivory said he did not see the tree or the kerb and fell over the wall."

22 Mr Maclean has also referred to a letter from Mr Ivory's solicitors to the Defendant's insurers dated 1 July 2015. This apparently enclosed a copy of what was described as

> "the plan which our client has prepared and sent to us, showing the position of the light columns in the area (marked as blue dots) and also, he has marked with a red asterisk, the place where his car was parked, which we understand was immediately adjacent to the accident locus."

23 I was not shown the relevant plan. It seems likely that the solicitors' comments were based on instructions given them directly by Mr Ivory, but possible that his instructions were relayed via a third party and that the solicitors did not think it necessary to say so. The point made about the position of the car is a simple one which it is unlikely that they would have misunderstood, and therefore it is likely that the passage quoted is an accurate reflection of what they were told.

Paul Good

24 Mr Good made a witness statement dated 22 September 2018 and gave evidence on the first day of the trial.

25 On the evening of 14 May 2014 Mr Good, like Mr Ivory, attended a Freemasons' meeting in Sittingbourne. Mr Good's evidence about the fall is clearly set out in his witness statement of 22 September 2018:

> "We had left the meeting that night, and I was approximately 15 feet behind Geoff, heading into the car park. There were other people there with him as he was walking to his car.
>
> It was very dark and the next thing I remember was seeing him stumble and fall over.
>
> I rushed to help him. He had fallen quite badly and when I got to him, he was very dazed. I

realised that he must have caught his foot on the kerb which surrounded a tree at the end of the car parking spaces. It was apparent that he had fallen badly, and I immediately went back to the Hall to get help and let everyone know.

...

At the time of his accident, there was absolutely no lighting actually in the car park area. The car park area was lit by a street light, but the tree in the area where the accident occurred, was obscuring any light that may have been cast from the street lighting because it was full of leaves, making it extremely difficult for anyone to see the kerb by the tree.

There was no other lighting from buildings nearby.

When looking down from the hall that we had just left, to the right were office buildings sited a long way back, and from which there was no lighting across to the car park

To the left there were houses but they were so far away that there would have been no beneficial light cast from them either.

To the front there were shops, but again, they were so far away that they would not have given any light benefit whatsoever.

In essence, it was extremely dark in the area where Geoff tripped and fell."

26 Mr Good was an impressive witness. He gave clear answers which engaged properly with the questions put to him. He paused at times in what seemed to me a genuine attempt to recollect and be accurate. He was not defensive of his statement. He readily acknowledged that when he described himself as walking behind Mr Ivory he made that comment with the benefit of hindsight, not having known who it was he was following until after the fall.

27 Mr Good did not significantly shift from his original position that there was little light in the car park. He said that at the time he lived in Sittingbourne and used that car park two or three times a week. He did not think it likely that he would have tripped over the kerb, as he knew the car park very well.

28 Mr Good was cross examined as to how well Mr Ivory knew the layout of the car park. He confirmed that the Claimant had attended Lodge meetings with him at the adjacent Hall since at least 2002. He said that the meetings occurred nine times a year, with a break in June, July and August. As well as the monthly meetings, there were rehearsals every Monday. He accepted that altogether Mr Ivory would have been attending meetings at the Hall more than once a month. He said the meetings normally started at 6pm, and thus in daylight in some months.

29 Mr Good did not recall ever having walked across the car park with Mr Ivory. He accepted it was likely that Mr Ivory sometimes used the car park, but he did not know whether he used it frequently. He pointed out that the Hall had its own car park with room for 20 or 25 cars, and that people would

only resort to the public car park if all those spaces were full.

Timothy Ivory

30 Tim Ivory made a witness statement dated 24 September 2018 and gave evidence on the first day of the trial.

31 I have some reservations about Tim Ivory's evidence. I was, for example, concerned by the way in which he adjusted his evidence regarding the Monday rehearsals at the Sittingbourne Lodge. His witness statement was directed mainly to his father's level of activity before the accident, as to which he made the unqualified statement that his father attended rehearsals every Monday. When in cross examination the point was turned against the Claimants so as to suggest that the late Mr Ivory had a high degree of familiarity with the layout of the car park, he began to say that attendance was less frequent than his witness statement had indicated. It seemed to me that he was anxious to give the answers which best supported the Claimants' case.

32 Tim Ivory's statement set out that he had become a Freemason and had begun to attend lodge meetings with his father from his mid 30s (so from about the year 2000). He referred to these as monthly meetings at the Sittingbourne Lodge, and at Stour Lodge in Ashford: in evidence he agreed with Mr Good that they only took place from September to May. He said in his statement that

> "we also attended rehearsals every Monday at the Mother Lodge [ie Sittingbourne] and also at Stour Lodge"

33 His answers to cross examination about the rehearsal arrangements were unclear. At one point in cross examination he said that his father had been attending monthly, not weekly, and at another he said that despite the passage quoted above, he and his father had not attended *"every single Monday"*.

34 Tim Ivory did not agree that his father would have been so familiar with the car park as to be well aware of the kerb. He said in cross examination that *"95% of the time we parked inside the compound. He only ever parked out there if we were late and the Lodge car park was full."* He accepted that his father did sometimes park in the Defendant's car park, *"but in different places".* When pressed as to whether that meant the car park was used on 5% of all visits to the Lodge, he was a little evasive, saying *"I can't count, 5%, the odd occasion"*.

35 It is for the Defendant to establish contributory negligence. Charlesworth & Percy on Negligence (15th edition) quotes at 4-13 the statement of Du Parcq LJ in *Lewis v Denye* [1939] 1 KB 540 at 554:

> "In order to establish the defence of contributory negligence, the defendant must prove first, that the plaintiff failed to take 'ordinary care of himself' or, in other words, such care as

a reasonable man would take for his own safety, and, secondly, that his failure to take care was a contributory cause of the accident."

36 The question here is whether the late Mr Ivory did take reasonable care of himself as he walked across the car park. The Defendant argues that he did not, and advances two points: first, that anyone walking there at the time of the accident would have been able, by keeping an adequate look out, to see the kerb; second, that Mr Ivory should have been particularly careful to look for the kerb because he would have been aware of it from his previous use of the car park.

Discussion and findings as to contributory negligence

37 I regard Mr Good as a reliable witness. I accept from his evidence that the car park was very dark at the time of the accident. The street light nearest to the accident was masked by a tree, and there was very little light from any other source. The fact that Mr Good could see Mr Ivory walking some 15 feet ahead of him, although not well enough to know who it was, does not allow an inference that the kerb must have been readily visible.

38 Mr Ivory's comment to Dr Crawford that he did not even see the tree might arguably raise a concern that he was not observing his surroundings as carefully as a reasonable person should have done in his position. But it may just mean that Mr Ivory paid no attention to the tree; it would not have been careless to ignore something which was to one side of his line of travel. He was never asked for clarification. Moreover, his comment was relayed through Dr Crawford following a discussion which involved some prompting from his son-in-law and at a time when, although saying that he was able to give a good account, she also assessed him as having mild cognitive impairment.

39 The kerb was an unusual feature to find in the middle of a car park. I believe it would have been visible with careful scrutiny. But that is setting the standard too high. I am not satisfied that a reasonable person who had no prior familiarity with the car park would, by failing to observe the kerb in the dark, have failed to take reasonable care for their own safety.

40 I then consider whether Mr Ivory's previous use of the car park put him in a different position.

41 According to a street sign (a photograph of which appears at page 116 of the main trial bundle) the car park had 99 spaces. This was not the subject of any evidence at the trial, but I see no reason to doubt that figure, which is consistent with what can be seen of the car park in other photographs.

42 Mr Ivory obviously had some experience of the car park, but I do not consider the evidence shows him to have been a regular user of it. Given its size, it is inherently likely that, as Tim Ivory said, his father would have parked in many different spaces on different occasions. It also seems likely that, as Tim Ivory said, he would park in the Lodge car park if he could: that would be a likely preference for anyone of Mr Ivory's age who suffered from the medical conditions which I will describe later on,

including COPD and consequential shortness of breath. Although not a point made by Tim Ivory, it seems to me to follow that if he could not use the Lodge car park itself, Mr Ivory would tend to park as close to it as possible, and thus that he would probably favour that part of the car park which lay between the point where he fell and the Lodge. If so, his use of the car park would not necessarily have given him any reason to observe the kerb around the central island. Even if that last point is incorrect, there is still the unchallenged evidence of Tim Ivory that his father did not always park in the same space. I do not think it possible to say that, having parked in different spaces on different dates, Mr Ivory was so familiar with the car park in its entirety that he would have known and should have remembered the position of the kerb. His routes across the car park to the Hall may never have taken him close enough to it.

43 There is then the solicitors' letter of 1 July 2015, which suggests that on the day in question Mr Ivory parked close to the "island". Meetings started at 6pm, which on 14th May would have been full daylight. It is likely that his car was not merely close to the island but on the far side of it: if it had been parked between the island and the Hall there would have been no reason for him to go as far as the island when walking back to his car. On a balance of probabilities, Mr Ivory therefore passed close to the island on his way to the meeting. Should that have put him on his guard when he returned? There are two difficulties for the Defendant here. First, it is not clear where precisely Mr Ivory parked. I do not know whether he had to step over or walk around the kerb on his way to the Lodge, or whether he merely walked close to it. If the latter, there was much less reason for him to pay any particular attention to it. Second, even if he did step over or walk around the kerbed area, in daylight it presented no obvious hazard at all. For anyone to make a mental note that it could be a different matter after dark they would have to be aware that the car park would not be as well lit as one would expect a town centre car park to be. The problem of lighting was seasonal – during the winter the tree would not have interfered greatly with the street light it surrounded. Mr Ivory only used the car park sporadically, and when he did he would not necessarily have parked near that particular street light. It is inherently fairly unlikely that he would have parked near the light on a previous occasion in 2014 after the tree had come into leaf, and I would not expect a reasonable person in his position to remember a lighting issue from a previous summer. I therefore do not consider that the position where he parked on the day of the accident demonstrates that he failed to keep an adequate look out as he walked back to his car.

44 I therefore do not accept that there was any contributory negligence on the part of Mr Ivory.

2. MR IVORY'S CONDITION BEFORE THE ACCIDENT

45 The medical experts' opinions on the main issue in this case – whether the injury suffered on 14 May 2014 caused the Claimant's dementia – were partly based on their view of his condition before that date, and the way in which he deteriorated after it. That raises factual issues which extend beyond his medical history to encompass his general level of functioning in daily life. The two sources of evidence as to that are the medical records and the lay witnesses.

46 I will address Mr Ivory's pre-accident condition as revealed by his medical records, and then the information provided by his family about his functioning before the accident. I will go on to deal with

the immediate aftermath of the accident, and then the two months or so that followed. I deal separately with Mr Ivory's re-admission to hospital on two occasions in July 2014. I then go on to describe his subsequent decline.

General assessment of the lay witnesses

47 I have already explained that I do not consider Tim Ivory entirely credible. My overall impression was that his sister Amanda Humphrey and her husband Christopher Humphrey both did their best to give an accurate account. This was not an easy task. Almost everyone would struggle to give a really clear description of the stages by which a relative's behaviour has changed. It does seem to me that in some respects their recollection has varied over time.

Pre-accident medical history

48 Mr Ivory suffered from a range of medical problems prior to the accident. I summarize below some of the material which appears in the medical records.

Frailty

49 An entry for 28 March 2012 noted that Mr Ivory underwent only a limited CT colonogram *"in view of the patient's frailty"*.

Type 2 diabetes

50 The GP notes record a diagnosis of diabetes in July 2011.

Visual difficulties

51 In 1999 Mr Ivory was diagnosed with glaucoma.

Migraine

52 The GP notes record that on an occasion in 1999 Mr Ivory had complained of an intermittent disturbance in his visual field ("fish scales") lasting a few minutes, followed by pain behind the right eye for about an hour. There is then a comment *"this history is very typical of migraine."* Prior to that, on 20 August 1997, a consultant ophthalmologist reported that Mr Ivory had had *"a number of attacks of visual disturbances in his right eye. The most recent one followed by quite a severe headache lasting about half an hour. In all he has had seven or eight attacks in the last three or four years. ... I think it is very likely that he is getting migraine and it may be that the attacks are now getting more frequent."*

53 In 2010 the GP noted *"visual migraine.. shimmering fish scales in right side of visual field"* with subsequent nausea but no headache. In June 2013 there is a reference to *"dancing shadows"* and in June 2013 to *"visual impairment this morning when he woke up"*.

Fatigue

54 Mr Ivory reported tiredness in July 2011 and daytime somnolence in 2012; obstructive sleep apnoea was diagnosed in October 2012.

Asthma/COPD

55 There was a long history of significant breathlessness, giving rise to numerous entries. The severity of the condition fluctuated. As long ago as 10 August 2006 the GP noted

> "MRC Breathlessness Scale: grade 3 finds it harder now to walk the dog or do gardening, hoovering, etc"

56 An application was made for a disabled driver's badge in 2007, mentioning asthma and osteoarthritis. It stated that Mr Ivory had a permanent disability and noting *"virtually able to walk only with excessive labour/pain/slow pace – yes"*.

57 On 24 October 2012 the MRC Breathlessness Scale was recorded as grade 5, with the notice *"seems breathless at rest"*

58 On 16 July 2013 the MRC Breathlessness Scale score had improved to grade 3, and the GP noted

> "walks dog in the park, ok on the level at own pace, but can't manage incline"

59 On 25 February 2014, Mr Ivory emailed his GP saying that he had started a course of steroids as *"my breathing is very poor"*

60 On 7 March 2014 the GP records set out a letter from Maidstone Hospital Respiratory Unit. It said that Mr Ivory had been seen by them and

> "was pleased with the results today [the results are not stated] and is keen not to have oxygen at home. I have explained that with his diagnosis of pulmonary fibrosis it is likely that he will need ambulatory oxygen at some point in the future."

61 On 31 March 2014 Mr Ivory saw his GP and told him that he was only taking steroids *"when COPD flares"*. The GP noted *"in fact seems quite well currently."*

62 On 30 April 2014, a consultant respiratory physician, Dr Husain, wrote that COPD had reduced Mr Ivory's exercise tolerance to 50 yards "*at best*".

Cognition

63 On 12 February 2013 Mr Ivory had a long consultation with his GP, who noted

> "...not doing well, recently had chest infection, still ongoing, lots of sputum, more sob [shortness of breath]..... chest poor AE today....feels cold a lot of the time, hands and feet, also memory less good, agree we will complete dementia screen bloods, MMSE [mini mental state examination] after if wishes although wife feels if could feel better memory would be better (been problem for 3/12 or so)..."

64 On 2 July 2013 the GP noted, without further explanation

> "At risk of dementia"

65 On 8 November 2013 there was a review with a GP, Dr Lloyd, who wrote

> "...discussed memory, not as good as was, however, declines formal assessment currently."

66 No formal assessment of Mr Ivory's cognition ever took place prior to the accident.

The evidence of the family about pre-accident functioning

Tim Ivory

67 Mr Ivory dealt with his father's pre-accident condition at length in his witness statement. He described him as "*extremely active*" and "*brilliant for his age*". He said that his parents were entirely self-sufficient, both driving cars and both looking after their home. His father shared the household chores and had sole charge of the garden, his pride and joy, which was "*immaculate*". He kept budgerigars in a large aviary, walked the dog, and would go out regularly with Mrs Ivory, always driving when they did so.

68 Tim Ivory said that Freemasonry was his father's main passion: I have already set out his evidence about meetings. He said his father

> ".. held quite important positions within the lodge including Almoner and Secretary and Charity Steward. He regularly organised fundraising events to support local and national charities and good causes. He would also arrange support for widows and former Freemasons; and flowers for them at Christmas. This took a great deal of time, effort and organisation..."

69 He added that Mr Ivory was an Almoner in both lodges (Sittingbourne and Ashford), which involved looking after any members who were ill and members' widows, and visiting hospitals and care homes.

70 Mr Ivory's statement that *"their garden was immaculate which was all down to him"* was somewhat undermined by the production of invoices for gardening work done before the accident. He retorted that it was just the odd invoice and that getting someone in to do the garden did not mean an inability to do it.

Amanda Humphrey

71 Amanda Humphrey made many of the same points as her brother, and gave some additional detail: Mr Ivory used to look after her pets if she was away, he would regularly pick up his grandchildren from school, and he was always happy to give friends, neighbours and family a lift. He dealt with every part of organising a Christmas lunch for retired colleagues: following the accident he handed the task to someone else. He arranged an annual cricket match in memory of her brother Stephen, which included obtaining funding and the use of the pitch.

72 In cross examination, Mrs Humphrey maintained that before the accident her father was in good health for a man of his age. She mentioned that as well as all his other activities he was involved in Neighbourhood Watch, and had helped her with tasks such as errands to B&Q.

73 Mrs Humphrey said the impact of the COPD went up and down over time, improving whenever Mr Ivory took a course of steroids.

74 Mrs Humphrey's second witness statement said that her parents *"started employing a gardener from 8 June 2015"*. She was cross examined about an invoice from Summerfield Garden Services dated 31 March 2014, which included weeding, pruning roses, and strimming and mowing the grass. She said that it would have been more accurate for her statement to say that her parents began employing a gardener *regularly* in June 2015. She accepted that by early 2014, before the accident, a gardener was employed for the bigger jobs which her father found difficult.

Christopher Humphrey

75 Mr Humphrey's witness statement of 26 September 2018 gave similar details about the different tasks Mr Ivory dealt with in the house and garden. He added that he was

> "very competent on his computer and would often be found in his study typing letters and correspondence, minutes and agendas for meetings, surfing the internet and sending e-mails."

76 Mr Humphrey's statement said nothing about Mr Ivory having required any help with the gardening, but when he cross examined about the pre-accident invoices said that even pruning roses in a raised bed was a big job *"for him"*; the invoices were for work which Mr Ivory *"couldn't do... at the time"* – his ability in that regard depended on the cycle of breathing problems with his bad chest.

77 Mr Humphrey gave an account of Mr Ivory's involvement with the Masonic Lodge. Mr Humphrey said that, having subsequently gone through his father in law's computer, he was aware that in the *"couple of years"* before the accident his father in law was (i) an almoner (ii) a member of the house committee (iii) a member of the "chapter" (he did not know what that was, and nor do I) and (iv) the organizer of an annual carol concert, which involved liaising with a local vicar about dates and sending out flyers.

78 Mr Humphrey met the Claimant's psychiatric expert, Professor Elliott, on 9 November 2018. Professor Elliott reported

> "he told me that in retrospect he noticed that Mr Ivory had an occasional 'memory lapse', for approximately three to six months prior to his accident."

79 Mr Humphrey met the Defendant's psychiatrist, Dr Series, on 21 January 2019. According to Dr Series' report, he mentioned that Mr Ivory stopped being a secretary of Neighbourhood Watch in late 2013.

Evelyn Ivory

80 The late Mrs Ivory provided some details in her witness statements which other family members did not. Her statements are hearsay, but were endorsed with a formal statement of truth.

81 She confirmed that Mr Ivory did *"lots of cleaning around the house, the hoovering and also helped me get dressed"*, as well as using the washing machine and the tumble drier. She said Mr Ivory was *"very passionate"* about his budgerigars, and regularly attended meetings of the Larkfield Village Hall Bird Club, about 12 miles from their home. She described Mr Ivory walking their dog, saying that on Mondays he would make a round trip to the Post Office of between half a mile and one mile altogether; on other days, a circuit of about half a mile. She acknowledged that his walking was restricted, saying *"he did tend to get breathless, particularly when walking up any inclines... He tended to plan his routes... so that he could mainly walk either on the flat or downhill.... He told me that if he was having any problems or breathlessness he would stop after about 100 yards or so, and use his Ventolin inhaler, especially if he was having to walk uphill..."*

82 Mrs Ivory said that she and her husband regularly went out for days out and meals, and that *"whenever we went anywhere Geoff always did the driving."*

3. THE AFTERMATH OF THE ACCIDENT

Paul Good

83 Mr Good's witness statement described what happened immediately after Mr Ivory fell:

> "I rushed to help him. He had fallen quite badly and when I got to him, he was very dazed... I immediately went back to the Hall to get help and let everyone know.
>
> I told those left in the Hall, what had happened, and someone phoned an ambulance. Along with others, I went back out to see how Geoff was. He was still very dazed and by this time there were quite a few other people helping him.
>
> Satisfied that he was being looked after, and knowing an ambulance had been called, I then went on my way."

84 Mr Good added later in his statement that he had "*no knowledge of the actual injuries that [Mr Ivory] sustained in his accident*".

85 Mr Good was questioned about what he observed of Mr Ivory and why he described him as dazed. He emphasized that he was only with Mr Ivory for a matter of seconds before going back to the Hall. During that time, he said Mr Ivory was "*on the ground, not talking, with his head down on the floor*"; "*there was no conversation with him, he was just lying there*"; "*he wasn't doing anything, not moving*"; "*it was not like he was trying to get up*". Mr Good said that he did not attempt to talk to Mr Ivory; there were a couple of other people with him, and, as I understood his evidence, Mr Ivory was not speaking to them either.

86 Mr Good estimated it was five minutes or so before he went back from the Hall to Mr Ivory. He said he considered Mr Ivory was "*still very dazed*" at that point because "*he just wasn't communicating*". It is not clear how long Mr Good spent with Mr Ivory before leaving, but he gave the impression that he did not stay long: he had done all he could and others were there to assist.

Ambulance records

87 The ambulance was called at 22.32, and paramedics were with Mr Ivory by 22.36. Their records read:

> "...tripped up kerb. Fell onto face on concrete pavement. O/A Patient sitting on floor supported by friends. O/E deep laceration to right cheek – swelling and hole [?} to face – no active bleeding – bump and swelling to right side of forehead. Graze and cut to right knee. No cspine [cervical spine] tenderness/deformity – able to move all 4 limbs – normal sensation and power to 4 limbs. NO LOC [loss of consciousness] – a little dazzed [sic] at first however able to stand – no hip pain – moved patient from cold to inside hall – no Amb available to assist"

Hospital records

88 Mr Ivory was taken to the Emergency Department of the Medway Maritime Hospital. He was admitted at 23.35. The clinical notes include the following

> "..tripped falling onto face... No L.O.C. Pt recalls incident."
>
> "Fully awake. GCS [Glasgow Coma Score] 15/15"

89 Mr Ivory was discharged about three hours later, at 2.55am on 15 May 2014. The discharge note gave a diagnosis:

> "Minor head injury. Laceration R cheek. Abrasion R knee."

Mr Ivory

90 Mr Ivory told Dr Allder on 25 April 2016 that he had a very vague memory of the period of time from the accident to his being discharged from the Emergency Department.

4. MAY TO JULY 2014

91 Mr Ivory had no relevant medical treatment in this period, save that his GP checked the wounds to his knee and face on 19 and 23 May. He and his family made a variety of statements describing his condition in this period, which I will summarize in chronological order.

Description to Dr Allder in April 2016

92 Dr Allder spoke to Mr Ivory on 25 April 2016 and noted

> "Mr Ivory explained that [following the accident] for the next seven days he was in bed feeling, in his words, 'shocked' and he remained slightly confused."

93 Mr Humphrey accompanied Mr Ivory to that medical examination. Dr Allder recorded that

> "Mr Ivory's son-in-law was clear that Mr Ivory had made a full recovery following the first accident and it was following his admission to hospital in June 2014 that he had developed his ongoing symptoms."

(As will appear later, the date given for the hospital admission was wrong: Mr Ivory was only re-admitted to hospital in July 2014.)

94 That first description, given to Dr Allder, suggests that the main ill effects of the fall endured for about a week. The reference to seven days appears to have come from Mr Ivory but not to have been disputed by Mr Humphrey. The descriptions given in 2018 and subsequently indicate a longer recovery period.

Description to Dr Crawford in January 2018

95 Dr Crawford saw Mr Ivory, with his wife and Christopher Humphrey also present, on 29 January 2018. She noted in her first report of 5 February 2018 that

> "Over the next month Mr Ivory felt very down and was frightened to do anything... [H]e spent a lot of time lying down in the bedroom upstairs and came downstairs for a change of scene. Mr Ivory had quite a number of headaches and his son-in-law said that at times he seemed slightly agitated and short tempered. Mr Ivory would walk the dog tentatively but not for long distances. Mr Ivory's son-in-law felt it was more the psychological shock rather than physical problems that had affected Mr Ivory following the accident. Mr Ivory was able to do everything but had just lost confidence."

96 Dr Crawford's updated report of 25 May 2019 said by reference to the same conversation

> "I took a history from Mr Ivory and his son-in-law who stated that Mr Ivory had more headaches and had lost confidence as a result of the accident. On direct questioning Mr Ivory's son-in-law stated that Mr Ivory was back to his normal self by one month after the accident."

Christopher Humphrey – witness statement of September 2018

97 Mr Humphrey's first witness statement, made on 26 September 2018, described Mr Ivory arriving home in the early hours of 15 May 2014 and immediately taking to his bed, after which he

> "spent many days in bed and seemed very reluctant, apprehensive and frightened to venture outside of the house independently. He was certainly more at ease if accompanied by a member of the family, which was normally Mandy or me."

98 Mr Humphrey's statement continued

> "After a while, however, Geoff seemed to make a reasonable recovery following the initial fall but he had certainly lost a bit of his sparkle and complained of periods of head pain on the right side of his forehead.
>
> He also became very tearful and seemed often to get upset and frustrated with himself.
>
> Two or three weeks after the accident he noticed that his sense of smell and taste was not right. For example, he was unable to smell flowers, or if the kitchen was full of smoke."

99 At a later point in his statement Mr Humphrey added

> "For a month or so after the accident, Geoff was very down and he just seemed apprehensive to do anything.

He spent a lot of time just lying in bed upstairs, only coming downstairs for a change of scenery.

He suffered with quite bad headaches and he just generally seemed agitated and short tempered."

Description to Professor Elliott – November 2018

100 On 9 November 2018 Mr Humphrey spoke to Professor Elliott, the Claimant's psychiatrist. Professor Elliott noted in his report dated 4 December 2018 that, according to Mr Humphrey

> "...over the days after the fall, Mr Ivory could not remember the circumstances of his fall, and the first thing he could remember was lying on the ground afterwards."

He added, however

> "He did not appear to have any significant worsening in his memory."

Christopher Humphrey – witness statement of 29 July 2019

101 In his second witness statement, Mr Humphrey referred to Dr Crawford's report of his comments (quoted at paragraph 96 above) and said he was "*confused to read that*" because "*to my recollection, he was by no means back to his normal self*". He said in cross examination that when he had mentioned Mr Ivory being back to normal he only meant that the physical wounds had healed. He said that Dr Allder's reference to a "*full recovery*" (see paragraph 93 above) was Dr Allder's phrase, not his. Clearly however Dr Allder was purporting to record what Mr Humphrey had said.

At trial

102 Mr Humphrey said in evidence that Mr Ivory recovered quickly from his injuries but remained very cautious, holding on to chairs as he moved around the house and holding Mr Humphrey's arm rather than using his walking stick.

July 2014 – the subdural haematoma

103 On 10 July 2014 Mr Ivory saw his GP, who noted

> "... came in with wife this morning noticed slight slurred speech and pins needles in left arm wife says very emotional o/e no facial asymmetry cranila [sic] nerves intact slight slur of speech is better no weakness no cerbellar [sic] signs.... Refer to rapid access tia clinic advised if any worse call 999 go to hospital..."

104 Mr Ivory was admitted to the Stroke Ward of Maidstone Hospital that day. He was seen by Dr Busch, a consultant stroke physician. According to Dr Busch's letter to the GP of 11 July 2014, when the seizure happened Mr Ivory:

> "... was on his own initially, however he wasn't able to communicate appropriately on the phone with his sister-in-law. On returning of his wife, the symptoms mainly were resolved, but not back to normal..."

The letter added

> "In the recent past he suffered from an [sic] worsening forgetfulness, his wife needs to prompt him increasingly often to do routine things..."

105 A CT scan was carried out. It was found that Mr Ivory had a subdural haematoma. Dr Allder and Dr Crawford agree that the confusion and slurred speech observed on 10 July 2014 were due to a small increase in size of the subdural haematoma, and not a stroke as Mr Ivory and his family believed at the time.

106 On 14 July 2014 Mr Ivory was assessed at the TIA Unit prior to discharge from hospital later that day. The TIA Unit notes indicate that he was *"felt to have normal cognition and no dysarthria"* (ie slurred speech). A Montreal Cognitive Assessment ("MoCA") was carried out. This was the only formal assessment ever made of his cognition until dementia had become pronounced. The MoCA assessment involves various tasks, including copying a drawing of a cube, drawing a clock face and hands, naming drawings of animals, and an exercise which tests short term memory. The memory exercise involves recalling words which have been read out to the patient five minutes earlier. Mr Ivory could not recall any of the words, even when prompted by category cue. He scored zero out of five on delayed recall and dropped one point each on copying the cube and on naming animals. His overall score was 23 out of 30.

107 On 28 July 2014 Dr Busch saw Mr Ivory and wrote to his GP, saying that he presented *"in a good condition with no neurological symptoms at present"*, adding that clinical examination did not show any neurological deficits and that the slurred speech and left arm weakness remained fully resolved.

108 On 29 July 2014 Mr Ivory was re-admitted to Maidstone Hospital. The discharge notification states that he presented with a seizure which occurred in bed in the early hours of the morning. A further CT scan was carried out, which showed that the subdural haematoma was still present. He was discharged from hospital the next day.

5. MR IVORY'S CONDITION FROM AUGUST 2014 ONWARDS

Medical and other records

109 On 19 August 2014 Mr Ivory had an annual review at the GP surgery regarding his breathing difficulties. The GP noted a score of grade 3 on the MRC breathlessness scale, and recorded *"walks small dog every day, and gardening etc"*

110 On 10 September 2014 Mr Ivory was reviewed by Dr Krasteva at Maidstone Hospital, who wrote to the GP that

> "I am pleased to inform you that he has not had any further falls. He has been doing well with no new symptoms or complains [sic]. He has been able to do gardening and to walk his dog on regular basis. He is mobilising with one stick.... We have discharged Mr Ivory back to your care".

Dr Crawford's summary of this letter omitted "new". It was suggested for the Claimants that this was significant, and that the letter could be taken to mean that previous symptoms from the SDH were continuing. Having read the entire letter, I think it very unlikely that it would not have mentioned any persisting symptoms if there had been anything of concern.

111 On 24 September 2014 Dr Busch wrote to the GP that Mr Ivory had told his secretary of telephone seizures on 17 and 19 September, and that in response he had phoned him and advised an increased dose of lamotrigine, an anti-epileptic drug.

112 On 5 November 2014, Dr Busch wrote to the neurologists at Maidstone Hospital that he had reviewed Mr Ivory again. His letter did not refer to the seizures of 17 and 19 September, but rather that Mr Ivory "*has sustained another (partial) epileptic fit on 24/09/*14. *I spoke with him on the phone. He seemed to be in a good condition...*" It added "*Today I saw Mr Ivory again in my clinic, he walked in independently and did not sustain any further epileptic activity since his two previous events.*"

113 The neurologist experts reported on seizures on the basis that there had been two (on 30 July and 18 September). Mr Pitchers submitted that there were four (10 July, and 17, 19 and 24 September). The medical records suggest to me that there were three (29 July, and 17 and 19 September), and that there was no seizure on 24 September, which was just the date of a telephone calls: otherwise, the letter of the 24th would have mentioned it.

114 On 5 November 2014 Dr Busch wrote to the GP

> "On today's encounter Mr Ivory reported feeling more forgetful than before his bleed. Otherwise he feels physically alright and he wonders whether he could go back to driving. I have advised him not to drive until further clarification..."

115 On 13 March 2015 the DVLA wrote to Mr Ivory to say that his driving licence was revoked: the reason given was that he had a "*visual problem*".

116 On 20 March 2015 the GP records show that Mr Ivory spoke to a nurse about "*confusion*"; his wife said he had been sleepy for the past six weeks, following the increase in dosage of lamotrigine.

117 On 16 July 2015, Mr Ivory saw his GP and complained of low back pain and swelling in the legs; he was tearful and low about his disabilities. The GP noted that he walked slowly around his house, but could walk independently using a stick. Mrs Ivory told the GP that he had *"not been so good since the cerebral haemorrhage 9 months ago"* – it is not clear in what respects.

118 On 23 July 2015 Mr Ivory was assessed by the West Kent Community Falls Prevention Service. They filled out a standard form, which included a list of risk factors, ticking "no" to *"Any problems with dizziness?"* and "no" to *"Any problems with memory?"*

119 On 26 October 2015 Maidstone Hospital noted that Mr Ivory was short of breath, and *"walks about 20 yards"*.

120 On 14 November 2015 Dr Chan, a consultant neurologist at Maidstone Hospital noted that Mr Ivory had been seizure free, but was experiencing migraine, with a comment that this could *"often occur following brain injury"*. His letter also noted that Mr Ivory *"has been having frequent headaches in the last six months. He experiences at least one or two headaches a day. They each last for about two hours."*

121 On 25 April 2016 Mr Ivory was examined by Dr Allder. Dr Allder's report of 6 June 2016 contained a section headed *"Symptoms suffered following the accident"*. The contents appear to be based partly on information given by Mr Ivory and Mr Humphrey and partly on Dr Allder's direct observation – including his comments that

> "Mr Ivory is suffering from obvious confusion and during the interview it was clear that he often lost his train of thought and would go off on tangents.
>
> "Mr Ivory's long term memory appears to be intact but his short term memory is very vague."

122 In a later section *"Physical examination"* Dr Allder wrote

> ".. Mr Ivory has obvious impaired cognition. He has got difficulty following conversations and with recall. He is easily distractable and he has clearly got emotional lability. There is no other focal neurological deficit."

123 Dr Allder recorded Mr Ivory's higher mental function as *"normal"*, but he said in evidence that this was an error and the entry should have read *"impaired cognition: abnormal"*.

124 The symptoms which seem to have been reported to Dr Allder in April 2016 rather than observed by him were: loss of taste and smell; deterioration of vision and hearing; intermittent dizzy spells; headaches; unsteadiness such that a couple of times walking 100 yards was difficult; anxiety,

depression and tearfulness; fatigue and sleep disturbance; avoidance of decision making and problem solving; and markedly reduced motivation and concentration.

125 On 4 July 2016 Mr Ivory was seen at Maidstone Hospital. Dr Crawford's summary of the medical records indicates that this followed a fall. He was found to have fractured his hip and broken 5 of 6 screws in his hip replacement. He was transferred to Sevenoaks Hospital and, according to Dr Crawford's review of the records *"had two operations on his eye and has become weaker on mobilisation, with episodes of confusion."* Professor Myerson's report referred to this as resulting from Mr Ivory having been *"unable to get out of chair"* after sleeping in it the previous night, and commented that an echocardiogram of 23 August 2016 showed severe aortic stenosis which was not picked up by the treating medical team.

126 On 15 December 2016 Mr Ivory was admitted to Maidstone Hospital, being delirious and short of breath due to an infective exacerbation of his COPD. He was discharged on 20 December.

127 On 18 June 2017 Mr Ivory attended the Emergency Department of Maidstone Hospital following what was described as a "seizure".

128 In October 2017 Mr Ivory had a heart valve replaced. In the same month he acquired a mobility scooter.

129 Dr Crawford met Mr Ivory on 29 January 2018. Her report of 5 February 2018 set out Mr Ivory's medical history, together with the symptoms reported by him and by his wife and son-in-law. I have mentioned some of her own observations of him at paragraph 20 above. She gave the opinion that Mr Ivory had mild cognitive impairment, with capacity for day-to-day decisions, but not for financial matters.

130 In 2018 Mr Ivory had several falls and infections which resulted in hospital admissions. When he was admitted to hospital in February 2018, their notes (set out by Dr Crawford at page 16 of her report of 1 October 2018) included this: *"has noticed decrease in memory over last 18 months, worse after op and urinary tract infection. Has also been having falls over the last year and has had general deterioration in his cognition but no formal diagnosis of dementia"*. A further note then referred to his being *"more forgetful in the last 12 months to the extent that it has significantly affected his life."*

131 A scan made in February 2018 showed no subdural haematoma.

132 Dr Ellis, a consultant stroke physician, wrote on 28 March 2018 that *"they have noticed a gradual decline in his cognition over the last 18 months to 2 years."*

133 Notes taken at hospital by a Dr Hutchinson record Mr Ivory's children saying *"regarding memory decline – really started declining noticeably since had TAVI end of '17, before that had occasional memory loss but nothing really that noticeable"*.

134 On 9 November 2018 Professor Elliott met and assessed Mr Ivory: he set out his findings in a report of 4 December 2018. He discussed the background and current circumstances with Mr Humphrey, who told him Mr Ivory was

> ".. extremely confused, disorientated, and has a very poor memory. He will at times not recognise his family members. He is emotionally labile... His mobility is poor."

135 Susan Xavier, a senior nurse carer at Sutton Valence who had looked after Mr Ivory since his admission told Professor Elliott

> "He is confused, forgetful and disorientated. He has no awareness of staff names. He is disorientated around the unit. He needs all assistance with washing, dressing and feeding. He is doubly incontinent. His sleep pattern is disturbed and he shouts out at night. He is emotionally labile. He is mobile with a zimmer frame... but is seen as a significant falls risk. He lacks awareness of his falls risk. He does not remember to take his medication... for example he will forget that he has taken his medication and ask to have it again... He lacks insight into his difficulties."

136 Professor Elliott described his discussion with Mr Ivory in detail. He reported that Mr Ivory was confused; he had difficulty with language, sometimes failing to complete his sentences; he could not remember *"the chap who is coming to support me"* (Mr Humphrey); he was emotionally labile; his answers often had no relation to the questions; he did not know what his current medication was or what it was for.

137 Professor Elliott made a mini mental state examination and noted that

> "He had obvious short term memory loss and could only remember one item out of three of new information. He was disorientated in time and place... He was unable to complete Serial 7s. He scored 9 out of 30 (this indicates significant cognitive impairment). He had impaired verbal fluency. I undertook a clock drawing test. He scored 0/4 (this indicates significant cognitive impairment)."

He diagnosed severe dementia.

The evidence of the family

138 Mr Ivory's family witnesses dealt in their witness statements with his decline between 2014 and 2018. In summarizing their evidence I will first mention their general comments, and then the more specific issues they mentioned.

Tim Ivory

139 Tim Ivory said in his witness statement that all the pre-accident activities he had described "*came to very much an abrupt halt*" because of the injuries sustained in the accident.

Amanda Humphrey

140 Mrs Humphrey's first witness statement of 26 September 2018 said that following her father's accident and what she referred to as the "*resulting strokes*" in 2014, he "*has just lost all confidence and finds the things that he used to enjoy, a real challenge and extremely difficult.*" She added that as a result of the loss of confidence Mr Ivory had become very depressed. As to how Mr Ivory declined, Mrs Humphrey said that it was hard to put a date on the changes, and that the decline was sometimes unnoticeable until some significant event occurred.

Christopher Humphrey

141 Mr Humphrey said that he noticed that Mr Ivory's memory was significantly impacted by the stroke, and that as time went on it got worse. He acknowledged that there had been changes in Mr Ivory before the accident "*he did forget things, for example to put the washing machine on*" but said that they were not significant compared to 2018.

142 Dr Crawford noted following her discussion with Mr Humphrey of 29 January 2019 that

> "Mr Ivory's son-in-law felt that Mr Ivory had become gradually more confused.... Mr Ivory's cognitive and psychological problems do fluctuate as he will have a few weeks when things are very good and then he realises he cannot do something so becomes quite low... The decline has been particularly noticeable since the end of 2016. About six months after the accident Mr Ivory became more reliant on his daughter..."

143 In his September 2018 witness statement Mr Humphrey gave a general picture of a progressive decline with multiple aspects

> "Over the years since the accident Geoff's confidence has just completely drained, as he has become more and more reliant on others, with his loss of independence because he could not drive, and his ever decreasing mobility, he has become extremely depressed and upset. Gradually he has become more and more confused and had increasing problems with his memory."

2014

145 Mr Humphrey did not take issue with the GP entry that Mr Ivory was still dealing with gardening and walking his dog in August 2014, saying "*He walked the dog every day. Sometimes up the road, sometimes Evelyn would drive them to the local playing fields... and he'd walk round.*" His evidence

did not identify any specific change from the pre-accident position, save that (because the doctors had advised against it) Mr Ivory could no longer drive himself.

146 Tim Ivory said that his father was *"determined to go [to] the lodge meetings, although he was far less frequent as he wasn't really fit enough to drive there himself."* He did not say how often Mr Ivory was still attending, and gave the impression that the initial drop in frequency was because of his inability to drive rather than anything cognitive.

2015

147 Tim Ivory said in his witness statement that

> "I carried on taking him to lodge meetings as often as I could, and as often as he wanted to go between January 2015 and May 2016, although I was constantly on watch to make sure that he was alright because he often was unsteady on his feet and fell over on a number of occasions. Further, his actual participation in ceremonies became less and less..."

Again, it was not clear to what extent Mr Ivory was missing meetings. Tim Ivory did not expand on the point about participating less in ceremonies, which might have been due to cognitive decline, but evidently he still considered that transport and mobility were part of the difficulty about attending.

148 Mr Humphrey also mentioned the Lodge meetings in his witness statement, but suggested that Mr Ivory's attendance carried on for slightly longer:

> "He could no longer drive to carry out his duties with freemasonry and was reliant on others for transport. I took him to some of his lodge meetings between January 2015 and August 2016 until he finally had to give up attending altogether."

The emphasis is again on transport and mobility. Mr Humphrey went on to describe how Mr Ivory became *"increasingly unsteady on his feet over the two or three years since his accident, and if he ever did go out he had to rely on using someone else's arm to help him walk."* He added that his father-in-law *"told me that he felt that he was always frightened that he would trip over or fall which caused him to worry immensely..."*.

149 Tim Ivory and Mrs Humphrey both said Mr Ivory started employing a gardener in May or June 2015. As noted earlier, that was inaccurate as he had paid for gardening, including what seem fairly minor tasks, since at least early 2014. It is hard to be clear from the family's evidence how Mr Ivory's gardening tailed off and when it ceased, but it seems to have been a gradual process. None of the witnesses gave any evidence about how far this was due to cognitive problems rather than psychological or physical ones.

150 The Falls Prevention Service form of July 2015 gave a more positive impression of Mr Ivory's physical and mental state than is suggested by most of the medical and family evidence. Tim Ivory

suggested in cross examination that the form was just a snapshot of a single day. It seems unlikely that the FPS only wanted a snapshot, as their aim would have been to assess the general situation and the risk of future accidents. The entries on the form suggest either that Mr Ivory's condition was fluctuating and that whoever gave the answers misunderstood how general the form was intended to be, or that they simply gave the wrong information.

2016

151 Mr and Mrs Humphrey's witness statements both referred to Mr Ivory and his wife starting to employ someone to clean and do household chores in March 2016.

152 As noted above, Tim Ivory suggested that by May 2016 Mr Ivory had stopped going to the Lodge, whereas Mr Humphrey's witness statement said that he continued until August 2016.

153 Mr Humphrey's witness statement noted that Mr and Mrs Ivory changed their home help to "Jo" in August 2016, who came for two hours every other week. That is quite a limited amount of assistance, and does not itself suggest a dramatic drop off in Mr Ivory's contributions around the house. However, it does seem from the Humphreys' evidence as to 2017 (outlined below) that the home was not kept up as well as it had been.

154 A Preliminary Schedule of Special Damages signed by the late Mr Ivory on 4 October 2017 included a claim for £1,000 for fitting a reconditioned stairlift in August 2016. However, Dr Crawford's review of medical records noted an entry in July 2014 *"has stair lift"*. Mr Humphrey accepted in cross examination that there was already a stairlift in the home before the accident.

2017

155 At some point in 2017, Mr Ivory ceased to be an Almoner for the Freemasons. In cross examination Mr Humphrey agreed that this was a demanding position, saying *"Yes, and he did it quite well. He gave it up in 2017, he said it was too much."* None of the witnesses explained how Mr Ivory continued as Almoner once he had stopped attending meetings in 2016.

156 Mr Humphrey's witness statement of September 2018 said Mr Ivory ceased to walk the dog in around March 2017: *"before the accident, he walked the dog daily but after the accident, this gradually decreased over time for the last 18 months or so he has no longer been able to manage this at all"*. Mrs Humphrey confirmed that general picture, saying in her statement *"Chris or I would go a couple of times a week to walk their dog Tilly until eventually in August 2017 they were able employ Mathew Barlow"*. At around the same point in 2017 it seems that Mr Ivory ceased to look after his budgerigars: Mr Humphrey said in his witness statement of September 2018 that Mr Barlow was brought in to do that *"about a year ago"*.

157 Mr Humphrey said in his witness statement that

> "Following his accident and his strokes over a period of time Geoff just began to forget how to do things on his computer. His Grandson produced a range of tutorial guides... but once again over time he just became increasingly incapable of using his computer."

He did not make it clear over what period this occurred, or by what date Mr Ivory ceased to use his computer. According to Dr Series' report, Mr Humphrey told him in January 2019 that about 18 months ago (which would have been about July 2017) Mr Ivory began to need help in sending emails, and in managing his money and tax.

158 In October 2017, Mr Ivory had a heart operation and, according to their statements, Mr and Mrs Humphrey then went to his home and carried out what Mrs Humphrey called a *"massive clean up"*.

2018

159 Mrs Humphrey mentioned in her witness statement of September 2018 that Mr Ivory had given up arranging the annual charity cricket match. It was clear from her evidence that he dealt with it in 2014 (albeit with some unspecified help), but not clear when he stopped altogether. She gave the impression of the task having become progressively harder for him to do, saying that it *"became more and more difficult for him to cope with and, ultimately he had to call it a day".*

160 Mr Humphrey noted in his witness statement that in June or July 2018 the amount of paid housework increased from two hours per fortnight to two hours per week.

161 Mrs Humphrey's September 2018 statement outlined Mr Ivory's situation at that time:

> "He cannot do any of the things that he used to enjoy before his accident, such as looking after his budgerigars, walking his dog, driving, housework, working on his computer, going for days out, or tending to his garden."

It added that as at September 2018 Mr Ivory could no longer attend to all the tasks that he used to do around the house, and was no longer able to deal with the washing.

6. EXPERT EVIDENCE

162 I move on to set out the expert evidence.

The jointly instructed experts

163 Professor Saul Myerson, the cardiologist, reported that he could see no cardiac cause for any neurological injury. He also discussed the likely cause of the seizures experienced in 2017: I will discuss what he said about that later on.

164 Dr Paul Butler, a neuroradiologist, reviewed the cranial CT scans made on 11 and 29 July 2014. He reported that they showed a mixed density right subdural haematoma, with age appropriate cerebral atrophy and some evidence of chronic cerebral ischaemia.

165 The subdural haematoma ("SDH") was visible on both scans. As to the earlier scan, Dr Butler said

> "There is a mixed density right sided subdural haematoma, predominantly hypodense. Ther is local mass-effect with sulcal effacement. There is minor ipsilateral effacement, but no shift of midline structures to the opposite side."

Sulcal effacement means that the sulci, which are grooves or passages in the outer layer of the brain have been squashed.

166 Dr Butler noted that the later scan of 29 July 2014 showed that the haematoma had reduced in size; some local sulcal effacement remained but "*overall the appearances have improved substantially*".

167 The further CT scan of 6 February 2018 was not reviewed by Dr Butler. According to Dr Crawford, who was not challenged on the point, it showed no subdural haematoma.

General issues

168 Expert neurology evidence was given by Dr Steven Allder for the Claimant and Dr Pamela Crawford for the Defendant. Psychiatric evidence was given by Professor Elliott for the Claimant and Dr Series for the Defendant.

169 Before going through each expert's evidence in turn, I will mention some general points about the medical issues. The experts disagree as to

(i) whether the course of the decline into dementia was unusual, given his pre-accident medical condition
(ii) whether the accident caused a traumatic brain injury and how severe any such injury was
(iii) the effects of the subdural haematoma
(iv) whether Mr Ivory developed post traumatic epilepsy
(v) whether a traumatic brain injury of the type sustained could, alone or in combination with the subdural haematoma and the seizures, cause or accelerate the development of dementia and
(vi) whether the injuries suffered in 2014 did cause or accelerate the development of the Claimant's dementia.

Dementia

170 A diagnosis of dementia means that a patient's cognitive decline is causing difficulties in everyday life. Dementia can arise from a number of underlying conditions. The three most common types are Alzheimer's disease, vascular dementia, or Lewy body dementia.

171 Dr Crawford's general comments about the common causes of dementia were not disputed by the other experts. She said Alzheimer's disease is responsible for about 75% of all dementias and affects 30% of people over the age of 85, while vascular dementia is a cause of dementia in about 15% of all cases.

173 A less serious decline in cognitive function, not amounting to dementia, may be described as Mild Cognitive Impairment ("MCI"), although the experts were not unanimous about the use of that as a diagnostic category.

The background risk

174 Dr Allder and Dr Crawford jointly stated in October 2018 that the background risk of developing dementia in the normal population is 7% to age 85. They also agreed that a person with diabetes is more likely to develop the condition, and that Mr Ivory's diabetes increased his baseline risk by 50%. Dr Series commented on that joint statement in his report of 29 March 2019. He queried what the neurologists meant by stating that the background risk of developing dementia was 7% "to age 85". He said he would agree with the statement if it referred to the proportion of all people *up to* the age of 85 who develop dementia, but that if the statement referred to the proportion of people *aged* 85 who have dementia, he considered the figure of 7% too low and advised that, while estimates vary substantially, the true rate of prevalence at age 85 was about 20%.

175 Dr Series maintained his position when giving evidence in chief, saying that the risk of having dementia at age 82 was roughly 20%. There was no discussion as to whether and if so to what extent he would increase that figure to allow for the additional risks posed by Mr Ivory's diabetes.

176 Dr Crawford's evidence was to similar effect. She said in chief that *"at the age of 85 [Mr Ivory] would have at least a 20% chance of being demented. His risk is actually higher because important risk factors are his hypertension, his cerebrovascular disease and his diabetes."*

177 The Defendant's experts were not challenged on these estimates.

Traumatic brain injury

178 The parties disagree about whether Mr Ivory suffered a traumatic brain injury ("TBI") at all, and, if he did, how it should be classified in terms of severity. The Claimants' case is that Mr Ivory did suffer a TBI which, together with the consequent subdural haematoma, and perhaps also the resultant seizures, caused or accelerated the development of dementia. The experts' evidence included discussion of published papers on the link between TBI and dementia. Those papers distinguish between different types of TBI, and so it is necessary to consider which category applies to Mr Ivory's injury.

The subdural haematoma

179 In lay terms, a subdural haematoma occurs when blood leaks into an area outside the brain but within the skull. An acute SDH involves a sudden leakage; a chronic SDH involves a slower process causing a gradual build up of blood over time. The term "acute on chronic" refers to a chronic SDH in which a fresh bleed has caused transient symptoms. A subdural haematoma may put pressure on the brain. In more severe cases it may cause a "midline shift", whereby one hemisphere of the brain is pushed across the midline and partially occupies the space normally taken up by the other hemisphere.

180 It was common ground between the neurologists that the subdural haematoma of July 2014 was an acute on chronic haematoma, and that it was caused by the index accident.

Post traumatic epilepsy

181 The neurologists agreed in their joint statement that following his re-admission to hospital in July 2014 Mr Ivory suffered two nocturnal tonic-clonic seizures, on 30 July 2014 and 18 September 2014. In fact, as discussed above, the history is muddled and there were probably three seizures, on 29 July, 17 September and 19 September. I do not believe that point would affect the experts' opinions.

182 The Claimants' case is that the seizures occurred because Mr Ivory had post-traumatic epilepsy, and were thus the result of (and evidence of) previous brain damage. The Defendant's case is that Mr Ivory did not develop post-traumatic epilepsy, the seizures he experienced would not have caused lasting damage, and they would not have caused or affected his dementia.

Published research

183 There was considerable discussion of the published literature about the relationship between TBI, SDH and dementia. I will outline the main papers discussed.

Rauhala[1]

184 This retrospective study compared mortality data for patients with a chronic SDH ("cSDH") and for a reference group with no history of chronic SDH. It concluded that "*cSDH patients have an increased risk for dementia-related mortality*". The authors commented:

> "Our results support the idea that cSDH may be a risk factor for dementia. This could be explained by Bin Zahid and colleagues' observation that cSDH is related to a significant increase in the degree of subsequent brain atrophy. It seems that brain atrophy is a risk

[1] *Long-term excess mortality after chronic subdural haematoma* Rauhala et al, 2020

factor for cSDH, which in turn accelerates neurodegeneration and increases the risk of dementia. Further long-term prospective studies are needed to verify this association."

Bin Zahid[2]

185 Dr Allder referred to his evidence to the 2018 paper by Bin Zahid, and in his closing submissions Mr Pitchers KC quoted its conclusion:

> "Prior to development of a cSDH, the atrophy rates in patients who will ultimately develop cSDH are similar to those in other patients. After development of a cSDH, the atrophy rates increase to more than twice those in patients with dementia. Chronic subdural haematoma is thus associated with a significant increase in brain atrophy rate. These findings further confirm the neurotoxic consequences of cSDH and may have implications for better understanding of the pathophysiology of cerebral atrophy and dementia."

Sufaro[3]

186 This study considered the outcomes achieved after one year for 54 elderly patients who had presented with an acute SDH. The study was limited to patients with a Glasgow Coma Score between 13 and 15, and at least one conventional indication for surgery: a haematoma thickness of more than 10mm, a midline shift of more than 5mm, or a GCS score drop of more than 2 points from injury to admission. Mr Ivory did not meet those criteria and would not have fallen into the group studied. The study considered outcomes as measured on the modified Rankin Scale, which I understand is loosely speaking a measure of disability, not dementia. The authors acknowledged that the cohort considered was so small that no statistically significant results could be concluded.

Gardner[4]

187 Gardner is a substantial retrospective cohort study, which compared subsequent rates of dementia in patients who had been diagnosed with a mild or moderate to severe TBI with the rates of dementia in patients who had suffered some other form of trauma. The study covered about 165,000 patients in California, of whom about 52,000 had suffered a traumatic brain injury. It distinguished between "Mild TBI" and "moderate to severe TBI" by reference to the Centers for Disease Contol and Prevention criteria.

188 The paper concluded that patients *"with moderate to severe TBI at 55 years or older or mild TBI at 65 years or older had an increased risk of developing dementia".* Results were broken down by age group. For patients aged 75-84, the hazard ratio ("HR") was stated to be 1.21 (1.08-1.36) with mild TBI and 1.27 (1.19 – 1.36) with moderate to severe TBI. A hazard ratio of, for example, 1.21 means that the event (in this case a diagnosis of dementia within the follow up period of 5-7 years) is 21%

---

[2] *Increase in brain atrophy after subdural haematoma to rates greater than associated with dementia* Bin Zahid et al, 2018

[3] *Unfavourable functional outcome is expected for elderly patients suffering from acute subdural haematoma even when presenting with preserved level of consciousness* Sufaro et al, 2019

[4] *Dementia Risk After Traumatic Brain Injury vs Nonbrain Trauma* Gardner et al, 2014]

more likely than if there had been no TBI. The figures in brackets show the confidence interval: that is, the range of HR figures which is 95% likely to be correct.

189 The acknowledged limitations of the Gardner study included that the data gathered did not establish how the TBI groups compared with the control group regarding other factors relevant to causation , including previous operations or illnesses, educational status, or prior TBIs.

Redelmeier[5]

190 This study involved a group of about 29,000 patients who were diagnosed as having had a concussion. It compared the incidence of dementia among those patients within that group who took statins and among those who did not.

Shiveley[6]

191 This was a meta-analysis of fifteen studies which all attempted to assess whether patients who had a head injury resulting in loss of consciousness were at greater risk of dementia.

Edlmann[7]

192 This was a discussion of the pathophysiological processes underlying the development of chronic subdural haematomas, and the prospects for treating them with drugs rather than surgery. The authors concluded

> "Overall, it is clear that there are multiple drivers promoting expansion of a CSDH..... [T]here appears to be a complex process of interrelated mechanisms including inflammation, membrane formation, angiogenesis and fibrinolysis that propagate an increase in CSDH volume."

Won[8]

193 This was a review of published studies dealing with post-traumatic epilepsy in patients who had subdural haematomas, both acute and chronic. It did not address the relationship between post-traumatic epilepsy and dementia.

---

[5] *Association Between Statin Use and Risk of Dementia After a Concussion* Redelmeier, 2019

[6] The paper is not in the bundle. According to one of Dr Allder's reports, it is *Dementia resulting from traumatic brain injury, what is the pathology?* (October 2012). He names the author as Srivli, but according to Dr Crawford that should be Shiveley

[7] *Pathophysiology of chronic subdural haematoma: inflammation, angiogenesis and implications for pharmacotherapy* Edlmann et al, 2017

[8] *A systematic review of epileptic seizures in adults with subdural haematomas* Won et al, 2016

Crane[9]

194 This paper analysed data about 7,130 patients, of whom 865 reported a history of a TBI with loss of consciousness. It concluded

> "Several previous studies have suggested associations between TBI with LOC and [Alzheimer's disease]. To our knowledge this study is by far the largest ever on this topic. With more than adequate power to detect an association between TBI with LOC and AD, we found none."

The study was not limited to TBIs suffered in late life. The conclusion noted that there may be other late life effects of TBI: Lewy bodies, microinfarcts, Parkinson's disease and parkinsonianism.

Hicks[10]

195 This was a meta-analysis of 68 papers which considered TBI as a risk factor for dementia and Alzheimer's disease. The study claimed to be *"the first comprehensive and detailed evaluation of the methodologies of studies examining TBI as a risk factor for dementia and [Alzheimer's disease]"*. The authors concluded that there were methodological problems with most studies, and that overall only one study (by Plasman, described below at paragraph 219) was identified as having *"strong methodological rigor"*. The paper by Gardner mentioned above was among the 68 considered by Hicks. The criticisms of Gardner by Hicks were not the subject of any evidence or submissions.

196 The Hicks meta-analysis was discussed by Hill J in *Mathieu v Hinds* [2022] EWHC 924 at [333] – [336]. In *Mathieu* the court refused to award provisional damages to cover the chance that a 29 year old man who had suffered a severe head injury would as a result develop dementia. Hill J regarded as significant the Hicks criticisms of all but one of the individual research studies analysed, saying that *"the Hicks team's conclusions surely cast significant doubt on those previous studies which found an association between a single TBI and dementia"* and describing Hicks as *"leaving open the question of whether there is a sound scientific basis for the assertion that a single TBI can cause dementia"*.

The evidence of Dr Allder

The underlying nature of Mr Ivory's dementia

197 Dr Allder considered it possible that Mr Ivory had vascular dementia in view of Dr Butler's report that the scan showed evidence of cerebral vascular disease. However, he said in his report of 1 October 2018 that in his view *"the extent of the decline over a short period of time (from the time the scans were undertaken in July 2014 to the present) makes it, on the balance of probabilities, unlikely to be the underlying cause."*

Deterioration

---

[9] *Association of Traumatic Brain Injury With Late-Life Neurodegenerative Conditions and Neuropathologic Findings* Crane et al, 2016

[10] *Traumatic Brain Injury as a Risk Factor for Dementia and Alzheimer Disease: Critical Review of Study Methodologies* Hicks et al, 2019

198 Dr Allder considered that there was a significant deterioration in Mr Ivory's clinical state following the diagnosis of the SDH (joint report, paragraph 3.4.2). He described this in his report of 20 June 2019 as a *"significant step change"*. In his view, the speed at which Mr Ivory declined from his pre-accident condition was unusual.

199 He explained that the stages of dementia may be assessed using the Global Deterioration Scale for Assessment of Primary Degenerative Disorders (the Reisberg Scale). The Scale sets out seven stages, the first three of which have the diagnosis "No Dementia"; the following four stages give a progression from early to late stage dementia. Each stage in the Scale is accompanied by a short summary of "signs and symptoms", which for stages 3 to 7 includes a sentence about duration.

200 Dr Allder's opinion, as set out in his report of 1 October 2018, was that, taking the most pessimistic view of the memory difficulties Mr Ivory mentioned to his GP in November 2013, his condition just before the accident could have been assessed as Stage 3. The Reisberg Scale describes Stage 3 as Mild Cognitive Decline, and it gives an average duration of 7 years before the onset of dementia.

201 In his October 2018 report, Dr Allder gave the opinion that Mr Ivory's cognitive decline was most likely to be dementia associated with his TBI or *"confusion secondary to his significant physical co-morbidity"*[11]. He emphasized the rapid development of Mr Ivory's problems:

> "I reach this view on the basis of the marked decline described in the witness statements of his family and the fact that if Mr Ivory were assessed as being at Stage 3 on the Reisberg Scale prior to the index accident (based on the GP assessment noting his memory difficulties in November 2013), he would not have been expected to have progressed to his current clinical state in such a short timeframe; the scale suggests an average of 7 years before the onset of dementia and that would mean Mr Ivory would have been expected to be exhibiting the symptoms associated with Stage 4 on the scale in 2020."

TBI

202 In Dr Allder's opinion the accident of May 2014 caused a traumatic brain injury. The mechanism of the injury was sufficient for Mr Ivory *"to have been at risk of sustaining a concussive and acceleration/deceleration injury at his brain"*. He considered that Mr Ivory had reported typical post-concussional symptoms.

203 Dr Allder listed in his report of 6 June 2016 thirteen symptoms from which Mr Ivory had in his view been suffering. He reiterated that list in his supplementary report of 1 October 2018, saying that they were *"subsequent to his re-admission in July 2014 and diagnosis of a 'delayed' subdural haematoma."*. The symptoms were

- visual difficulties

[11] It was not suggested by either party that this was a possibility which needed to be explored

- loss of smell and taste
- dizziness
- unsteadiness
- headache
- fatigue
- sleep disturbance
- problems with short term memory
- difficulty with problem solving
- problems with decision making
- reduced motivation
- reduced concentration
- problems with social monitoring, social control, intuition and new learning secondary to impaired memory

204 In his 2016 report, Dr Allder wrote that those symptoms "*suggest a possibility that Mr Ivory suffered a subtle closed brain injury secondary to concussive injury.*" In cross examination he said he should have written that the symptoms showed brain injury was probable, not just possible. He was extensively cross examined about his grounds for that opinion.

205 As to visual difficulties, the description in Dr Allder's report is in very general terms. He accepted in evidence that there was a pre-accident history of glaucoma, that visual systems were difficult to assess, and that it could only be said that this particular symptom could possibly be related to a brain injury.

206 Dr Allder accepted that loss of taste and smell could be caused by a respiratory illness, damage to the fibres that go to the olfactory nerve, a problem with that part of the brain that processes taste or smell, or an early sign of dementia. He considered that last possibility unlikely as rarely occurring save in Lewy body dementia. His view, expressed in cross examination, was that "*it's more likely to be the shearing [of the] fine fibres*". I understood that to refer to something other than damage within the brain itself. In re-examination he said that the SDH did not appear to be in the right position to interfere directly with the olfactory nerve, although the interpretation of the scan was a matter for a radiologist; he added that the SDH could have caused swelling of the brain, which was in turn pressing the nerves.

207 Dr Allder recorded that Mr Ivory told him in 2016 that "*he has suffered troublesome headaches*". He did not give any further detail there or in cross examination about how frequent or severe they had reportedly been, save to add that they sometimes caused sleep disturbance. He noted in his

report of 1 October 2018 that the headaches were still continuing in 2016. (It seems from Dr Chan's letter of 14 November 2015, noted at paragraph 120 above, that Mr Ivory reported very frequent headaches from about May 2015 onwards, but that is not a point Dr Allder discussed).

208 There was a reference in Dr Allder's report to fatigue and "*sleep disturbance secondary to his headache*". He acknowledged in cross examination that there were pre-accident entries in the GP records about tiredness in relation to diabetes, as well as a diagnosis of obstructive sleep apnoea. He said that this was one of a number of nonspecific symptoms from which he was seeking to assess the extent of change pre and post accident.

209 Dr Allder accepted that dizziness and unsteadiness could have numerous causes, and that his report had not recorded the family telling him of any clear change in those symptoms.

210 The entries in Dr Allder's report regarding problems with short term memory, reduced concentration and motivation, problem solving, decision making, social monitoring, social control, intuition and new learning were all expressed in the present tense. It is not clear from the report what he was told by Mr Ivory or his family about when these various problems arose. In cross examination, Dr Allder accepted that matters such as difficulty solving problems and making decisions could have multiple causes. He said that the sense he got from the family in 2016 was that Mr Ivory was maybe a little bit worse than when he was discharged, but was in the same type of territory since he had come out of hospital.

211 As to whether there had been post traumatic amnesia, Dr Allder said in a supplementary report that it was difficult to classify the severity of the brain injury, "*as Mr Ivory's post traumatic amnesia (PTA) history was clouded by the cognitive impairment arising from a subdural haematoma.*"

212 The neurologists' joint report recorded (at paragraph 3.2.2) that according to Dr Allder Mr Ivory had sustained a "*mild acute traumatic brain injury*". In cross examination, Dr Allder went beyond that, saying that he was basing his assessment of the risk of dementia on the correct classification for Mr Ivory's TBI being "*moderate to severe*" (which is the highest level of severity in the classification scale). He said

> "... the initial presentation on clinical parameters would have been at most mild, but we now know he should perhaps have been scanned, and if he had been scanned, it would have then been moderate to severe."

This was because, he said, the scan would probably have shown the subdural haematoma beginning to form.

SDH

213 Dr Allder gave unchallenged evidence that the initial CT scan of 11 July 2014 and Dr Butler's report indicated that the SDH was compressing the brain. In his view this compression was compelling evidence of damage to the brain, both to its surface and to its deeper structures, with resulting cognitive impairment.

214 Dr Allder said that the MoCA result of July 2014 was significant. He explained that memory involved paying attention to the information given, encoding that information, consolidation and retrieval. He said of the MoCA result that *"... it tells you the consolidation process is malfunctioning, and that's in the deep structures of the brain, so this midline shift must have been impacting brain function there... [T]he brain was pressing up against the midline, it's not going quite across... and in the bit of brain that's getting pushed are the structures that underpin consolidation and memory..."* He added that the failure to copy the cube correctly in the MoCA test showed that the right parietal region was affected, saying that it is the frontal parietal region which drives visual-spatial cognition.

215 Dr Allder accepted that for someone of Mr Ivory's age, and depending on educational level, a MoCA score of 23 or 25 would be typical. He said however that Mr Ivory had been very high functioning, and that he would have expected him to be in the top decile with a pre-accident MoCA score of 28.

Epilepsy

216 Dr Allder's first report stated that Mr Ivory was at increased risk of developing post traumatic epilepsy, and then in the following paragraph that he *had* developed that condition, adding that there was no clear alternative clinical explanation other than it being secondary to the brain injury. His evidence at trial was that Mr Ivory had developed post-traumatic epilepsy. He considered that the 2014 seizures had happened sufficiently long after the relevant trauma to justify that diagnosis. The further seizure of 18 June 2017 was in his view more likely to be a product of post traumatic epilepsy than of Mr Ivory's cardiac problems. He considered that Professor Myerson's report of 30 June 2018 supported that view.

217 In re-examination, Dr Allder said that the combination of swelling visible on the July 2014 CT scans and the timing of the recurrent seizures was a "*classic presentation*" of post traumatic epilepsy. He felt that the prescription of lamotrigine was a good choice of drug, and that the dose was low. He implied that the lack of subsequent seizures, at least until 2017, was probably the result of that treatment.

Published research

218 Dr Allder's 2016 report advised that

> "The emerging research suggests that Mr Ivory is now at four times the baseline risk for the development of dementia."

219 He relied particularly on an October 2012 paper from which he quoted at length. I set out some of that quotation:

> "The Srivli[12] et al meta-analysis of fifteen case controlled studies estimated that individuals who had a head injury of sufficient severity to result in loss of consciousness were at approximately 50% increased risk of dementia compared with others (OR 1.58 confidence intervals 1.21 to 2.06). In the mirage study... the OR for dementia was 4.0 for head injury with loss of consciousness (confidence interval 2.9 to 5.5) and 2.0 for head injury without loss of consciousness (confidence interval 1.5 to 2.7)."

The quotation went on to refer to a study by Plasman et al of US marine veterans who were hospitalized for traumatic brain injury during World War II, comparing them with another group who were hospitalized at the same time for a non TBI injury.

> "Study subjects were evaluated by telephone interviews and clinical assessments fifteen years after the injury. The veterans who sustained a severe traumatic brain injury defined by loss of consciousness or post traumatic amnesia lasting longer than thirty minutes but less than twenty four hours were at more than double risk. No increased risk was evident for veterans who had a mild TBI."

220. Dr Allder's position on the state of the research was set out in his report of 25 September 2019:

> "... the role of mild traumatic brain injury (mTBI) as either a causative factor in the increased risk of suffering dementia of the mechanism by which mTBI may cause dementia are not yet fully established. Some studies suggest a clear association between mTBI and the development of dementia, and others have not found a large increased risk. I would also agree that the role of isolated head injury, with no loss of consciousness, is even less established as leading to an increased risk of dementia. However, in moderate to severe TBI the evidence in aggregate would support a doubling of risk of dementia in patients."

Rauhala

221 Dr Allder said in evidence that the significance of the Rauhala paper is that it *"opens up the possibility that subdural haematoma is... triggering dementia"*.

Bin Zahid

222 In relation to the Bin Zahid, Dr Allder acknowledged that because the patients studied were all military veterans, they were more likely than the general population to have suffered multiple TBIs. As I understand it, it is generally accepted that, whatever the position about single TBIs, a history of multiple TBIs is associated with higher rates of dementia.

[12] This should be Shiveley

Sufaro

223 Dr Allder quoted the study at length in his report of 25 September 2019 and regarded it as significant, saying that *"The findings of this study suggest that the deterioration that Mr Ivory suffered following the index accident was secondary to his admission in July 2014."*

Gardner

224 Dr Allder commented in his report of 25 September 2019 that the Gardner report was a key paper: its graphs of survival rates showed that *"as patients get older there is an increased risk of dementia following TBI, and this begins to mirror the risk with moderate TBI when patients get to Mr Ivory's age."* He also referred to an updated review by the same authors in 2018, which he said showed good evidence for a link between mTBI and increased risk of dementia.

225 Dr Allder was cross examined in detail about the original report. He accepted that the baseline characteristics recorded for those in the TBI group showed that (compared with the control group) it contained a significantly greater proportion of patients with three features that are risk factors for dementia (hypertension, cerebrovascular disease, and alcohol dependence). I calculate[13] that 40.7% of the TBI group had at least one of those conditions, as against 34% of the control group.

226 Dr Allder accepted that Gardner had its limitations as a study, but maintained that it certainly showed a possibility that even a mild TBI in someone of Mr Ivory's age had the propensity to trigger or accelerate dementia.

Redelmeier

227 Dr Allder referred to the Redelmeier paper in his report of 20 June 2019, quoting its statement that in the group of 28,815 patients studied, all of whom had been diagnosed as having had a concussion

> "we found that the subsequent incidence of dementia was twice the population norm, and it was further accentuated in control patients who were not taking statins."

In his report of 25 September 2019 he added that the study was a robust one which, taken with Gardner, provided good evidence for a link between mTBI and risk of dementia. He described it as a *"further large study looking at the relationship of concussion – the mildest form of mTBI – and dementia in an elderly cohort."*

Causation, association and mechanism

228 Dr Allder accepted in cross examination that all of the scientific papers discussed dealt with the association between TBI and dementia, and not causation. He acknowledged that *"the mechanisms by which TBI generates dementia are still being worked out"*.

[13] From the figures in Table 1 of Gardner

229 In re-examination Dr Allder outlined what he said were three broad mechanisms which might be involved. First, the presence of blood from the SDH on the outer surface of the brain might trigger a neurotoxic cascade. Second, the injury might trigger a chronic inflammatory response. Third, the injury might in some way trigger the interaction between the proteins amyloid and tau which leads to the clogging of neurons, that being the condition which underlies Alzheimer's disease. He mentioned that some support for the first theory could be found in the Bin Zahid paper, and for the second in Edlmann.

The evidence of Dr Crawford

Alteration of initial report

230 Dr Crawford's first report was dated 5 February 2018. A copy was sent to the Claimant's solicitors. On 13 July 2018, the Defendant's solicitors wrote to Dr Crawford asking her to prepare an updated report. That letter told her that her original report had been served on the Claimant. Dr Crawford's updated report was dated 1 October 2018.

231 The updated report was not described as a supplemental report and did not reference the original report. It was substantially based on the original, but the amendments did not merely add comments on the new material supplied: some aspects of the history and opinion sections were altered. Dr Crawford was asked in cross examination whether, when preparing her second report, she had known or expected that the first report had been or would be disclosed. She said she had not.

232 The first report contained a two sentence paragraph headed "Sense of Smell and Taste" which was removed from the second report while several nearby paragraphs were carried over unaltered. The second report did however give an accurate summary of the missing text in the Opinion section. Dr Crawford was cross examined about the removal. She said that she had moved things around to make the report flow better, but *"I have no idea why it's gone, because it wasn't meant to be gone."*

The underlying cause of the dementia

233 Dr Crawford referred in her updated report of 25 May 2019 to the opinions of the two psychiatrists on the cause of Mr Ivory's dementia. She rejected Dr Series' suggestion of possible Lewy body dementia and said

> "I would agree with Professor Elliott's opinion that it is unlikely that Alzheimer's disease alone is responsible for Mr Ivory's dementia. However, in my opinion the MRI/CT scan imaging changes of cerebrovascular disease are not so severe that this is a pure vascular dementia; rather the appearances are of a mixed picture of Alzheimer's disease in combination with vascular dementia."

Deterioration

234 Dr Crawford commented on the usual development of dementia:

> "The onset of the disorder is generally insidious and difficult to detect and the course is slow and progressive. The early stages are usually marked by memory disturbances which may go unnoticed for some time by family and friends. The majority of clinical evidence indicates that a considerable time may elapse, on average three years between the appearance of symptoms and establishing a diagnosis."

235 As to the typical speed of progression of dementia, Dr Crawford appeared to agree with the passage from the psychiatrists' joint statement which appears below at paragraph 266.

236 Dr Crawford's view, as set out in the neurologists' joint report, was that the pre-accident history, and in particular the information that Mrs Ivory increasingly needed to prompt Mr Ivory to do routine things indicated that he had reached Stage 4 on the Reisberg Scale. In her final updated report of 25 May 2019 she agreed with Dr Series that

> "... in view of the subsequent history of cognitive decline it can be concluded that the symptoms Mr Ivory reported before the index accident were due to the onset and progression of his dementing disorder, although a formal diagnosis could not have been made at that time."

237 Dr Crawford reported that

> "Mr Ivory's clinical trajectory follows that of a classical dementing illness with memory problems (classified clinically by the psychogeriatricians as MCI) prior to the fall and gradually increasing symptoms with time, with some acceleration two years after the accident... Mr Ivory has multiple risk factors for developing dementia of what appears to be of mixed Alzheimer and vascular type. The most important risk factor is Mr Ivory's age in association with type 2 diabetes and hypertension. Repeated brain scans have confirmed changes of cerebrovascular disease and cerebral atrophy."

238 In her view, the temporal course of the dementia

> "... is as it would have been expected had the accident not occurred, following the temporal pattern in clinical studies of dementia."

Traumatic brain injury

239 Dr Crawford did not accept that there was any traumatic brain injury in May 2014. She described the accident in her first report as *"a minor blow to the head."* She added that *"it is likely, from talking to Mr Ivory, that there was a very short-lived period of loss of consciousness"* – but she then noted that the A&E records on the night of the accident recorded that there had been no loss of consciousness, that Mr Ivory's GCS score remained at 15 throughout, and that he could give an

account of the accident. In her updated report of 25 May 2019 she said in her view those notes meant that *"there was no pre- or post-traumatic amnesia and it is dubious whether consciousness was even lost"*. She therefore considered that the classical symptoms of a TBI were lacking.

240 Dr Crawford agreed with Dr Allder that the fall could have been sufficient to give rise to a TBI, and accepted in cross examination that the absence of any wrist fracture suggested that Mr Ivory had not used his arms to break his fall. However, in re-examination she said that the graze to his knee could mean that he fell to his knees first.

241 She did not agree that the post-accident symptoms relied on by Dr Allder showed post-concussional syndrome. She did not accept that all those symptoms were present given that, she said, she had asked Mr Humphrey detailed questions about Mr Ivory's condition between the accident and the diagnosis of the subdural haematoma, and had established that Mr Ivory rested for a week and was physically back to normal after a month. She commented that *"there are notes pre-accident relating to the majority of the reported symptoms"*.

242 She considered that Mr Ivory had experienced two types of headache. The headaches described to her by Mr Humphrey were in her view *"head pain relating to local tenderness, they did not sound migrainous."* Her opinion was that any headaches relating to the May 2014 head injury would have ceased within six months. Any headaches arising before and after that period she attributed to migraine, which had been reported before the accident. She did not consider that the headaches resulting from the accident were indicative of brain damage.

243 In cross examination, Dr Crawford confirmed that when she met Mr Ivory she was told of headaches experienced between the fall and the re-admission to hospital in July 2014, but that she was also told that they stopped before the re-admission. She accepted that headaches were a common symptom of TBIs, but maintained that the accident related headaches experienced by Mr Ivory were due to him banging his head, not brain damage. She said that from the description she was given, particularly of waking with a headache, some of the post July 2014 headaches *"sounded quite migrainous"*.

244 Dr Crawford accepted that the history of pre-accident migraine she referred to comprised just two entries dating from 1999 and 2010[14]. She did not accept that if Mr Ivory had continued to have migraines, he would have mentioned it to the doctor.

245 Dr Crawford considered that the loss of taste and smell, relied upon by Dr Allder as an important symptom, was likely to be a consequence of the mass effect of the subdural haematoma, and not a direct consequence of the head injury. If this symptom had been the result of a TBI she would have expected Mr Ivory to have mentioned it almost immediately. Contrary to Dr Allder, she would have

[14] I have noted above at paragraph 52 that there was also an earlier entry in 1997

expected the change to be noticed straight away: *"with the advent of covid we realised how quickly you notice your loss of smell and taste."*

246 Overall, Dr Crawford emphasized that the symptoms relied upon by Dr Allder were in her view peripheral, and that what was lacking were the classical TBI features of immediate problems with memory and concentration. She contrasted Mr Ivory's history of cognitive difficulty with the natural history of acute brain injury, which she said *"is at its most severe around the time of the accident and gradually improves with time."* She noted that no increased cognitive problems were reported after the accident until symptoms arose relating to the subdural haematoma, and that those symptoms of increased confusion were temporary.

247 There are several different systems for classifying TBIs. Dr Crawford accepted that the history of Mr Ivory being 'dazed' and suffering headaches immediately after the fall would, depending on one's interpretation of 'dazed' warrant the injury being treated as the lowest grade of TBI - symptomatic possible, or mild, depending on the system used. She disagreed with Dr Allder's approach of taking into account the SDH so as to elevate the category, saying that the Mayo was intended to be used at first presentation in A&E and was not to be applied retrospectively.

The subdural haematoma

248 Dr Crawford did not accept that the SDH had caused any lasting brain damage. She distinguished sharply between acute and chronic SDHs. She said that an acute SDH would be the result of a severe head and brain injury. A chronic SDH was due to leakage from bridging veins across the subdural space, and occurred in an elderly people where the subdural space had increased due to brain atrophy. In her view, trauma may precipitate the development of a chronic SDH, but cannot lead to one if there is insufficient subdural space. In Mr Ivory's case, there was sufficient space: the brain scan showed age-appropriate cerebral atrophy.

249 She considered that the absence of any midline shift was significant. She commented that this was further evidence that there had been significant brain atrophy prior to the accident. In her view it also indicated that the pressure imposed by the SDH was *"not that high";* she contrasted Mr Ivory's 10mm SDH with a paper which said the chronic subdural haematomas operated upon were typically about 30mm with a midline shift of 10mm.

250 In her opinion, the symptoms experienced by Mr Ivory in July 2014 were due to the pressure exerted on the brain by the build-up of the subdural haematoma; she did not accept that those pressure effects could be regarded as a brain injury.

251 Dr Crawford agreed that the MoCA result showed a very marked deficit in delayed recall. She said that left open a question of whether this was a result of the SDH or of an underlying process. If treating Mr Ivory, she would have wanted to repeat the test after three or six months. Retesting after an interval would probably have eliminated the possibility that the SDH was still having an

effect. Although the acute symptoms from the SDH had eased by 14 July 2014, he then had a 10mm haematoma; on 29 July 2014 the SDH had reduced in size but still measured 7mm. She did not accept that the delayed recall issue would be necessarily have been noticeable to Mr Ivory's relatives, saying that family members find it very difficult to recognize memory problems; she did accept that it would make chairing a meeting or organizing events difficult.

Post-traumatic epilepsy

252 Dr Crawford's CV showed a long term specialist interest in epilepsy.

253 Dr Crawford did not agree that post traumatic epilepsy had arisen, in the sense of there being a long-term condition of epilepsy caused by previous damage to the brain. She considered that the head injury had not been sufficiently severe to cause that condition, and that the seizures of July and September 2014 were a consequence of the SDH.

254 She did not accept that the interval from the diagnosis of the SDH to the last recorded seizure indicated post-traumatic epilepsy rather than a direct response to the SDH. She said that an SDH would only dissipate slowly, and that it was unknown how long it was present in Mr Ivory's case.

255 Dr Crawford explained that post-traumatic epilepsy would be caused by the breakdown of blood products within the brain, that being a consequence of a severe traumatic brain injury; she did not accept that it was likely to result from the mass effect of an SDH. She rejected the suggestion that Mr Ivory had suffered any bleeding within the brain, saying that he would have displayed symptoms if that had been the case. She contrasted the effect of an SDH, which involved blood collecting outside the brain, irritating the surface of it and causing symptomatic seizures. Post-traumatic epilepsy was likely to be a long term condition, whereas if the seizures resulted from an SDH the disappearance of the SDH would usually lead to their cessation. She added that in such cases if the seizures did not end that was because of modifications within the brain caused by the original seizures, a condition known as focal seizure disorder.

256 She went into detail about the difficulty of stopping post-traumatic epileptic seizures altogether, saying that medication could normally only control their severity rather than preventing their occurrence. She added that post-traumatic epilepsy was one of the most difficult conditions to treat. In her view Mr Ivory's seizures had stopped because the SDH had gone, and not because of his medication: she agreed with Dr Allder that the antiepileptic drug prescribed was at a low dose, but disagreed that such a low dose was likely to have controlled post-traumatic epilepsy.

257 Dr Crawford did not accept that the seizures experienced by Mr Ivory would themselves have caused brain damage. She said that seizures would only inflict brain damage in a patient who had status epilepticus, which Mr Ivory did not.

258 Based on Professor Myerson's report, and on what she said had been her detailed questioning of Mr Ivory and Mr Humphrey about the 2017 episodes, she considered that the seizures experienced in that year were likely to be of cardiac origin. She took the absence of further seizures after the TAVI operation of October 2017 as further evidence for that.

Causation, association and mechanism

259 Dr Crawford discussed in evidence how it could be that a TBI could cause or accelerate dementia. She accepted that if there were brain damage leading to a loss of cortical reserve, then a patient who would have developed dementia anyway would present with it at an earlier date. That had not in her view happened to Mr Ivory as she did not consider there had been any brain damage. She said she was unaware of any evidence to support the suggestions that a TBI or SDH could cause or accelerate dementia by provoking a neurodegenerative cascade, or a chronic inflammatory response.

Published research

Rauhala

260 Dr Crawford pointed to features of this study which in her view made it hard to draw any firm conclusion applicable to this case. First, 85% of the patients in the chronic SDH group had their haematoma dealt with by way of an operation. The operation itself was a substantial risk factor, and one could only compare Mr Ivory with the 15% who were not operated upon. However, that non-operative group contained a mixture of those who were too frail to undergo an operation, and those (like Mr Ivory) who did not need one because their SDH was not large and was not worsening. The paper did not separate out those two sub-groups.

261 She also noted that in terms of overall survival, measured across the whole sample, patients with no comorbidity did as well or better than the control group. If chronic SDHs were causing or accelerating dementia, then one would expect them to do worse.

Bin Zahid

262 Dr Crawford said the Bin Zahid paper was very interesting, but posed major difficulties. It did not provide enough information about what other risk factors may have been present in the group studied. It did not say how many of the patients were operated upon, or how frail they were. The paper compared atrophy rate in patients before and after they had a chronic SDH: there were only 11 such patients, and they would have been people with some unusual issue which caused them to have the scans in the first place. That other unknown condition might account for the greater rate of atrophy. The point was acknowledged in the paper itself:

> "Any individual with serial head CT scans or MR images is more likely to have one or more neurological problems that may affect atrophy rate, cognitive function, and mortality. Thus, our study has an ascertainment bias created by the inclusion of more symptomatic individuals."

Gardner

264 Dr Crawford noted that while the Gardner study said that mild TBI at the age of 65 or over increased the risk of dementia, its conclusion warned that there may be characteristics in TBI prone patients that increase the risk of both TBI and dementia.

Shiveley

265 Dr Crawford's report of 25 May 2019 identified passages in the Shiveley study that did not in her view support Dr Allder's argument. She highlighted that the article said

> "... experiencing a TBI in early or midlife is associated with an increased risk of dementia in late life. The best data indicate that moderate and severe TBIs increase risk of dementia between 2- and 4- fold. It is less clear whether mild TBIs such as brief concussions result in increased dementia risk."

The psychiatrists

266 The psychiatrists agreed that the speed of decline into dementia varies widely. The joint report said:

> "Professor Elliott states that research indicates that patients progress through the stages of dementia until death from 3.3 to 11.7 years with most studies suggesting death within a 7-10 year period (Todd et al. 2013). Professor Elliott would therefore estimate on the balance of probabilities that a patient with mild dementia in 2015 is likely to have severe dementia by 2021-22. Dr Series comments that the median survival time from diagnosis was 3.3 to 6.6 years (Todd et al. 2013) and that Mr Ivory's survival time from the onset of symptoms in 2013 to estimated death in 2021 would be about eight years, which is well within the expected range of life expectancy for an average person with dementia."

267 As to rate of progression

> "Professor Elliott's opinion based on clinical experience is that it is well recognised that the progression of dementia is extremely variable from patient to patient, with some patients rapidly deteriorating over a short period of time eg 2 to 3 years, with other patients only very gradually declining over a number of years."

268 Dr Series pointed out that these figures vary for a number of reasons, including whether the survival period is calculated from the date of onset or the (often very much later) point of diagnosis.

The evidence of Professor Elliott

269 Professor Elliott reported on 4 December 2018 that the underlying cause of Mr Ivory's dementia was likely to have been vascular. He was of that view because of of Mr Ivory's history of diabetes

and the CT evidence of cerebral vascular disease, but he accepted in cross examination that the cause may have been the mixture asserted by Dr Crawford.

270 Professor Elliott's oral evidence was that (in the absence of any other causative event), it was likely that patients who have developed dementia will have had brain disease for some ten years before the symptoms developed. He accepted that dementia almost always begins with minor symptoms which are not readily noticeable.

271 He said that from his understanding of the evidence, Mr Ivory had been significantly high functioning pre-accident. He observed that *"based on his family's report, following the fall [Mr Ivory] never regained his previous level of functioning";* after that initial decline he considered the medical records indicated *"minimal deterioration in [Mr Ivory's] dementia from the time that he developed worsened cognitive problems after the fall, until around 2017."*

272 He accepted that if the memory complaints in 2013 were symptoms of a process resulting in dementia, the rate of progression to dementia was what he would have expected. However, he said that if the pre-accident memory problems were the precursor of dementia, he would have expected other symptoms to have become noticeable in the interval between the memory issue first being raised and the fall. Given Mr Ivory's high functioning and his involvement in such things as using his computer and chairing meetings, he thought the likelihood of that was over 90%.

273 He said Mr Ivory's pre-accident memory problems were *"minimal"*, and that the symptoms displayed before the fall would best be classified as Mild Cognitive Impairment (MCI), adding

> "MCI is a well-recognised condition at the stage between the expected cognitive decline of normal aging and the more serious decline of dementia. It is not early dementia."

274 As noted in the psychiatrists' joint statement, MCI in his view meant that there was no, or minimal, impairment of his daily functioning, but a subjective complaint of memory loss.

275 He discussed the stages of dementia by reference to the Clinical Dementia Rating Scale ("CDR"), which ranges from 0 (normal) to 3 (severe). He considered that the reports of the family and the medical records suggested that Mr Ivory had reached stage 1 (mild) in around 2015, and that by December 2018 he had reached stage 3.

276 Professor Elliott's report included a summary of the medical records, but did not mention the GP entries of February 2013, July 2013 and November 2013 about Mr Ivory's poor memory. He accepted in cross examination that those entries were relevant: he could not say why he had not

mentioned them, but thought it most likely that he had not seen them. He had also failed to pick up on indirect references to them in other documents which his report said he had reviewed[15].

277 Professor Elliott did not consider it within his expertise to say whether the accident had occasioned a TBI. In his opinion, if it were found that there had been even a mild TBI then it was likely that the accident was a material factor in the development of dementia; if not, then it would be unlikely to have been a material factor.

278 He largely based that view on the point that most patients with MCI do not go on to develop dementia. As to that, he relied on his own clinical experience and on reported studies: in particular, a 2009 review by Mitchell[16], which suggested that the proportion of patients with MCI who did develop dementia of any kind was somewhere between 21.9% and 39.2%, so that *"most people with MCI will not progress to dementia even after 10 years of follow-up"*. He also cited a study in 2018 by Peterson et al which found that cumulative dementia incidence was found to be 14.9% in individuals with MCI and older than age 65 years, who were followed for 2 years. He then said (at 18.52 of his report)

> "Therefore, on balance, based on this research evidence, in my opinion Mr Ivory, despite having MCI, was not likely to develop vascular dementia over the period following the fall until now [4 December 2018]"

279 Dr Series summarized that reasoning in the joint report in terms which Professor Elliott did not disavow:

> "Dr Series understands Professor Elliott to be saying that because only between 39.2% (in specialist settings) and 12.9% (in population studies) of people with MCI ultimately convert to dementia, it is less likely than not that Mr Ivory would have developed dementia."

280 Professor Elliott also said that in view of Mr Ivory's pre-accident functioning, he would have assessed his risk of developing dementia independently of the accident as much less than the balance of probabilities: dementia was possible but not likely. It encouraged him to believe that there had been some other causative event that the family told him Mr Ivory after the accident was *"completely different – nowhere near what he was like before"*.

281 In cross examination, he accepted it was *"absolutely possible"* that the memory problems reported in 2013 were early signs of degenerative dementia, but maintained that because of Mr Ivory's high functioning it was unlikely that they were.

---

[15] See for example paragraph 3.5.1 of the neurologists' joint statement

[16] *Rate of progression of mild cognitive impairment to dementia – meta-analysis of 41 robust inception cohort studies* Mitchell et al, 2009. As the Defendant attacked the relevance of Mitchell rather than its reliability, I will not give a more detailed description.

282 Professor Elliott said that he would defer to the neurologists as regards the SDH.

283 He commented on the MoCA result of 14 July 2014. He said that he believed 23/30 would have been an abnormally low score for Mr Ivory, in view of his pre-accident functioning. He did not think it possible that someone who scored zero on delayed recall could carry out all of the tasks which Mr Ivory had been performing.

Epilepsy

284 Professor Elliott did not express a view about the disputed post-traumatic epilepsy.

285 In the psychiatrists' joint statement Professor Elliott said that he was not an expert in the literature on mild TBI and its likely neurocognitive effects: he deferred to the neurologists as to the type and strength of evidence in the literature regarding the increased risk of mild TBI causing dementia in patients over 65.

The evidence of Dr Series

286 Dr Series did not accept the Claimants' overall case. He said in his report of 29 March 2019

> "I do not think it likely that either the head injury or the haematoma caused, accelerated or aggravated his dementia."

287 Dr Series considered it possible that Mr Ivory had Lewy body dementia. This did not seem to be accepted by any of the other experts, but nor did it seem to underpin his opinions about other matters in the case.

288 As to the rate of development of dementia, Dr Series' view was that

> "... the claimant's progression from mild memory symptoms to severe dementia in the space of six years is in line with the trajectory that I would expect for a man of his age."

289 Dr Series discussed that point at length in section 13 of his report. He described the normal pattern of dementia as being a gradual onset, with considerable variation between individuals in the rate and pattern of progression. He said

> "... some people appear to stabilise for several years, while others progress rapidly at some periods. In people with vascular dementia, the trajectory is often said to be 'stepwise' meaning that it proceeds by a series of stepwise downward increments, possibly corresponding with a series of cardiovascular events. Although this pattern is described in many textbooks, in my clinical experience it is very difficult to get a clear and accurate

history of the time course of progression from patients and their families, making it difficult to decide if progression has been stepwise or not."

290 He summarized four research studies as to survival time after the estimated onset of dementia, and said that published studies *"vary substantially, but are typically in the range 3 to 8 years, usually in the shorter part of that range"*. He added that in general people who are older at diagnosis, male, and in poor physical health have shorter survival times. He considered that Mr Ivory's health was considerably worse than average. He maintained in cross examination that the speed at which the dementia developed was not at all surprising.

291 As to Mr Ivory's family's perception of the decline, he commented

> "... as a practising clinician I have often found that where a person has developed dementia, they and their families seek to attribute the onset of dementia to a particular event. Sometimes this is an injury or operation, sometimes it is a change in circumstances such as the death of a spouse. While I can understand that human beings characteristically try to find explanations for adverse events, such apparent associations of dementia with an event occurring close in time to its onset do not demonstrate a causal connection. Sometimes the effect of the event is to focus attention on the condition of the individual concerned, and it is only when family and professionals around the person re-evaluate that person's condition that cognitive changes are apparent, even though they may in fact have been present for some time before the event."

292 Dr Series was not prepared to say that Mr Ivory had 'mild cognitive impairment' prior to the accident, both because in his view there was a lack of any agreed diagnostic criteria for MCI and because there had been no formal assessment of Mr Ivory's cognition. He commented in the joint report that there had been a great deal of debate in published literature about the term, with a large number of definitions put forward. He did not accept that Mr Ivory would have been diagnosable with dementia prior to the accident.

293 Dr Series considered that the three pre-accident GP entries were significant as showing a degree of stability and persistence in the memory problem. He did not think it would be surprising if the GP had not pressed Mr Ivory to have a cognitive assessment once he had refused one. While in his view there was not enough evidence of Mr Ivory's condition before May 2014 to make a diagnosis, he said that did not mean it was possible to say that no dementia was in the process of emerging.

294 Dr Series did not agree that the MoCA score of July 2017 was significant, saying that 23/30 was normal for a man of Mr Ivory's age, and that the overall mark and pattern of scoring with a failure to get any points for delayed recall was *"very typical for a person in the early stages of Alzheimer's or vascular dementia."*. He also disagreed with any suggestion that there were signs of the SDH having damaged the visual-spatial function, because although a point was lost on the cube drawing the clock exercise was done very well.

295 Unlike his opposite number, Dr Series did express a view about whether Mr Ivory had experienced a traumatic brain injury. In his report of 29 March 2019 he said that there were a number of definitions of TBI in clinical use, and gave details about three of them. One, the American Congress of Rehabilitation Definition, which he described as *"rather wide"* was to the effect that TBI had occurred if at least one of a list of seven things had occurred. Third on the list was *"any alteration in mental state at the time of the accident (eg feeling dazed, disorientated, or confused)"*. He commented

> "... it could be argued that as Mr Ivory felt dazed after the fall, a diagnosis of mild TBI could be made because just one of the above criteria for mild TBI was met. While this may be true in a formal sense, in general in making a diagnosis in medicine, the more features of the patient's presentation that point towards that diagnosis, the more confident one can be about it. Meeting just one criterion out of a list weakens the confidence with which a diagnosis can be made."

296 He considered that Mr Ivory would not have satisfied the World Health Organisation definition of TBI. He concluded that

> "... it could be argued on some definitions Mr Ivory's injury following the index event could just meet criteria for mild TBI. In my opinion, the mildness of his symptoms at the time of the injury make it very marginal whether he could be judged as having received a mild TBI."

297 Mr Pitchers disputed that Dr Series was within his expertise in commenting on the diagnostic criteria for TBI. Dr Series said he was used to considering diagnostic criteria in general.

298 Dr Series said, when invited to comment on possible mechanisms of injury, that in his view an SDH could conceivably cause dementia but only if it were large enough to cause a midline shift, with resultant damage to the structure of the brain. However, he also said he did not feel competent to comment on the literature regarding SDHs.

299 Dr Series pointed out that studies of the type reviewed by Mitchell would underestimate the lifetime rate of conversion from MCI to dementia unless they followed up the subjects until death, and that most of the reviewed studies did not do so. He also noted that the Mitchell review excluded studies of people with non-MCI cognitive impairment, and that Mr Ivory himself would have fallen outside the scope of the Mitchell review because he was never diagnosed with MCI.

300 More fundamentally, Dr Series took issue with Professor Elliott's approach to probability. Dr Series addressed this at length in the joint statement. I cannot quote all that he said or reproduce the Venn diagram with which he supported his argument, but his essential points were

> "Mr Ivory (in our shared view) ultimately developed dementia. The relevant question here is, 'Of those who have dementia, what proportion start with mild cognitive symptoms?
>
> ...

> Dr Series thinks it likely that... most people who develop dementia go through a period of MCI first. In his experience the large majority of people who present with dementia have a history of preceding cognitive impairment.
>
> The final conversion rates quoted in the Mitchell review... are the proportion of those who have MCI who go on to develop dementia... However, as Mr Ivory has in our shared view developed dementia, the proportion that is of relevance here is ... the proportion of those who develop dementia who previously had MCI. Dr Series does not know how big this is, but it is clearly not the same as the conversion rate in the Mitchell review.
>
> ... the Mitchell review gives a value for the relative risk (corrected for sample size) of developing dementia of 13.8, which was statistically significant. In other words, the risk that a person with MCI will develop dementia is 13.8 times higher than the risk that a cognitively healthy control of similar age will develop dementia."

301 Dr Series maintained in cross examination that Professor Elliott's reasoning was back to front. He gave the example of a patient who presents to a doctor on Monday with shortness of breath but who is sent home with no diagnosis. On Wednesday the patient returns and is found to have pneumonia. Viewed from Monday, that would have been an unexpected outcome: there are many possible causes of shortness of breath. Viewed from Wednesday, it is likely that the shortness of breath was a precursor of the pneumonia.

302 In his report of 29 March 2019, Dr Series referred to a study by Goldstein and Levin[17] which suggested that there was no long term effect on cognitive functioning and said that

> "I am not aware of any clinical research supporting the view that a single mild TBI is a risk factor for the development of dementia."

303 In the psychiatrists' joint statement, Dr Series maintained that no relationship between mild TBI and dementia had been shown to exist. In cross examination he was taken to the Gardner report. He said he had been aware of Gardner, and admitted that he had expressed himself too strongly when he reported there was no clinical research supporting the view that a single mild TBI is a risk factor for the development of dementia. He maintained however that Gardner provided only very weak evidence.

304 In cross examination about the Gardner report, Dr Series was only asked to consider the summary of conclusions on the first page, which set out the hazard ratios for age groups 55-64 and 65-74. As to that, he pointed out that for the 65-74 age group the hazard ratio was 1.25 but the confidence interval was 1.04 to 1.51 (ie at its lowest only a 4% increase in risk). He was not referred to the equivalent figures for the 75-84 age group, which appear in Table 2 of the paper: the hazard ratio is 1.21 with a confidence interval of 1.08 to 1.36.

---

[17] *Cognitive outcome after mild and moderate traumatic brain injury in older adults* Goldstein and Levin, 2001

7. DISCUSSION AND FINDINGS

Findings of fact

Before the accident

305 Mr Ivory was very active socially up to the date of the accident. He had a wide range of pursuits. The only evidence that his participation had diminished is that he ceased to be the Neighbourhood Watch secretary in late 2013.

306 Mr Ivory's physical health was obviously poor. He had a variety of significant medical problems. The COPD significantly restricted what he could do. That much is clear from the medical records. I do not agree with Mrs Humphrey's comment that Mr Ivory was in good health for a man of his age.

307 Mr Ivory and his wife were already concerned about a deterioration in his memory. The main evidence of that is the GP notes of 12 February, 2 July and 8 November 2013. The February note indicates that the problem had become noticeable in about November 2012.

308 Mr Pitchers submitted that the GP notes were not significant: neither consultation was arranged specifically to discuss memory issues, there was nothing to say that any memory problems were interfering with Mr Ivory's functioning, and there is no record of the GP urging Mr Ivory to undergo a dementia assessment. I do not agree. I would not have expected Mr Ivory to make a separate appointment to discuss his forgetfulness when he was a frequent visitor to his doctor. It is unlikely that he would have mentioned his memory at all if it were not troubling him to a significant extent. He seems to have been an outgoing, confident man: I do not believe he would have raised anything with his GP unless he felt it to be important. It is not obvious that if the GP thought there were genuine grounds for concern they would gone so far as to urge Mr Ivory to have a formal assessment[18], or that they would have recorded it in their notes if they had. The entry of 2 July 2013 suggests that the GP did consider dementia a real possibility. Nor do I infer that there was no impact on functioning from the fact that the GP notes do not mention that. It seems to me unlikely that Mr Ivory would have raised the matter to his GP at all if there was no impact.

309 It is harder to interpret the hospital record of 11 July 2014. The reference to the *recent* past suggest that Mrs Ivory was only describing a short period before the hospital readmission, but the comment that she *increasingly* had to prompt her husband to deal with routine things gives the impression of a long enough period for not just a change but a trend to be noticeable. The accident would have been a memorable point of reference, and if she had only meant that Mr Ivory had changed since then she could easily have said so. On balance, I think the record is a further sign that there were forgetfulness problems before May 2014, and that the need for prompting suggests they were affecting everyday life.

[18] Dr Series said at paragraph 11.2.1 of his report that *"The doctor consulted may not think it worth referring the patient for further assessment believing (usually incorrectly) that nothing would be achieved by referral since dementia cannot be cured."*

310 The final piece of evidence suggesting there was a developing problem is Mr Humphrey's comment to Professor Elliott that he had noticed the occasional memory lapse in the three to six months before the accident. Although close to his father-in -law, Mr Humphrey did not live in the same house, and would have had less interaction with him than did the late Mrs Ivory. It would not be surprising if it took him longer to notice anything amiss. That he did notice it tends to suggest that the problem had grown worse.

311 As to quite how evident any emerging problem would have been, Dr Crawford made the point that people often continue to function successfully despite progressive dementia while they remain in a familiar environment. This has some application to Mr Ivory. Although he clearly went out and about, it seems that many activities were long standing pursuits, involving a fairly fixed routine and taking place at familiar venues.

312 Mr Ivory must surely have engaged in his many activities because they were rewarding. It is unlikely that he would have given them up at the first sign of difficulty. The fact that he continued to pursue them (save for his position in Neighbourhood Watch) does not necessarily mean that he did so as easily or efficiently as before November 2012, and there is no clear evidence as to whether that was so or not. Although is not possible to be entirely sure about the pre-accident position, I find on a balance of probabilities that Mr Ivory was suffering a noticeable deterioration of his memory which began to be apparent in about November 2012.

The accident: loss of consciousness and amnesia

313 Applying the balance of probabilities test, I do not believe that Mr Ivory lost consciousness at the time of the accident. The contemporaneous reports by the Ambulance service and the hospital positively say that he did not. When the paramedics arrived, they noted that he was sitting up, supported by his friends: if he had been unconscious prior to their arrival, even briefly, that would have concerned both him and his friends, and it seems to me very likely it would have been mentioned and recorded.

314 Mr Good described Mr Ivory as "*dazed*" and explained he had been uncommunicative. As a matter of ordinary language that does not mean there was a loss of consciousness. Being dazed and being unconscious are not the same. The former term can be used to describe a state of shock, and Mr Ivory would surely have been shocked and in pain. The ambulance record "*a little dazzed*" plainly did not equate being dazed with loss of consciousness, as it is the same record which states there was no such loss.

315 Apart from the suggestion of amnesia, the only material I can see to suggest there was a loss of consciousness is the account given to Dr Crawford and set out in her first report. But by the time she was told that, Mr Ivory had declined considerably and was speaking of an event over three years earlier. I do not believe that what he told Dr Crawford is as reliable as the contemporaneous records.

316 The evidence taken as a whole does not suggest any period of amnesia. I have not been referred to any mention of amnesia in Mr Ivory's medical records. The clinical notes for the day of the accident say "*patient recalls incident*". It is very unlikely that they would say that if it had appeared at the time that he did not recall the incident. When he spoke to the medical experts between two and four years later Mr Ivory sometimes did not remember the fall well or at all, and Mr Humphrey told Professor Elliott in 2018 that in the days after the fall Mr Ivory could not remember the circumstances of it. But in my view none of that outweighs the contemporaneous medical records.

Mr Ivory's condition between the accident and re-admission to hospital in July 2014

317 Different accounts as to this have been given at different points. What Mr Ivory and his son-in-law told Dr Allder in 2016 was that for a week he kept to his bed, feeling shocked and slightly confused, but that he seemed to have made a full recovery before he was admitted to hospital. No different period is mentioned for the recovery, so the terms of the report naturally suggest that it was about a week. The description given to Dr Crawford in January 2018 indicated a longer recovery period, with Mr Ivory feeling depressed and fearful for a month or so after the fall, as well as complaining of headaches, but still that he was back to his normal self after a month. In September 2018 Christopher Humphrey added the further information that Mr Ivory noticed a loss of taste and smell two or three weeks after the accident. In July 2019 Mr Humphrey said in his second witness statement that Mr Ivory had not returned to normal within the first month, and that he had not told Dr Crawford that he had.

318 The medical records for the period do not contain any entries to suggest that prior to 10 July 2014 Mr Ivory experienced anything related to the accident which was sufficiently serious for him to tell a doctor. He went to the GP surgery during that time and had the chance to mention any concerning symptoms, but did not do so. There are two entries in the GP notes about dressing his wounds in May 2014, and some other entries about unrelated physical issues.

319 It seems to me the earlier accounts given to the experts are more likely to be accurate than the later ones. Recollection is likely to become less accurate with time. It is unlikely that both neurologists were mistaken in noting that Mr Humphrey felt Mr Ivory had fully recovered. It is also unlikely that if there were any major continuing problems Mr Ivory would not have mentioned them to the GP on one of his several visits to the surgery. By the time of his 2019 witness statement Mr Humphrey recalled the matter differently, but on a balance of probabilities I do not believe that his recollection is right.

320 As to loss of taste and smell, I am satisfied that this occurred at some point. It is an unusual problem, and Mr Humphrey is unlikely to be mistaken about Mr Ivory having mentioned it. The timing given by Mr Humphrey of two to three weeks after the fall can I think be taken as a reliable sign that the symptom did not immediately follow the accident. I doubt whether two or three weeks is a very reliable estimate of how long afterwards it was, given the length of time elapsed before Mr Humphrey first reported it. Indeed, Dr Allder said in cross examination that he had not been able to

get an accurate history of the exact timing of that symptom, and that he did not know whether the loss of taste and smell occurred before or after the subdural haematoma.

321 The history of headaches is not wholly clear. The description relayed in Dr Allder's report of 2016 suggests that they only arose after the hospital admission. Section 3.1.1 of his report ("circumstances surrounding the accident") is brief but does not mention headaches at all. Section 3.1.2 mentions that there had been a full recovery (which implies there were no continuing headaches) and that according to Mr Humphrey *"it was following his admission to hospital in June 2014 that [Mr Ivory] had developed his ongoing symptoms"* before setting out a list which included *"he has suffered troublesome headache"*. It is only in 2018 that an account began to be given (first recorded by Dr Crawford) of headaches post accident but pre hospital admission.

321 On a balance of probabilities, I find that Mr Ivory had headaches for some time after the fall but that they cleared up before his readmission to hospital on 11 July 2014.

322 It is not controversial that for a time after the fall Mr Ivory kept largely to his bed, and that there was a loss of confidence. Probably he had not regained that by 11 July 2014 – Mr Humphrey's comment that he had lost some of his 'sparkle' rings true.

Mr Ivory's condition from July 2014 to 2018

323 Mr Ivory reported being more forgetful in November 2014 but declared no memory problems to the Falls Survey of July 2015. Dr Allder met him in April 2016 and found him to be confused and with very vague short term memory; he nevertheless continued a little longer with Lodge meetings (until May, or August, depending on whether Tim Ivory or Mr Humphrey is right); he continued to act as Almoner for the Lodge until 2017; ceased to walk his dog in about March 2017, and later that year ceased to look after his budgerigars. In 2018 Dr Crawford considered that he had mild cognitive impairment but lacked mental capacity to manage his finances; in November 2018 Professor Elliott found him to be extremely confused. When Dr Series met Mr Ivory in January 2019 he considered his level of cognitive function extremely poor.

324 I was not persuaded by Tim Ivory's statement that his father's activities came to an abrupt halt after the accident. He said himself that his father continued with at least some attendance at Lodge meetings until May 2016, which was two years later. In cross examination, it was put to him that his father had remained an Almoner even beyond that, until 2017: he did not dispute that was so, and yet maintained that after the accident Mr Ivory was not fit to do anything. He did not explain how his father could then have acted as an Almoner. It seems to me that Mrs Humphrey's account of a gradual decline in which it was difficult to pinpoint dates of particular changes is more likely to be accurate.

325 It seems that the accident put an immediate and lasting dent in Mr Ivory's confidence. He became fearful of falling, and was less inclined to venture out on his own. But there is no clear

evidence that this immediate change in behaviour was a product of an immediate drop in his cognitive abilities. To take some specific examples, he did not immediately stop going to the Lodge, resign as Almoner, give up his budgerigars, stop walking the dog, abandon the gardening, or cease to use his computer.

326 The overall picture presented by the lay evidence is that Mr Ivory's difficulties got progressively worse, and his activities gradually reduced; it is not possible to be precise about when and how they did so. There is nothing clearly identifying a sharp drop in cognitive ability at a particular point. Mr and Mrs Humphrey described a gradual process of change in multiple ways, which they linked to a loss of confidence and decreasing mobility as well as to cognitive decline. It is difficult to be clear about whether any particular loss of ability or cessation of activity was purely the result of cognitive impairment, or whether and to what extent physical and psychological difficulties played a part.

327 The main support for the idea of a sharp decline in ability in July 2014 comes from the MoCA score. I accept that the zero score on memory is not easy to reconcile with the evidence of Mr Ivory's pre-accident activities. Equally, however, it does not sit well with the evidence that to a large extent those same activities continued after the accident, gradually dwindling over the next few years. Nor does it accord with the family's numerous references to a gradual change. For that reason, it seems to me more likely that the MoCA score was worsened by the SDH, but that the impact of the SDH was short lived.

328 Apart from the effects of the SDH in July 2014, I find that there was a fairly steep and somewhat fluctuating but progressive decline. I am not satisfied that Mr Ivory's cognition underwent what Dr Allder called a significant step change.

Causation

The Claimants' case

329 Mr Pitchers submitted in his closing note that the Claimants' case is much broader than the assertion that Mr Ivory suffered a mild TBI which caused dementia. As I understand it, the Claimants say that the accident caused a brain injury, that it was an injury which should properly be classified as at least mild if not moderate to severe, and that the TBI and/or the SDH and perhaps also post-traumatic epilepsy caused Mr Ivory either to develop dementia when he would not have done so, or to develop dementia sooner than he otherwise would have done.

330 One matter which I do not have to decide is the question of what, if not the accident, was the underlying cause of the dementia. The experts did not entirely agree about that, but it does not seem that their other opinions depended on the point, and neither Mr Pitchers nor Mr Maclean has made any closing submissions about it. It would not affect the debate about causation if the alternative explanation for the dementia were the progression of Alzheimer's, vascular dementia, or a combination of the two.

The experts – general comments

331 The experts, and particularly the neurologists, set out Mr Ivory's history at length, attempting to summarize where possible. They made a few errors in doing so, but that was unsurprising given the volume of material they were faced with. In my view the largest oversight was that both the Claimants' experts failed to mention the pre-accident GP notes about memory. But having heard all experts give evidence, I believe that all were conscientiously trying to fulfil their duties to the court.

332 Mr Pitchers submitted that the way in which Dr Crawford altered her first report to create her second report raised grave concerns about her impartiality. He placed weight on her admission that she made those changes while believing that the Claimants had not seen and would not see the first report. Mr Maclean annexed to his submissions the letter from his instructing solicitors of 13 July 2018, which told Dr Crawford that the first report had been disclosed to the Claimants. The second report was finalized within three months after that letter.

333 When she stated what her belief had been in 2018 about the disclosure of her first report, Dr Crawford was being cross examined over four years later on a point which was not directly relevant to the issues in the case, and which I would not expect her to have reflected upon in the intervening time (unless, which assumes what Mr Pitchers seeks to prove, she was alive to the point because she had been unscrupulous in the way she created her second report). It would therefore not be surprising if her off the cuff recollection were wrong. The letter of instruction of 13 July 2018 was not drawn to her attention. Despite what she said in the witness box, it seems to me inherently likely that, when she prepared the second report, she would have had that letter in mind.

334 I accept Dr Crawford's evidence that the removal was accidental. It was not put to her that it was deliberate, and any such suggestion would be implausible because she mentioned the relevant information later in the same report.

335 Mr Pitchers submitted that Dr Crawford had also revised her report in the Defendant's favour, as regards headaches. That complaint has several aspects. Dr Crawford had added five paragraphs to discuss more fully the symptoms regarded by Dr Allder as indicative of TBI. Mr Pitchers highlighted that the added material included the comment that Mr Ivory *"complained of headaches for the first few weeks after the accident"* whereas in an earlier part of the report Dr Crawford had noted that there were headaches *"since the accident"*. I understand however that the former phrase was backed up by her original handwritten notes, which were produced at court after she gave evidence, so I do not see any force in that complaint. Mr Pitchers also objected to Dr Crawford's mention of a *"long history of migraine noted from 1999"*. I accept the word "long" is arguably inappropriate when the history of migraine dates back a long time but is otherwise limited, but I consider that a minor point and not indicative of bias. The other points raised about the wording of her report were not, it seemed to me, any more significant.

336 As a matter of general impression, and while recognizing that all four experts had an arduous task in trying to convey a technical subject to a lay audience, I would say Dr Crawford was the clearer

and more consistent of the two neurologists. The only inconsistency I noted was that her assessment of Mr Ivory in January 2018 seems out of line with her general view of his decline, but as the overall picture of that decline is clear I do not think much turns on that.

337 It seemed to me that there were shifts in Dr Allder's opinions for reasons that were not always wholly clear to me. In particular (i) he only corrected a statement in his first report about the likelihood of there having been a brain injury from "possible" to "probable" during the hearing (see paragraph 204), (ii) he issued a joint statement which said his view was that Mr Ivory had sustained a mild acute traumatic brain injury (see paragraph 3.2.2 of that statement) but gave evidence that it was moderate to severe, and (iii) his 2016 reference to a fourfold increase in risk was changed in a 2019 report to a doubling of risk.

338 As to the psychiatrists, I accept that Dr Series was willing to express views on matters lying outside his specialist area. It seems to me however that classification of TBI is a matter on which he could properly have a professional opinion, even if one which should not normally be accorded as much weight as the opinion of a neurologist. I was impressed by his clarity of expression and reasoning: as I will explain below, I consider that his criticisms of Professor Elliott's argument from general probability were justified.

The background risk

339 In considering how likely it is that the accident caused or triggered Mr Ivory's dementia, it is necessary to consider the background risk that he faced.

340 Mr Ivory was formally diagnosed with dementia in 2018, when he was 86 or 87 years old. In May 2014 the background risk of that outcome was at least 10.5% (if one interprets the neurologists' joint statement to produce the lowest figure possible). The evidence of Dr Series and Dr Crawford put his risk of developing dementia by his 85th birthday at 20% if not more. The figures were not explored sufficiently for me to say precisely what the risk level was. Even if I take 10.5%, the background risk that Mr Ivory would succumb to dementia was so high that it cannot be regarded as unusual or surprising that he did.

The deterioration/decline

341 Dr Allder relied quite significantly on their understanding that there was an abrupt and otherwise inexplicable step change in Mr Ivory's cognitive ability in about July 2014. That does not accord with my findings. I accept there was a sudden drop in confidence, but not cognition.

342 Dr Series and Dr Crawford considered there was nothing unusual about the progression of Mr Ivory's dementia from 2014 to 2018. The psychiatrists agreed about overall timescales for the development of the disease, and the substantial variability between different patients. Given that, on my findings, there was a problem with Mr Ivory's memory for 18 months or so before the

accident, I accept that the progression was not unusual. It may be that his decline was more rapid than average, and no doubt it was more shocking for his family because of the active man he used to be, but if timescales are variable it is inevitable that some people will be at the faster end of the spectrum. That they are does not show that there must have been some other cause for their decline.

343 I prefer that view to Dr Allder's opinion that Mr Ivory's decline was unusually rapid. The implied starting point of his reasoning seems to be that Mr Ivory only began to satisfy the Reisberg Stage 3 criteria in November 2013, whereas I have concluded that noticeable problems had arisen a year before that. It is not clear to me why Dr Allder used November 2013 as his starting point when the GP first noted a concern about memory in February 2013. The next stage in Dr Allder's reasoning is that Mr Ivory would normally have remained at Stage 3 for seven years before deteriorating further, but that, it seems to me, is to put too much weight on a figure which can only be a median or mean of a wide spread of data.

Traumatic brain injury

344 It is uncontested that Mr Ivory's fall on to a hard surface was capable of causing brain injury. It is not claimed that it inevitably would have done. There is no direct evidence of long lasting damage to the brain caused by the accident. There is not, for example, any scan which shows that damage. On my findings there was no loss of consciousness, and no amnesia.

345 The Claimant's case is that damage can be inferred from the constellation of symptoms identified by Dr Allder. The list he drew up in his first report did not distinguish between those symptoms which arose at or very soon after the fall, and those which occurred later and which may be attributable to the subdural haematoma rather than the immediate consequences of the accident. It included matters of which Mr Ivory had demonstrably complained to his GP before the accident, and/or which were plainly capable of arising from many different causes. Mr Ivory saw his GP several times in the two months after the accident but did not mention any accident related problems other than his grazes and cuts. It did not seem to me that there was any clear answer to Dr Crawford's comment that the listed symptoms tended to be peripheral features of a TBI whereas the "classical" features were absent. After the accident Mr Ivory was shaken and took to his bed, but there is no indication in the evidence that he was confused or otherwise suffered a sudden cognitive deterioration.

346 I do not think it possible to say that the SDH which arose is itself indicative of brain injury, as the haematoma did not occupy a space within the brain. Whether the SDH itself nevertheless caused damage to the brain I will consider below.

347 Another approach to this issue is to consider the criteria for classifying traumatic brain injuries. As Mr Pitchers submitted, that classification will not determine the substantive issues in the case. However, when I come to examine the literature about the link between TBI and dementia, it is relevant to know in which category of TBI the researchers would have placed Mr Ivory.

348 There are several different diagnostic definitions of mild TBI. One which received some attention, and was used in the Gardner paper, was that of the Centers for Disease Control and Prevention ("CDC"). Would Mr Ivory have met the criteria for 'mild', or the (most serious available) category of 'moderate to severe' TBI under that system? The CDC criteria do not seem to be set out in full anywhere in the bundle, but I was referred to a summary of them in an article by Kaufman[19], and Dr Series gave his own summary in his report. According to Kaufman, the CDC definition for a mild TBI is met if any one of five factors is present. The factor most likely to be satisfied in this case is that of "*observed, or self-reported, transient confusion, disorientation, or impaired consciousness*". Dr Series' summary described what seems to be the same factor in different terms: "*observed or self-reported decreased level of consciousness*".

349 According to Kaufman, it is a further requirement of the CDC definition that three other factors are all absent (presumably because they would put the injury in the more serious category): (i) observed or self-reported loss of consciousness of 30 minutes or longer (ii) post traumatic amnesia of 24 hours or more and (iii) a penetrating craniocerebral injury.

350 It seems to me likely, given the description by two sources that Mr Ivory was dazed, that he would be regarded for the purposes of the CDC criteria as having had transient confusion, disorientation or impaired consciousness, and thus that he did satisfy that test for mTBI. However, it also appears to me Mr Maclean is right to submit that he would have only done so by a fairly small margin. The scope of mTBI extends to patients who were unconscious for up to half an hour, or who had amnesia of up to 24 hours, whereas Mr Ivory had no loss of consciousness or amnesia at all.

351 It seems to me, having read the other definitions of mTBI summarised by Dr Series in his report and by Mr Pitchers in his submissions, the position would be similar under them: Mr Ivory would not have met the more sharply defined criteria, such as loss of consciousness, but would probably just about have fallen within the definition of mTBI on the basis that, being dazed, he could properly be regarded as confused, disoriented, or experiencing an altered mental state.

352 Dr Allder's view that Mr Ivory had a moderate to severe TBI was based on the subsequent discovery of the SDH. Dr Crawford responded (in relation to the Mayo system, but I assume with general application) that the criteria were not intended to be used retrospectively in that way. That comment was not countered, and is consistent with the approach taken by the Gardner paper: the authors would not have taken this SDH into account, as they classified patients with multiple subsequent hospital visits on the basis of their first visit only[20].

---

[19] The summary appears in an article *What Attorneys and Factfinders Need to Know About Mild Traumatic Brain Injuries* Kaufman et al, 2019

[20] See the section "Exposure" in the Gardner paper.

353 This is not an easy dispute to resolve, but it seems to me that because of the two descriptions of him being "dazed" Mr Ivory would probably have just satisfied most criteria for a mild TBI. It was not however the stated view of any expert that an injury at the lowest end of the mild TBI spectrum would necessarily entail any lasting harm to the brain. I am not persuaded that most clinicians would have regarded Mr Ivory as having a moderate to severe TBI.

354 The next feature relied upon by the Claimants is the subdural haematoma. It is common ground that it had significant short term effects on Mr Ivory, including slurred speech and confusion. It is disputed whether it had any long term effect.

355 In Dr Crawford's view the symptoms experienced in July 2014 were the consequence of the mass effect of the SDH, and when the SDH receded the pressure on the brain reduced leaving no long term damage. The contrary position taken by Dr Allder seems to depend in particular on two things: his view that there was a significant step change in cognitive ability at the time the SDH was diagnosed, and his opinion that the scientific literature shows that there are or may be long term adverse effects from subdural haematomas.

356 The first point does not survive my finding above that there was no significant step change in July 2014 or at any other point. The second turns on the discussion of the research material which appears below.

357 The third aspect of the Claimants' case is the argument that Mr Ivory developed post-traumatic epilepsy. Dr Crawford had a specialized interest in this area that Dr Allder did not. It seemed to me both from that background and from the clear detailed evidence she gave about epilepsy that she is particularly knowledgeable about it. To a greater extent than Dr Allder she related her opinions to the processes within the brain which are involved when a seizure takes place. Her distinction between post-traumatic epilepsy and the transient effect of an SDH was clear: the former would be a long term condition; the latter would cease when the SDH was absorbed. She was not shaken in cross examination on that point.

358 Dr Allder's view that Mr Ivory did have post-traumatic epilepsy was based on the time which elapsed between the accident and the seizures. That may mean, as he said in his fourth supplementary report, that he and Dr Crawford were using different definitions of post-traumatic epilepsy. It seems to me more important for this case to consider the nature of the seizures than the terminology, and that it does not effectively counter Dr Crawford's views to focus only on the interval between the diagnosis of the SDH and the last September 2014 seizure.

359 The SDH was certainly present at the end of July 2014, and there was no suggestion that it would not still have been present, albeit probably smaller, in September 2014 when the last of the 2014 seizures occurred. They then ceased until 2017. The only suggested explanations for that were

either that the anti-epileptic drug prescribed to Mr Ivory was effective, or that the SDH was no longer present.

360 Dr Crawford was clear that what she called post-traumatic epilepsy was very difficult to treat, and that the dose of lamotrigine would not have prevented seizures if that had been Mr Ivory's condition. In view of her experience in the area, I find that quite persuasive.

361 There were further seizures in 2017. Dr Allder's opinion that these had a neurological cause depended significantly on his reading of Professor Myerson's report of 30 June 2018. He said in his report of 1 October 2018 that Professor Myerson considered the episode of 18 June 2017 was "*more likely to have had a neurological cause*". It does not seem to me that Professor Myerson did say that. His conclusion (at paragraph 6.3 of his report) was that the episode of 18 June 2017 "*has an unclear cause, and could be due to either the aortic stenosis of an epileptiform 'seizure'*". The more detailed discussion in paragraph 5.13.1 of Professor Myerson's report was to the same effect.

362 There was one episode which Professor Myerson said did have a neurological and not a cardiac cause. To quote from his report (at 5.14 and 5.15)

> "There was... one documentation of several 'absence seizures', where the Claimant appeared unresponsive for a few minutes (but appeared conscious), during the clerking at St Thomas Hospital... These are not noted elsewhere... These would have a neurological, but not a cardiac, cause and the nature of these is better assessed by a neurological expert."
>
> "In my view, many different events in 2017 were labelled as 'seizures' and only one event (on 18 June 2017) had any features of a loss of consciousness that was potentially due to a neurological cause. Even for that event, my view is that it is difficult to be confident about a cardiac versus a neurological cause. The 'absence seizures' noted above... would likely have a neurological cause."

363 That lends some support to Dr Allder's view. On the other hand, Dr Crawford said she had taken a detailed history of the 2017 seizures which inclined her to think they were not neurological. It was not explored how far she was able to obtain details of the apparently one off 'absence seizures': they were not much discussed in evidence. The lack of any further seizures after the TAVI (cardiac) operation leads me to accept on a balance of probabilities that the 18 June 2017 episode was not related to the SDH. The absence seizures at St Thomas Hospital were not sufficiently explored in evidence for me to base any conclusion on them: for Professor Myerson to say that they were neurological does not without more show that they were a result of the SDH.

364 Dr Crawford was clear that the type of seizure experienced in 2014 would have left Mr Ivory with a slightly raised likelihood of further seizures, but she said they would not have caused any other damage to the brain. She was not effectively contradicted on that point.

365 I am not persuaded on a balance of probabilities that the seizures suffered by Mr Ivory were either indicative or causative of brain damage, save in the limited sense mentioned in the previous paragraph, or that any of the seizures experienced after September 2014 were a result of the accident. Further, I do not see any basis in the expert evidence for saying that the seizures are likely to have caused or accelerated dementia.

366 There remains for me to consider Professor Elliott's position that it was at the time of the accident unlikely that Mr Ivory was going to develop dementia, and that therefore if Mr Ivory suffered any kind of TBI that was probably the cause of the condition.

367 In my view, Dr Series was right to reject Professor Elliott's analysis of probability, which essentially rests on asking the wrong question. The issue for the court is whether the accident of 14 May 2014 caused or contributed to Mr Ivory's dementia. The fact that Mr Ivory did develop dementia is an undisputed starting point. In assessing what caused the dementia, it is necessary to consider how likely it is that the pre-accident history of memory problems was a symptom of an underlying progressive condition which eventually developed into dementia. The appropriate question is not 'of those who have mild cognitive symptoms, how many develop dementia?' but, as Dr Series said, 'of those who have dementia, what proportion start with mild cognitive symptoms?' If, as is undisputed, the answer is that a high proportion do, then it is likely that in many cases the MCI was a first sign of a developing problem. That is the context in which the Claimants have to show that the dementia in this case was brought about by the accident and not by a progressive condition which was already under way. The fact that most people with MCI do not develop dementia is irrelevant to the enquiry. The proportion of people who buy a lottery ticket and win the prize is tiny, but that does not make it unlikely that a win was caused by buying a ticket.

368 I move on to discuss the scientific literature.

369 Three of the papers dealt with whether there is an association between mild TBI and subsequent dementia. The first of these, Crane, was a large study which found no association.

370 The second, Redelmeier, was a comparison of dementia rates among two groups of elderly patients who had been diagnosed with "concussion": those who took statins, and those who did not. As highlighted by Dr Allder, the paper did comment on the higher rate of dementia in both groups than in the population as a whole. He described it as a *"further large study looking at the relationship of concussion – the mildest form of mTBI – and dementia in an elderly cohort."* But the paper did not attempt to account for factors which might make patients more prone to both head injuries and the development of dementia: its focus was entirely on the effect of statins.

371 Mr Maclean pointed to a discussion of the Redelmeier article in the same journal[21]which commented *"this study cannot infer causality"*. I read that comment as referring to the possible effect of statins rather than the effect of TBI, but note that earlier in the same article the author commented that the effect of statins was worth considering *"**if** a concussion does increase the risk of dementia"* (my emphasis). It does not seem to me that Redelemeier significantly assists the Claimants.

372 That leaves the paper by Gardner, which comes closer to supporting the Claimants' case. It is a large scale study, and I accept that Mr Ivory would probably have come within its definition of mild TBI. However, I have several reservations about how helpful Gardner is to the Claimants.

374 First, the mild TBI group in Gardner encompassed patients who had suffered much more obvious immediate harm than Mr Ivory did, as Dr Allder accepted in cross examination. It seems likely to follow that for anyone in the lowest portion of that group, the hazard ratio applying to the group as a whole will be overstated. Second, Gardner is one of the studies found by the Hicks meta-analysis to have had an insufficiently rigorous approach. Third, the TBI group contained a greater proportion of people with other known risk factors for dementia than did the control group.

375 Fourth, Gardner deals with association rather than causation: that was a general concern about the literature expressed by Hill J in *Mathieu v Hinds* [2022] EWHC 924 at [338].

376 Fifth, if I were to take Gardner as showing causation and not just association, there is still a question of how far that helps to prove on a balance of probabilities that Mr Ivory's head injury caused his dementia. On my understanding of hazard ratios, the HR figure of 1.21 which I noted at paragraph 304 means that for someone aged 75-84 mTBI increases the risk of dementia by about 21% - say 25% for ease of discussion. If someone in that age group suffered an mTBI and then developed dementia, and in the absence of any other evidence about causation, one could argue from Gardner that there is a one in five (25/125) chance that the mTBI caused it – but that would leave a four in five chance that it did not.

377 The three papers discussed which considered subdural haematomas were Rauhala, Bin Zahid, and Sufaro.

378 Rauhala does not seem to me to support the idea that a chronic subdural haematoma is associated with a higher risk of dementia. The study considered mortality from all causes. As Dr Crawford said, the study did not show excess mortality in patients who had suffered a chronic SDH but did not have any comorbidity: that result was clearly stated in the summary on the first page of the paper. No reason was suggested why, if the SDH increased the dementia rate, that was not

[21] *Concussions and Dementia – Are Statins the Salve in the Wound?* Whitmer (2019) JAMA Neurology Vol.76, no.8

reflected in the mortality rate where no comorbidities were present. Mr Maclean also pointed out that, while Rauhala found dementia to be a more common cause of death in the cSDH group when compared with the control group, the difference varied between men and women, and was described in the paper as significant for women but not for men.

379 Bin Zahid was a study involving a very small number of military veterans. I accept Dr Crawford's points that it did not provide enough information about the patients studied (who appear to have had an unusual medical history pre-TBI) to be very informative. It dealt with a possible link between SDH and atrophy, not SDH and dementia, and even as to that the authors commented *"we do not know whether the atrophy seen after cSDH has clinical significance."* The numbers in the study were so small that any conclusions drawn from it could only be very tentative, including as to the theory of a neurotoxic cascade as a mechanism for causing dementia. Further, while I accept Mr Pitchers' submission that the paper suggests cSDH might cause organic brain changes of some sort, it is another matter whether they would be changes which are causative of dementia.

380 Sufaro does not have any close bearing on this case. It concerns acute SDHs, and does not consider dementia at all. It examines patient outcomes by reference to the Rankin scale, which is a general measure of disability.

381 The paper by Won et al on epilepsy does not really advance the Claimant's case. It indicates that seizures are not uncommon following a chronic SDH, but does not comment on any connection there may be between those seizures and dementia.

382 Dr Allder suggested that Edlmann lent some support to the suggestion that a subdural haematoma may cause brain damage by way of inflammation. It seems to me however that the paper deals solely with the chronic SDH and its development: while it states that the process involves inflammation, I cannot see that it suggests that this inflammation occurs within the brain. That seems to be as far as the cited papers take the discussion of what the causative mechanism could be. I accept that there must be areas of medicine where the mechanism of causation is unknown to science but research shows that causation is taking place; nevertheless, it does not help to show a causative link when (as it seems to me here) there is no scientific consensus about what the mechanism would be.

383 The specific research papers relied upon do not persuade me there is an established scientific basis for saying a single TBI of the type suffered by Mr Ivory, whether alone or in combination with a chronic subdural haematoma and the seizures of the type he suffered in 2014, is likely to cause or accelerate dementia.

384 Of the meta analyses, the Hicks study suggests that a wider survey of the literature would point to the same conclusion. Plasman was the only paper endorsed by Hicks, but it dealt with military

veterans (who were more likely to have had multiple TBI), it considered only patients with loss of consciousness or amnesia, and it found no increased risk was found for those with mild TBI.

385 The meta analysis by Shiveley was relied upon by Dr Allder. It was not suggested that Dr Crawford's summary in her report was inaccurate: according to that summary, Shiveley only dealt with TBI in early or mid life. It was a smaller exercise than Hicks, and appears of less relevance.

386 In summary, my view of the dementia claim is this. Prior to the accident Mr Ivory had a significant background risk of developing dementia. He had other medical conditions which increased the normal background risk. In addition to that, his memory had noticeably deteriorated. Those two factors make it sadly unsurprising that he did develop dementia. The manner and rate at which he did so were not unusual, and did not give grounds for believing that this was something other than a case of degenerative dementia. I am not persuaded that in May 2014 Mr Ivory suffered anything more than (at most) an injury at the least serious end of the spectrum of cases diagnosable as a mild TBI. The current state of research does not establish that either a single mild TBI or a chronic subdural haematoma is likely to cause or accelerate dementia. The additional feature relied upon by the Claimants – post traumatic epilepsy – has not been established on a balance of probabilities to be associated with, still less causative of, dementia.

387 Applying the balance of probabilities test, I am not satisfied that the accident of 14 May 2014 caused Mr Ivory to develop dementia, or that it accelerated the development of dementia.

8 THE AWARD OF DAMAGES

388 Mr Ivory suffered cuts to his cheek and his knee when he fell. He was at the hospital until very late on the night of the accident, and had to see his GP twice to have his wounds dressed: they seem to have healed within a few weeks. He suffered from headaches for six months or so (as to which I rely on the evidence of Dr Crawford). For a time he lost his sense of smell and taste. It is not clear for how long that persisted: the best estimate I can make is that it arose in June and continued until about September. He developed a subdural haematoma, and as a result experienced seizures on 10 July, 29 July, 17 September and 19 September 2014. These seem all to have been fairly brief but must have been disturbing and frightening. The first occasion caused pins and needles in one arm and left him briefly confused and unable to form his words clearly. He was prescribed lamotrigine which he continued to take for several years: whether or not that was beneficial, he was following medical advice. I have not been referred to any evidence that the lamotrigine caused any unpleasant side effects. He managed to go on a planned foreign holiday in the autumn of 2014.

389 Mr Maclean has submitted that Mr Ivory continued to drive until 14 March 2015. I am satisfied on a balance of probabilities that he did not drive after the accident. Although there is no witness statement which says that in terms, the evidence was that he kept to his bed initially and then only ventured out cautiously. In July he was admitted to hospital with the SDH. It is inherently likely that he was advised at that point not to drive. In November 2014 Dr Busch noted that he had asked if he could go back to driving, which implies that he had not been driving since the seizures. Dr Busch

advised him not to drive, and I think it very likely Mr Ivory followed that advice. That general picture is confirmed by Tim Ivory's statement that his father always needed a lift to Masonic meetings. I find that the accident prevented Mr Ivory from driving until 14 March 2015, at which point he was forbidden to drive by the DVLA for the unrelated reason that his eyesight was no longer good enough. Given the evidence about his use of a car before the accident to attend meetings, to go on trips with his wife, and to help others, this restriction would have been a considerable loss of amenity.

390 Mr Pitchers submitted that the claim fits within Chapter 3(A)(d) of the Judicial College guidelines, and that the seizures should be taken into account as an aggravating factor. The range suggested by the Judicial College for that category is £15,320 to £43,060. Mr Pitchers suggested an award of general damages for pain suffering and loss of amenity should be assessed at £45,000. Mr Maclean submitted that the relevant bracket is Chapter 3(a)(e), where the recommended range is £2,210 to £12,770, and that £7,500 would be appropriate for general damages.

391 Neither party cited any authority on general damages, save that Mr Maclean provided a Kemp & Kemp note of an out of court settlement (*Condon v Sainsbury's Supermarkets)* which I do not think provides useful guidance.

392 I will not lengthen this judgment still further by setting out Chapter 3(A)(d) and (e), which I have carefully considered. I also note the separate section 3(B)(c) for "other epileptic conditions". Bracket 3(A)(d) gives a very wide span of damages, and it is difficult to be sure of its ambit. I take the statement that "there may still be persisting problems such as poor concentration and memory or disinhibition of mood" to suggest at least that most cases falling with that bracket will have involved something of that general nature, whether or not it is continuing. That suggests that I should look instead to 3(A)(e), where the first line "brain damage, if any, will have been minimal" matches my findings. Mr Maclean has pointed out that even within 3(A)(e) "cases resolving within about two to three years are likely to fall within the mid to lower range of the bracket". On the other hand, 3(B)(c) suggests that there should be an award of at least £10,640 and possibly very much more in cases where there are "one or two discrete epileptic episodes", and 3(A)(d) states that "at the top of this bracket there may be a small risk of epilepsy."

393 I have reflected on how unpleasant the effects of the accident were for Mr Ivory, and I have considered how any award I might make compares with the Judicial College guideline figures both for the categories I have discussed and for other types of injury. Having done so, I assess general damages at £16,000. It seems to me that the seizures push the case above the maximum for 3(A)(e) but that the lack of short term problems of the type commonly experienced by those in 3(A)(d), and the absence of any long term effect, mean I should not go much above the bottom of that bracket.

394 A claim is made for special damages. Mr Pitchers submitted that if the dementia aspect of the claim did not succeed, the court should award just over £13,000. Of that sum, £12,817.03 is proposed in respect of gratuitous care, being 80% of the pleaded claim for that item for the period from 14 May 2014 to 31 March 2016. That calculation does not allow for the 25% discount required

to reflect gratuitous provision of services. The pleaded claim was based on an estimated 17.5 hours per week, which itself comprised 14 hours per week in respect of the services Mr Ivory would have provided domestically, and 3.5 hours per week in respect of the ad hoc personal care assistance and support which was provided to Mr Ivory.

395 The Defendant's counter schedule asserts that Mr Ivory was in such poor general health that he could not have provided domestic services for the hours claimed, and proposes a figure of £155.25 (one hour per day for the first month after the accident at £6.90 per hour, discounted by 25%).

396 I do not see any basis for an award in respect of gratuitous services for 80% of the 22 month period to 31 March 2016, but nor do I see why care and assistance would have been limited to the month after the accident. The overall evidence about Mr Ivory's pre-accident activity persuades me that he was making a real contribution to domestic life, albeit that it is difficult to know how many hours work were involved. He suffered ill effects from the accident which varied in nature and severity but lasted for about six months. At its worst (for the few weeks after the accident, and for short periods after a seizure) it is likely that he was unable to do anything at all around the home, and that family members had to spend time assisting him. At other times within that overall period, he is unlikely to have needed much if any help, but his domestic contribution was probably somewhat reduced.

397 Taking a necessarily broad brush approach, I award for this item £6.90 x 0.75 x 120 hours = £621.

398 Mr Pitchers' other requested awards are gardening costs to the end of 2015 at £120, and travel expenses at an estimated £100. Although Mr Ivory was already paying for gardening services, I accept that in the six months after the accident he was likely to need more help. The Updated Schedule of Loss only identifies £37.50 spent in 2014, and I award that amount for gardening. The suggested figure of £100 for travel seems to me a reasonable approximation for the appropriate period, having regard to section 4 of the Updated Schedule of Loss: I award £100.

399 The total award is therefore £16,000 general damages and £758.50 special damages. The total is £16,758.50.

HHJ Parker

4 April 2023