STATE CORONER'S COURT
of NEW SOUTH WALES

Inquest:	**Inquest into the death of BRENDAN BURNS**
Hearing dates:	8-11 October 2013
Date of findings:	9 May 2014
Place of findings:	State Coroner's Court, Glebe
Coroner:	Deputy State Coroner H.C.B. Dillon
File number:	260/09
Keywords	**CORONIAL LAW** – Cause and manner of death – Hospital death – Misdiagnosis of seriously-ill patient in emergency department – Failure to identify patient as critically ill – Flaws in clinical decision-making -- Systems shortcomings – Need for improved systems and training of regional surgeons
Representation:	Mr A Casselden (Counsel Assisting) instructed by Ms B Thomson (Crown Solicitor's Office) Mr M Cranitch SC with Mr B Bradley instructed by Perrots Solicitors and Beilby Poulden Costello representing the family of Mr Burns Mr R Sergi instructed by Norton Rose Fulbright representing Dr Ratnam Ms K Burke instructed by TressCox representing Dr Naim Mr A Quinlivan instructed by Avant Law

representing Drs Hall and Wark

Mr G Gemmell instructed by Curwoods representing Murrumbidgee Local Health District and Dr Hamzeh

Findings:

I find that Brendan Burns died on 27 January 2009 at the St Vincent's Hospital, Darlinghurst, New South Wales of acute hydrocephalus due to an undiagnosed colloid cyst of the third ventricle of the brain.

Recommendations:

I recommend to the Minister for Health, the Royal Australasian College of Surgeons and the Neurosurgical Society of Australasia that they consider implementing a scheme for organising regular short-form neurosurgical skills training for general surgeons operating in NSW regional centres.

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REASONS FOR DECISION

Introduction

1. Brendan Burns died on 27 January 2009 at St Vincent's Hospital in Sydney. He had been transported to St Vincent's Hospital the day before from his home in Hay in south-western New South Wales having suffered catastrophic brain herniation caused by acute hydrocephalus due a colloid cyst of the third ventricle of his brain.

2. By the time Brendan was transferred to Sydney on 26 January he was effectively beyond recovery due to brain death and life support measures were withdrawn the following day.

3. He had been suffering headaches for some weeks. He attended Hay Hospital on 25 January and was transferred to Griffith Hospital for the specific purpose of having a CT brain scan.

4. The attending doctor at Griffith Hospital decided not to conduct the scan. It seems that he was misdiagnosed as suffering from alcohol withdrawal and his headaches were attributed to that. On 26 January 2009, Mr Burns was re-admitted to Hay Hospital in critical condition. He was subsequently transferred to St Vincent's Hospital for emergency neurosurgery but died on 27 January.

5. There are some cases where the first occurrence of an obstruction is not resolved and the patient may die very rapidly. That was not, however, the case with Brendan who endured what one expert described as a "crescendo effect."

6. Sudden and unexpected deaths, or deaths from unknown causes, or the deaths of particularly vulnerable members of our society, are investigated by coroners. Coronial investigations signify that this is a society that in principle and at law respects human life and values the lives of each individual person, young or old, rich or poor, sick or well, without distinction.

7. There are a number of reasons for doing so: to identify the causes of deaths and how they came about; to address the concerns of relatives and friends about those deaths; and to learn such lessons as these deaths may be able to teach us so that we can reduce the risk for others in future.

Brendan Burns

8. Before proceeding to the medical issues, it is important to recognize that at the centre of this inquest is a young man, aged only 24 years when he died, who left behind him friends and family who loved him very much and who continue to mourn him and miss him.

9. Brendan was 24 years old, a partner to Liz Newman and father to their daughter Nadia. He was the son of Wayne Burns and Noelene Burns-Gee.

10. The relationship between Brendan and Ms Newman was not always easy. Brendan had a drinking problem that led to difficulties between them. But their

fundamental relationship was loving and optimistic. Brendan was a good father and wanted to be a better father for his child. He had sought help for his drinking and, indeed, about two weeks before his death he had stopped drinking all together and was undertaking therapy.

11. Anyone who knows anything about addiction understands that it is a difficult physiological as well as psychological condition to overcome and that it takes time and a great deal of effort on a daily basis. Those who struggle conscientiously against their demons as Brendan did are deserving of respect and support rather than the contempt that is so often their lot.

Coroner's functions

12. A coroner investigates sudden and unexpected deaths to establish, if possible, the identity of the deceased person, the date and place of the person's death; and the manner and cause of the person's death.

13. There is no controversy in this case as to identity, date or place of death.

14. The real issues in this inquest related to the manner or circumstances of Brendan's death: we have focussed on how and why he died in the way he did.

15. A secondary but equally important coronial function is to make any recommendations considered necessary or desirable in relation to any matter connected with this death.

The nature of an inquest

16. An inquest is an inquiry, not a contest. There are no "parties", as such, in these proceedings, with rights and interests to be adjudicated upon after they present their respective cases. Nor is it the function of this inquest to apportion blame. Nobody is on trial in these proceedings.

17. The role of Counsel Assisting is to remain impartial, and focussed on the relevant evidence. Neither the coroner nor Counsel Assisting seek to prove a case theory – they follow the evidence where it leads. This process is designed to assist the coroner to uncover the factors that contributed to Brendan's death and to learn anything that might prevent such a tragic outcome in the future.

The issues

18. Brendan's death raises a number of issues:

- Whether at any point prior to Brendan's death, any of the doctors who saw Brendan Burns should have ordered or arranged a brain CT scan to have been carried out?

- Were sufficient investigations / examinations carried out by the doctors who saw Brendan Burns – consistent with an approach of "diagnosis by exclusion" – and should further investigation and specialist consultation have been considered by any of those doctors on any of the occasions they saw Brendan?

- When – or during what period of time – did irreversible brain herniation most likely occur?

- Were there any other measures that might have been taken to delay brain herniation?

- If it had been recognised that Brendan was suffering from raised intracranial pressure either prior to 25 January 2009 or whilst he was at Griffith Base Hospital on 25 January 2009:

    a. What surgical intervention would have been required to have altered Brendan's prognosis?

    b. Was there sufficient time to transport Brendan to another facility for this Surgery to have altered his prognosis?

19. The fundamental question, however, is why this critically ill young man was not recognised and treated as such by the clinicians at Griffith Base Hospital.

Outline of the events leading to Mr Burns's death

20. In the months prior to his death, Brendan had been suffering from headaches. He regularly complained of those headaches to his friend Ricky Dickson and at Christmas 2008 he complained to his partner Ms Liz Newman of one such headache. He did not drink at Christmas as a result of that headache. Ms Newman described a change in Brendan's behaviour - he was "snappish".

21. Intermittent headaches continued through early January 2009 culminating in a debilitating headache over the weekend of 17 and 18 January 2009. Brendan and Ms Newman's friend Marg Dickson called an ambulance on 18 January and Brendan was taken to Hay Hospital. This was Brendan's first admission to Hay Hospital associated with these symptoms.

22. At Hay Hospital, Brendan was seen by Dr Hamzeh. Brendan complained that he has been suffering from headaches for days, that the headaches came and went and that his vision was blurred. Dr Hamzeh prescribed analgesia and told Brendan to see his GP for further investigations, such as a CT scan, if the headaches persisted.

23. The next day the headaches were persisting. Ms Newman made an appointment with the local GP, Dr Ratnam, at the local medical centre. Dr Ratnam was the only GP at the medical centre that day. During that time, he saw 44 patients including Brendan. He was also the doctor on call at Hay Hospital.

24. When Brendan attended the appointment with Dr Ratnam that afternoon, the notes of the consultation reveal that Brendan again complained of having had headaches for the previous five days in the occipital region (namely the back of his head) associated with dizziness.

25. Dr Ratnam's evidence is that he recommended that Brendan have a CT scan but that Brendan did not wish to travel to Griffith (a round-trip of about 320 kms) for this investigation. Dr Ratnam's notes record a diagnosis of sinusitis and that an X-Ray was ordered. Further analgesia was also prescribed.

26. The following day, 20 January 2009, Brendan attended the local Community Health Centre where he was seeking assistance with alcohol counselling. The Drug and Alcohol counsellor who saw Brendan that day noted that Brendan was disoriented and unwell. She recommended that he return to his GP or seek better medication from the chemist.

27. Two days later, on 22 January 2009, Brendan attended Hay Hospital for the purpose of having the x-ray ordered by Dr Ratnam. Clinical notes from that presentation record that Brendan had been taking panadol every four hours with an extra one in between. Again Brendan was advised to return if the pain persisted. The x-ray was insufficiently sharp or discriminating to reveal the colloid cyst.

28. Brendan was continuing to experience severe pain from headaches plus associated symptoms. On Saturday 25th January, Brendan's and Ms Newman's friends Marg and Ricky Dickson were again visiting. Brendan appeared to them to be in great pain at this time. Mr Dickson observed Brendan looking scared. Brendan told Mr Dickson that he could not see. Ms Dickson saw Brendan as lying on the couch with a cold pack around his neck crying from the pain.

29. An ambulance was called. Paramedic Robert Marmont performed neurological examinations and recorded that Brendan could not see, could not touch his nose with his finger and did not react to a hand passing in front of his eyes.

30. Brendan was received at Hay Hospital at 5:10pm on the evening of the 25th and seen by Dr Hamzeh again. Brendan appeared disoriented, was still having headaches and appeared to have deteriorated since Dr Hamzeh last saw him. He was so uncommunicative that Dr Hamzeh had to take a history from Ms Newman and Mr Marmont. As a result of his observations and the history, he became concerned that Brendan might have a brain tumour.

31. Hay Hospital does not have the CT scan facilities required to investigate brain lesions or trauma. Dr Hamzeh therefore telephoned doctors at Griffith Base Hospital, including a surgeon on duty, Dr Krishna, a locum in the emergency department, Dr Hall, and another emergency physician, Dr Wark.

32. Dr Hamzeh's evidence is that he communicated to these doctors that he was concerned Brendan had a space-occupying lesion – i.e. a brain tumour -- and referred Brendan to Griffith Base Hospital for an urgent CT scan. The terms of the conversations Dr Hamzeh had with the Griffith Hospital clinicians are disputed and I will return to this. What is indisputable, however, is that Dr Hamzeh referred Brendan to Griffith Base Hospital late in the afternoon on a weekend for the purpose of a head scan because he was familiar with the patient and thought Brendan's headaches were potentially very serious.

33. Dr Hamzeh's referral letter stated that Brendan had not been co-operative in relating the history. He recorded the history he had taken from Ms Newman and Mr Marmont, namely more than one week history of headaches, nausea, blurred vision and dizziness. He also noted that there was no significant past medical or psychiatric history and that, although there was a history of alcohol misuse, Brendan he was undergoing drug and alcohol counselling and had not had a drink in past two weeks.

34. Mr Marmont then transported Brendan by ambulance to Griffith Base Hospital where he was immediately triaged by Registered Nurse Deborah Chlebowski and seen shortly thereafter by Dr Hall in the emergency department.

35. Dr Hall's provisional assessment was that Brendan was suffering from alcohol withdrawal. He discussed Brendan's case with Dr Wark, the emergency consultant.

36. At about 10:30pm, Dr Wark saw Brendan. Dr Wark, who had not met Brendan before, gave evidence that Brendan appeared to be alert and was co-operative. He formed the view that there was no need for an urgent CT scan. Dr Wark asserted that he had nevertheless planned to admit Brendan, but that Brendan did not wish to stay in hospital overnight. He therefore asked Nurse Chlebowski to contact Brendan's family to collect Brendan.

37. By the time Ms Newman arrived with Marg Dickson, having travelled some 160km that night in order to collect Brendan, he had been incontinent and was obviously very unwell. Ms Dickson gave evidence that she had had to stand behind the wheelchair to hold Brendan and stop him from falling forward. Brendan had to be physically carried to the car and he was unconscious for much of the journey home to Hay.

38. Brendan suffered a catastrophic brain herniation early on the morning of 26 January 2009. The evidence of Ms Newman is that it was after 6am in the morning that Brendan made an horrific noise and appeared to have a seizure. An ambulance was called at 6:30am and was on scene by 6:40am, however, Brendan was non-responsive by this time.

39. He was flown to Sydney for emergency treatment but it is evident that by that time irreparable damage had been done.

Should a CT brain scan have been ordered?

40. The short answer to this question is that a CT brain scan should have been ordered. In my view, this is not only obvious with the benefit of hindsight – we now know that Brendan was suffering the effects of a colloid cyst when seen by each of the doctors. If sufficient attention had been paid to his history, and to the concerns of Dr Hamzeh, it is inconceivable that not only would Brendan have been refused a CT scan but that he would have been sent home from Griffith Base Hospital in the way he was.

41. In a report tendered in evidence, Dr John Vinen, a consultant emergency physician suggested that opportunities were lost at Hay Hospital on 18 January, at the medical centre on 19 January, and again at Hay Hospital on 22 January when Brendan was seen by doctors. In his view, the signs of possible intracranial pressure ought to have led to investigations by Drs Hamzeh and Ratnam to exclude life-threatening conditions.

42. On 18 January, when Brendan first presented at Hay Hospital, Dr Hamzeh examined him, took a history and prescribed analgaesia. He also directed him to see his GP if the headache persisted.

43. There was no CT scan available at Hay Hospital. Headaches are common presentations and do not usually herald a major neurological event. The nearest CT scanner was 160 kms away. Brendan was a young man and Dr Hamzeh was reluctant to expose him to such a significant dosage of radiation without more evidence that it was needed. Quite reasonably, in my view, Dr Hamzeh was reluctant to order a CT scan in these circumstances.

44. On 19 January, Dr Ratnam examined Brendan at the medical centre. This examination included a fundal examination of the pupils of the eyes. He did not see signs of papilloedema (swelling of the optical disc) which would have indicated raised intracranial pressure. Although Brendan's headache was in the occipital region (the back of the head) Dr Ratnam diagnosed possible sinusitis and prescribed further analgaesia. He gave evidence that he had suggested a CT scan to Brendan who had refused. He also ordered an x-ray for Brendan. This was able to be done at Hay Hospital.

45. On 22 January, when Brendan presented for the x-ray at Hay Hospital it seems another opportunity to investigate his headache was passed over. The headache was not resolving with analgaesia, it remained severe and persistent and there was no indication of sinusitis on the x-ray. In Dr Vinen's view, this should have led to consideration of other diagnoses and investigations. Nevertheless, at this stage the signs and symptoms were still ambiguous and it seems that the clinicians took a "wait-and-see" approach, simply prescribing more analgaesia.

46. By 25 January, however, it had become obvious to Dr Hamzeh that further investigations were needed. He saw that Brendan had significantly deteriorated in the week since he had first seen him for the headache. The headache was cripplingly severe. Brendan was so disoriented that he could not give a history. He was dizzy and hyperventilating.

47. Dr Hamzeh's evidence at the hearing was that he had spoken to Dr Wark at Griffith Base Hospital to discuss the case. He said that he had told Dr Wark that he thought that Brendan may have a space-occupying lesion in his brain which was causing the headaches. Dr Wark denied "absolutely" being told by Dr Hamzeh that one of his concerns was the possibility of a space-occupying lesion and he also denied that Dr Hamzeh had requested a CT scan. He also denied being told by Dr Hamzeh that Brendan had presented a week before at Hay Hospital, that analgaesia was not relieving the headaches and that Brendan had presented to his GP between visits to the Hay Hospital that week.

48. Dr Hamzeh's account is that when he spoke to Dr Wark about the case, the discussion had included the fact that Brendan had had a history of alcohol abuse but that he had not drunk for about two weeks. He said that Dr Wark had summed up the discussion by saying, "He's alcoholic, nothing wrong with him… But send him anyway"[1]. This was denied "absolutely" by Dr Wark.

49. In cross-examination by counsel for Dr Wark, Dr Hamzeh explained that he had not recounted Dr Wark's comment in his notes or statement because he had great respect for Dr Wark as a physician and that he had been surprised by such a response. It seems that he had not wished to embarrass Dr Wark and had not

[1] Transcript 08/10/13

known what to do when preparing his statement. He said that he had no conflict with Dr Wark but that he had decided to bring this up at the inquest because he had a duty to disclose any relevant information.

50. In my view, Dr Hamzeh presented as an honest and straightforward witness. This is not to say that Dr Wark is the opposite. Dr Wark received the phone call from Dr Hamzeh while on his rounds at the hospital. He was busy and, no doubt, preoccupied with assessing his patients. My impression is that Dr Hamzeh's recollection of the conversation is better than that of Dr Wark's.

51. This conclusion is not based solely on the respective demeanours of the two doctors. Given the circumstances, Dr Hamzeh would not have sent Brendan all the way by ambulance to Griffith but for the fact that he was concerned about the pathology and thought that it needed investigations that could not be conducted in Hay. The fact that he noted in his referral letter that a CT scan "might be needed" demonstrates this. The expression "might be needed" reflected his respect for consultant physicians who would, naturally, apply their own clinical judgments to the problem. The very fact that Dr Hamzeh called Griffith and spoke first to a surgeon (Dr Krishna) and then to Dr Wark is indicative of his level of concern. Is it likely that he would go to such lengths without explaining in some detail why he was calling and why he wanted to send Brendan to Griffith late on a Saturday afternoon?

52. In my view, the fact alone that a doctor from Hay was sending a patient with significant neurological deficit (disorientation, dizziness, headache, unwillingness to co-operate) a long distance by road ought to have been regarded as a "red flag" by Griffith Base Hospital. When other factors are taken into account – the history, the ambulance patient health care record, the triage nurse's observations that Brendan appeared confused on arrival at the hospital and so unwell that he became incontinent later in the evening, which caused her to ask for him to be reviewed by a doctor (Dr Naim), the fact that Brendan had not drunk alcohol for 10 days to two weeks -- the preponderance of evidence overwhelmingly demonstrates that there was an urgent need for serious brain pathology to be excluded before Brendan was discharged. A CT scan was indicated and the failure to order one was a serious lapse.

53. The burning question, to which I will come, is why was it not ordered?

Could or should Brendan's condition have been identified at Hay?

54. Diagnosis of a patient's pathology from signs and symptoms that could indicate a number of different conditions is by no means easy. In an ideal world, a patient would always be examined so thoroughly that every branch of the possible differential diagnosis would be investigated to exclude the most serious first.

55. In practice, however, this slow, logical process is usually preceded by a much faster process of pattern recognition. That is, when doctors see a patient, the histories they take from their patients as well as the signs they observe and the symptoms the patients report prompt them to apply their accumulated learning and experience to the problem. They look for patterns in these histories and clusters of signs and symptoms that organise these disparate facts into one or more possible diagnoses.

56. On 18 January, although Brendan had suffered such intense headaches that an ambulance was called for him, it seems to me to have been reasonable for Dr Hamzeh to take a 'wait-and-see' approach and to prescribe analgaesia with the advice to seek further medical attention if the pain persisted. Brendan was young and was an unlikely candidate for significant brain pathology given that he had not suffered any trauma to his head. A headache could have indicated a very large number of conditions, most of which were relatively benign and would resolve naturally over a short period. To subject a young man to a long journey to Griffith and expose him to significant quantities of radiation without strong reasons would not be regarded as appropriate by many practitioners in small country hospitals.

57. On 19 January, when Brendan saw Dr Ratnam, the doctor suggested a CT scan. Clearly his index of suspicion was higher than Dr Hamzeh's because of the persistence of the headache and the fact that Brendan had again sought medical attention. How strong his advice to Brendan was is impossible to say now. In any event, Brendan declined to act on it. In hindsight, this was a lost opportunity but given the doctor's huge workload that day, and Brendan's reluctance, it would be unfair to criticise Dr Ratnam.

58. On 22 January, when Brendan was x-rayed at Hay Hospital, it was evident that he was still suffering from severe headaches that were not resolving and not being mitigated very much by analgaesia. It is not clear whether Brendan's condition was investigated or examined at the hospital other than radiologically. It appears not. Presumably, the radiologist sent a report to Dr Ratnam and expected him to follow Brendan up. That would be the usual course of events. Again, with the benefit of hindsight, it appears that an opportunity was lost at this point not so much because anyone did anything wrong but because no one considered Brendan's case at the time.

What went wrong at Griffith Hospital?

59. The ventricles of the brain distribute cerebro-spinal fluid within the brain. The CSF protects the brain from damage by "buffering" the brain. In other words, the CSF acts to cushion a blow to the head and lessen the impact. It also reduces pressure on the brain stem by allowing the brain to float in fluid. CSF remove waste products from the brain and transports hormones to various areas within the brain.

60. A colloid cyst is a benign mass of gelatinous fluid. They are contained wholly within the cerebrospinal fluid and do not invade the brain tissue. They are generally situated at the point where the two lateral ventricles of the brain drain into the third ventricle and until they attain a size sufficient to cause obstruction to the flow of cerebrospinal fluid they cause no symptoms.

61. However, once a colloid cyst has reached that threshold size, they intermittently obstruct the flow of cerebrospinal fluid out of the lateral ventricles. When this occurs a person will suffer severe headaches that will at first spontaneously resolve. Ultimately, however, as the cyst grows, the lateral ventricles enlarge as CSF builds up within them due to the obstruction caused by the cyst. This build-up of CSF is known as hydrocephalus (or, colloquially, "water on the brain"). This causes intracranial pressure to rise rapidly until the brain is eventually deprived of blood supply.

62. The most common presenting sign and symptom of a colloid cyst is an intermittent but very severe headache. Less common presenting signs and symptoms include nausea, vomiting, memory loss, mental status changes, gait disorder, and visual disturbances. [2]

63. Brendan had all of those signs and symptoms except perhaps memory loss (there is no evidence of that). These signs and symptoms did not lead directly to a diagnosis of colloid cyst. This is a rare condition. But the cluster of signs and symptoms indicated a potentially serious neurological condition.

64. This condition is not usually fatal if the pressure is relieved in time. But it must first be correctly diagnosed. A CT brain scan was needed for that purpose. It fell to the clinicians at Griffith Base Hospital to arrange that investigation, to interpret the results and to take remedial action. They failed at the first hurdle. Drs Hall and Wark have not provided satisfactory explanations for this failure.

Dr Hall's role

65. The evidence shows that when Brendan arrived at Griffith Base Hospital, he was triaged and shortly afterwards was examined by Dr Hall who was in charge of the emergency department that evening. His preliminary diagnosis was that Brendan was suffering the effects of alcohol withdrawal.

66. The ambulance crew brought with them an envelope containing the referral letter and other clinical notes from Hay Hospital. They were given to the triage nurse at Griffth Base Hospital. At Griffith the ambulance crew gave the triage nurse an oral handover, explaining why Brendan had been brought in and details of his progress on the trip. As he had been given morphine on the trip, and this had been ineffective, it is likely that this was also explained to the triage nurse. Paramedic Robert Marmont also gave evidence that the question of alcohol withdrawal would have been mentioned during the handover.

67. RN Deborah Chapman, a clinical nurse specialist, who was on duty at Griffith in the emergency department when Brendan was sent recalled having been told to expect a 24 year old male from Hay who had headaches, who was suffering alcohol withdrawal symptoms and that Dr Wark knew about the case. When he arrived she conducted the handover from the ambulance officers and the triage. She also accepted the envelope of notes they had brought. She found Brendan to be "alert but confused". His signs and symptoms were severe headaches, confusion, nausea, blurred vision, hyperventilation, profuse sweating and abdominal pain.

68. She triaged him as a "category 3 patient" (meaning that he did not appear to be suffering an illness that was immediately life-threatening but needed urgent treatment. He was to be seen by a doctor within 30 minutes).

69. Dr Hall's preliminary diagnosis may have arisen from a number of things: the Patient Health Care Record filled in by one of the ambulance officers at Hay Hospital, a conversation he had had with Dr Hamzeh before Brendan was sent, the referral letter from Dr Hamzeh and from an expectation that seems to have arisen at Griffith

[2] Richards J, Ballard N. "Colloid cyst: a case study." *J Neurosci Nurs.* 2008 Apr;40(2):103-5

Base Hospital even before Brendan arrived that this patient was suffering from alcohol withdrawal.

70. The PHCR nominated "alcohol withdrawal" as Brendan's chief complaint. That was incorrect. Brendan never complained of alcohol withdrawal symptoms – his complaint was of severe headaches and other symptoms.

71. Dr Hamzeh's letter of referral made reference to the possibility of alcohol abuse being implicated but did not specify it as the principal issue.

72. Brendan certainly did not relate his symptoms to alcohol withdrawal, possibly because he had stopped drinking about two weeks beforehand but possibly because whatever withdrawal symptoms he had suffered, if any, were not significant. There is no evidence that at the time he stopped drinking he suddenly developed withdrawal symptoms. In any event, while it is possible for alcohol withdrawal to be protracted, most patients are through the worst after about a week. Ms Newman did not associate his symptoms to alcohol withdrawal it seems, and she may have been in the best position to judge this as she knew him and his history better than the clinicians. She emphasised that he had not drunk anything for about two weeks.

73. When examined at the inquest, Dr Hall, who had had lengthy experience in emergency departments and also significant experience in a "drug and alcohol" hospital, was unable to provide a satisfactory explanation for choosing alcohol withdrawal as his preliminary or working diagnosis. He said that there were "many diagnoses he could have had" and that alcohol withdrawal was "one of 27".

74. The alcohol withdrawal hypothesis was undermined when RN Chapman conducted an alcohol withdrawal test which showed Brendan experiencing only "mild" symptoms of alcohol withdrawal. This does not seem to have prompted a re-evaluation of Brendan's true condition by Dr Hall or anyone else in the emergency department.

75. Dr Hall was dismissive of the suggestion that Brendan should have been given a CT brain scan soon after his arrival at Griffith. The following passage from the transcript reveals his approach [3]:

> Q. Did you at that point have any concerns of intracranial pathology?
> A. It's one, one possible cause of his difficulty.
>
> Q. And it's a possible cause that could have been excluded if a CT brain scan had been performed as requested by Dr Hamzeh, do you agree with that?
> 35 A. No, I'm—
>
> Q. How else would you exclude intra-cranial pathology if you--
> A. The, the—
>
> 40 Q. --let me finish please doctor?
> A. Sorry.
>
> Q. How else would you exclude the possibility of intra-cranial pathology in the absence of a CT brain scan and the absence of a fundal examination?
> A. By observing a patient. The issue is who do you do CT scans on? Do you do CT scans on people with GCS's of 13 with a variable conscious state? No

[3] Transcript 10/10/13 pp 8-12

you wouldn't.

Q. Well Dr Hall you know this, that he had presented to the Hay Hospital a week before in the Emergency Department?
A. Hmm.

Q. That he had been complaining of headaches for four days, on and off, that there was blurred vision?
A. Yep.

Q. There was nausea, that there was vomiting?
A. Yep.

Q. That he had on 18 January a pain score on his self assessment of 9 or 10 out of 10. That he had been prescribed analgesics with no relief. Then he presents a week later to Hay Hospital again on 25 January and the doctor present, Dr Hamzeh, is sufficiently concerned that he telephones Griffith Base Hospital, speaks to yourself, writes a referral, is transferred, nine o'clock at night or thereabouts for the sole purpose of having a CT brain scan. My question to you is, why wouldn't you perform that CT brain scan given that history?
A. Well you are jumping to, jumping a few hurdles too early. Point 1, I couldn't order a CT scan if I wanted to in my role. Point 2, the fellow, when I saw him, Mr Burns when I saw him had GCS of 13, he was cooperative, he was not well, the list of possible diagnoses is huge, coming from Hay higher on the list of the cause of headaches and whatever else and his other symptoms would be things like Ross River, Barmah Forest Fever, he needed to be sorted out properly rather than, hey let's do a CT and see what happens.

Q. You accept do you not that prudent practice is to exclude the most serious or life threatening cause first?
A. So do I do a CT scan on everybody who comes in the door with a GCS of 13 who might have a brain tumour, I don't think so.

Q. That is but one factor having regard to a history of persistent headaches over a week that were not responding to pain relief and a doctor in Hay sufficiently concerned that there may be a space occupying lesion?
A. It still comes down to the fact that he needs to be sorted out properly, not any person, not specifically Mr Burns, any patient who presents with these symptoms, needs to be assessed properly and if the first thing you did was a CT scan you would be not assessing him properly.

Q. Again I return to my earlier question, how would you exclude intracranial pathology as a possible cause of Mr Burns' headaches?
A. By referring him to somebody who was more expert than me for a neurological assessment and in the end if they considered it appropriate by doing a CT scan, now CT scans aren't magic.

Q. No, but if there is a lesion present it's more probable than not it would be detected you accept that?
A. Yes, more likely than not.

Q. So in the absence of a CT scan or in the absence of fundoscopy, how else would you exclude intracranial pathology as a possible cause of this gentleman's presentation?
A. By observing him and seeing, seeing what he does by admitting him and observing him and seeing what happens.

Q. Notwithstanding the history of which I've already alluded to?
A. (No verbal reply)

Q. Where he's had two presentations to your knowledge at Hay Hospital, the

third presentation now at Griffith, you still think you'd take a wait and see approach?
A. You take a coherent approach which involves assorted tests to see what happens, that when I saw him at 21:45 it was appropriate to admit him and observe him There was no indication to me to do a CT scan at that time.

Q. And was that because you had simply formed the view that this was nothing more than alcohol withdraw that. symptom?
A. No , no, no, o, no, no, no. That's what I said. Is a list, long list of diagnoses that—

Q. Don't you as I said earlier you seek to exclude the worst or more life threatening first. Basic prudent medical practice is it not?
A. That's basic prudent medical practice is to exclude the worst things in their order. It is more likely, it makes more sense to me to examine the more likely issues.

Q. And on your evidence that was a provisional diagnosis of alcohol withdrawal?
A. As I have said, that is one of, it is a provision query alcohol withdrawal was, was probably top of the list. There would have been 27 other diagnoses 30 before brain tumour.

Q. But you took no steps, no objective steps to exclude brain tumour did you?
A. (No verbal reply)

Q. No CT scan, no fundoscopy?
A. I admitted, I wanted to admit the patient, I referred the patient to a specialist for assessment which was all I could have done at the time.

Q. Did you have any lingering doubts as to your provisional diagnosis of alcohol withdrawal in circumstances where the consistent history throughout the documentation was that this gentleman had not had a drop of alcohol for some ten or fourteen days.
A. As a general principle, if a patient presents and denies alcohol or recreational drug use, you take that with a degree of scepticism. That's the prudent thing to do. If somebody says they haven't had a drink for however long, and you accept that, you are potentially missing some issues.

Q. Well let's assume that to be the case, what about the persistent headaches for a week and the location of the headache, in the occipital region at the back of the head, wouldn't that put you on notice that there may be some intracranial pathology?
A. Are you a headache person? What percentage of headaches are at the back of the neck? Lots and lots and lots of them. If I did a CT scan on everybody who presented with a headache at the back of their neck, I'd be doing headaches, doing CT scans from now till Christmas.

Q. And what about all the associate symptoms in respect of Mr Burns Dr Hall that had been present for over a week?
A. And the examination--

Q. Non responsive to analgesic?
A. Sorry?

Q. A headache that was non-responsive to analgesic, that was located at the back of the head, that was associated with blurred vision, associated with nausea, associated with vomiting, associated with dizziness. Doesn't that clinical picture present to you something more than withdrawal of alcohol symptoms?
A. When I saw him at 21:45 and over the subsequent hour and a quarter, he was co-operative, his GCS was 13, he was alert enough to have a discussion

with Dr Wark about he wants to go home.

Q. Were you present then for that?
A. No….

Q. You saw Mr Burns once, correct?
A. I saw him over an hour and a quarter.
Q. Right, you've conducted one assessment?
A. I saw him as he came through the door, I examined him for probably half an hour, I talked with - I reviewed his blood tests at whatever time they came back, and I reviewed his ECG at whatever time that came back. He was on my mind until my shift finished at 11 o'clock.

Q. I'll come to that in a moment. Were you made aware of the findings in relation to the alcohol withdrawal assessment?
A. Yes.

Q. Do you know when you were made aware of it?
A. No….

Q. The total score of five which puts him on a withdrawal severity scale of less than 5 10 being mild?
A. Yep.

Q. Does that raise any red flags for you given his presentation?
A. My diagnosis of possible alcohol withdrawal was one of many diagnoses he could have had. If I had a list of 27 different diagnoses there it would not have altered my management of him which was to refer him to the physician for his assessment.

Q. Did you do that?
A. Absolutely, I did that.

72. While on the face of it, this exposition suggests that Dr Hall kept an open mind and was hoping further observations would reveal the true nature of Brendan's condition, the reality appears to be that he had formed a view to which he had become anchored. Once formed, this view was difficult to shift.

73. If, as Dr Hall suggested, Ross River fever and Barmah River fever were more likely diagnoses in a patient from Hay than a brain tumour, it can be reasonably assumed that doctors in Hay would have considered them.[4] These types of diseases are not

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[4] People suffering from RRV disease or BFV disease may develop a wide range of symptoms that are common to both diseases. The symptoms vary from person to person but include painful and/or swollen joints, sore muscles, aching tendons, skin rashes, fever, tiredness, headaches and swollen lymph nodes. Less common symptoms include sore eyes, a sore throat, nausea, and tingling in the palms of the hands or soles of the feet. The symptoms may be similar to some rheumatic diseases or other viral diseases, so they can only be reliably diagnosed by a specific blood test ordered by a doctor.

Pain in the joints is much more common than swelling. The most commonly affected joints are the wrists, knees, ankles, fingers, elbows shoulders and jaw. Pain usually develops rapidly and may be intense, and more severe in different joints at different times. When they are severe or prolonged, the symptoms can cause emotional distress or depression, and can affect family, social and work relationships. The symptoms in children tend to be milder and the disease runs a shorter course. A rash tends to be more common to BFV disease and swollen joints are not as common and may not last as long as with RRV disease.

http://www.public.health.wa.gov.au/2/486/2/ross_river_and_barmah_forest_virus_fact_sheet.pm

diagnosed by CT brain scans. Dr Hamzeh did not need to send Brendan to Griffith for such investigations. It must have been obvious from the fact that Dr Hamzeh had sent Brendan by road on a Saturday night 160km to a hospital with a CT scanner (because such a facility was unavailable in Hay) that he had serious concerns about the possibility of significant brain pathology. *That* should have been the starting point in the differential diagnosis.

74. Why, out of the "27" possible diagnoses, did he fix on alcohol withdrawal as the most likely or the working diagnosis? Why did he effectively dismiss Dr Hamzeh's suggestion (based on his greater knowledge of the patient and his history) that Brendan's pathology was serious enough to require a head scan late on a Saturday night 160 kms from home? Why did he not – despite this prompting from Dr Hamzeh – exclude the most serious of the possible pathologies, especially the possibility of a life-threatening brain condition?

75. Three factors appear to have combined at this point: first, Dr Hall's fixation on alcohol withdrawal. Second, ordering a CT was inconvenient – Dr Hall was unable to do so without getting the approval of Dr Wark and, in any event, there was no radiographer on duty. This meant that someone would have be to called in to do the scan and, if they were difficult to interpret in Griffith, a consultant in Sydney would perhaps have been needed to examine the films. Third, Dr Wark was senior to Dr Hall and he relied on Dr Wark to examine the patient and make the final decision.

Dr Wark's role

76. After Dr Hall had seen Brendan, Dr Wark also assessed him. According to Dr Wark, the only notes he had available to him were the letter of referral from Dr Hamzeh, the triage nurse's notes and Dr Hall's notes.

77. I find this evidence difficult to accept. Dr Wark agreed that it is standard practice that when a patient is transferred from one hospital to another, the transferring hospital would send a bundle of notes (a copy of its own notes) with the patient. A file is then created by the receiving hospital. Another document that the receiving hospital would incorporate in the patient's records is the ambulance Patient Health Care Record.

78. The reason for the transfer of the notes with the patient is self-evident: to enable the clinicians receiving the patient to understand the previous history and management of the patient whose treatment they are taking over.

79. Dr Wark suggested in his evidence that somehow the Hay notes had become separated from the Griffith file.

80. Another explanation for Dr Wark's inability to remember seeing the Hay notes is that he did not look at them but relied on his own previously formed opinion, Dr Hall's opinion and his own clinical assessment of Brendan at Griffith. Which is correct I cannot say but there is no obvious reason for the Hay notes to have been removed or separated from the Griffith file which was made up by the nursing staff. And if they were not on the file, why did Dr Wark not demand that they be produced to him? He provided no satisfactory explanation for this omission.

81. In evidence during the hearing, Dr Wark said that he had not been given a history of "persistent and debilitating" headaches for more than a week and said that this was "a major problem".[5] He also said that if he had had the documents that were sent from Hay [which gave this history] "the next morning we would almost certainly have done a CT brain scan on less evidence than that."[6]

82. Based only on the referral letter, Dr Hall's notes and his own assessment of Brendan, however, Dr Wark's provisional and working diagnosis was that Brendan was suffering late withdrawal from both alcohol and marijuana. He said that his plan was to observe Brendan overnight and consider a CT scan in the morning.

83. This evidence is curious for a number of reasons. When examined at the inquest, Dr Wark agreed that Brendan did not fit the typical clinical picture of a person suffering from alcohol withdrawal. Moreover, as previously noted, the alcohol withdrawal screen did not indicate that alcohol withdrawal was of particular significance. But the provisional diagnosis fits neatly with the account that Dr Hamzeh gave of being told on the telephone by Dr Wark that Brendan was an alcoholic undergoing withdrawal but to "send him anyway". If Brendan was, as both he and Dr Hall thought, undergoing late and protracted alcohol withdrawal why did Dr Wark not persuade him to stay in hospital for the night? And finally, if Brendan was thought to be undergoing alcohol withdrawal, why was the plan for a CT scan in the morning and where is the evidence in of this in the notes?

84. If Dr Hamzeh's account is accepted, even before Brendan was sent to Griffith Dr Wark had formed a preliminary view that his problem was alcohol withdrawal. This fits with RN Chapman's hearsay information that the hospital was expecting a 24 year-old patient undergoing alcohol withdrawal and with what happened when he arrived and how he was managed over the evening.

85. Dr Wark's evidence concerning his assessment of Brendan that evening is troubling. He described his recollection of the history given by Brendan as follows [7]:

> Q. What is your recollection about Mr Burns on that night, I just want to understand what you actually recall?
>
> A. So I - as I was on call I at that time stayed off site for accommodation and came back in when Dr Hall notified me of Mr Burns' arrival. Dr Hall outlined the history that he'd obtained and the physical findings. By that stage, he'd had some investigations that had come back as well and we went over those. I then came in and saw Mr Burns. Initially, Mr Burns displayed a reluctance to give me a history.
>
> He did state that this had been the second or third time that night he'd related the same story to individuals, however, I explained that it was important that he discuss that with me so we could decide what we were going to do and he after that was quite co-operative and quite reasonable throughout the rest of the conversation. He gave a fairly thorough history. I asked him specific questions in regard to the main features and main symptoms that he had presented with and were appearing to concern him particularly the headache, the nausea and the vomiting. he described the headache as being significantly better than it had been earlier in the evening and he had received narcotics when he was at Hay, I believe. The headache had almost resolved completely at that

[5] Transcript 10/10/13 p.28
[6] Transcript 10/10/13 p.26
[7] Transcript 10/10/13 p.21

> stage. He related a history of intermittent headaches that had gone back over a period of about seven to 10 days was his recollection, that was as long a history as he had given at the time. He described it as a bi-temporal headache or a headache that was present on both sides of his head that was not particularly throbbing in nature. It is not have sudden onset. It did not have the features of being the most severe headache that he had ever had. It was not associated with symptoms such as fever, rigors or other problems such as that--
> Q. Just stop you there, what about blurred vision?
>
> A. He admitted to history of some dizziness. It was difficult to draw him on the presence of blurred vision and what that had meant.
>
> Q. Were you aware that he had complained of blurred vision previously in relation to these headaches?
>
> A. He - so the symptoms that he described on the night he described dizziness and he may well have used the terms of blurred vision on that night as well. I couldn't elicit a clear history of Diplopia [double vision] and he didn't have a clear history of Diplopia at the time of my assessment.

86. The history as recounted by Dr Wark was at odds with that described in the referral letter, the triage notes and the Patient Health Care Record. It was also very much at odds with the notes that Dr Wark did not read or were unavailable to him. It was also at odds with the description of the patient given by Dr Hamzeh.

87. Either Brendan gave an inaccurate history to Dr Wark or Dr Wark misinterpreted it. Whichever was the case, Dr Wark did not compare what he was being told with the history recorded in Hay which would have revealed the history of persistent and debilitating headaches for over a week. And that was indeed, as Dr Wark stated, "a major problem". Moreover, Dr Wark was probably misled by the fact that the headache had apparently resolved. Whether he took into account the fact that Brendan had been treated with morphine for the pain is unclear but he seems to have given little consideration to this. But the real problem was that he did not obtain the true history of these headaches. Given that the documents that would have filled in much of the clinical picture for him were available somewhere in the emergency department, this was a serious oversight.

88. Dr Wark also gave evidence that he had desired Brendan to stay overnight for observation but that Brendan had insisted on being allowed home. I do not doubt that Brendan might have said something to the effect that he wanted to go home. This is not the same thing as demanding to be discharged.

89. If Dr Wark had recognised that Brendan may be seriously ill, as he would have if he had read the full history provided to the Griffith Base Hospital or if Dr Hall had read the full history and accurately conveyed it to him, it is inconceivable that he would have simply acquiesced without making a major effort to dissuade Brendan from leaving. And especially as to leave hospital at that time of night would be enormously inconvenient for his family and a very long drive for him.

90. In Dr Vinen's expert report he stated that the decision not to do the CT scan whilst Brendan was at Griffith Base Hospital was "inexplicable." Again a serious cause of Brendan's symptoms was not excluded when a diagnosis of "non-specific" headache was made. In his expert opinion there were multiple red flags in relation to Brendan's condition and furthermore, the time frame between Brendan ceasing

drinking and his presentation to Griffith Base Hospital – some two weeks having elapsed – meant that alcohol withdrawal was an unlikely diagnosis.

91. Dr Vinen's major criticism was that Dr Wark had made his decision on the basis of an incomplete history and his own impressions (and those of Dr Hall presumably) without giving weight or sufficient weight to the concerns of the referring doctor: [8]

> Q. And Dr Wark in his circumstances of finding a patient who's headache was virtually absent when he saw him, the history of intermittent headaches, it was orientated, it was 15 out of 15 on the Glasgow Coma Scale, his judgment was that he didn't there and then need an urgent CT scan, that's, you don't find that a defensible position?
>
> A. Well in the context of having no other information available it may not have been unreasonable but given the information that was in the referral letter in particular and I understand there was a phone call as well… you really need to have taken into account what they say because they've seen the patient, sometimes they know the patient well and whilst you have to revisit the patient anew yourself to satisfy yourself that you're not having your decision making process influenced by factors that they should not be influenced by, you don't discount the content or the referral letter or the GP's conversation and in fact you take note of it and make sure that you, if you dismiss aspects of that, then you've got to be able to justify why you've dismissed it.

92. While Dr Vinen agreed that ordering a CT scan was ultimately a decision for the attending physician to make, and stated that he did not always do a CT scan when a GP referred a patient to him, in cases where, absent a CT scan, the diagnosis [even with a full history] was uncertain and possibly serious, he considered that it was in the patient's best interest "to get it over and done basically and then you know the answer."[9]

93. Unfortunately, the lingering impression the evidence leaves is that Dr Wark lacked sufficient respect for both Brendan and Dr Hamzeh to summon the energy to do what really needed to be done – admit Brendan to hospital and organise a CT brain scan. Despite his protestations of careful medicine, the decision to send Brendan off into the middle of the night was, in my opinion, emblematic of his true attitude to his patient. But for the fact that it is now five years since these events, I would have considered referring him to the Medical Council.

Non-surgical measures to delay brain herniation

94. To relieve the intracranial pressure, surgical intervention was needed. Had Brendan's condition been diagnosed in time, more time could have been bought with the administration of Mannitol. This is a medication that relieves intracranial pressure for a period of one to two hours by reducing the quantity of fluid within the cells of the brain. It is, however, a one-off therapy with only a temporary effect.

When did irreversible brain herniation occur?

95. It may not be strictly necessary for me to determine this issue because a coroner's task is to identify the cause and manner of death and that has been done. Nevertheless, the question is of some importance because had it been necessary for Brendan to be transported to Sydney for the requisite surgery to take place, there

[8] Transcript 11/10/13 p23.
[9] Transcript 11/10/13 p24.

would need to have been sufficient time for this to occur prior to irreversible brain herniation.

96. Three experts – Dr Vinen, Dr Warwick Stening and Dr Marcus Stoodley -- gave evidence in relation to this issue. The experts differed slightly in their description of the process of brain herniation but this was not of significance.

97. Dr Warwick Stening outlined three types of brain herniation: (A) tentorial herniation, when the medial surface of the temporal lobe is squeezed through the gap between the brain and the cerebellum, compressing the brain stem, (B) when the cerebella tonsils (at the base of the cerebellum) are pushed through the foramen magnum (hole at bottom of skull), compressing the medulla oblongata and (irrelevant here) (C) when the brain is pushed upwards through the same gap as in the first type.

98. In his opinion, irreversible herniation occurred at some point between 0400 and 0600 hours , but possibly as early as Brendan's departure from Griffith Base Hospital shortly before 0200. He described the seizure witnessed by Ms Newman at 0600 as 'the final brain activity after the herniation occurred'. He described it as irreversible to the extent that treatment [i.e., mannitol followed shortly afterward by surgery to relieve intracranial pressure] within 30-60 minutes might have been effective. Such treatment was obviously unavailable to Brendan Burns until 10-l2 hours later.

99. Dr Stoodley believed that type A herniation probably occurred when Brendan lost consciousness on the drive home to Hay some time between 0200 hours and 0400 hours. In his view, type B herniation – causing irrevocable brain damage – occurred by 0600 to 0700 hours.

100. Dr Vinen described brain herniation as moving through four stages in terms of the decreasing oxygenation of the brain under pressure:

> Stage 1: normal intracranial pressure.
>
> Stage 2: slow rise in ICP. Symptoms of headache and drowsiness.
>
> Stage 3: rapid rise in ICP, falling perfusion pressure. Symptoms of deteriorating level of consciousness, increased blood pressure and falling pulse rate.
>
> Stage 4: ICP equals blood pressure, cerebral perfusion ceases. Symptoms of coma, fixed dilated pupils. Death results.

101. In Dr Vinen's view, Brendan had reached stage 2 by the time of his arrival at Griffith Base Hospital on 25 January, stage 3 when noted by Ms Newman at home to be unconscious and snoring, and stage 4 by 0630 hours on 26 January. Accordingly, while Brendan had experienced progressive levels of reversible brain herniation throughout the night of 25 January, it was not until 0630 hours on 26 January that irreversible brain herniation probably occurred.

102. Absent regular observations of vital signs, timing the stages is educated guesswork. Brendan was barely conscious when he left Griffith Base Hospital it seems. Whether

this was due to exhaustion or intracranial pressure or a combination of both, it appears to me that if he was not at stage 3 at that point, he probably entered that stage during the drive home as he deteriorated. It is very difficult to say with precision when he crossed the threshold of stage 4 but it seems likely to have been some time between roughly 0400 hours on the way home and about 0600 hours or perhaps a bit later.

Could there have been a different outcome?

103. If Brendan had been recognised as suffering from raised intracranial pressure either prior to 25 January 2009 or while he was at Griffith Base Hospital on 25 January his prognosis would have been markedly different from the outcome.

104. Certainly, if he had been correctly diagnosed *prior* to 25 January, it would have been possible to intervene surgically and his prognosis would have been very positive. Studies have shown that early detection and total excision of the colloid cyst carries an excellent prognosis[10].

105. The situation on 25 January was obviously more urgent. Surgical intervention was needed to relieve the intracranial pressure. The first step would have been to reduce intracranial pressure by draining the enlarged ventricles of the brain. This would have required the insertion of ventricular drains via a burr hole drilled in the skull. Regional hospitals do not generally have the ideal type of drainage tube or specialised instruments used by neurosurgeons. More significantly, this is a delicate and difficult procedure and few general surgeons have the experience or expertise to carry it out even with the advice of a neurosurgeon over a telephone link.

106. Having bought time with the ventricular drains, the next step is to remove the cyst itself. This requires a specialist neurosurgeon's skills and experience with the back-up of a neurosurgical team. There was no neurosurgeon available in Griffith and, according to Drs Stening and Stoodley, in NSW there is no emergency system for flying neurosurgeons or neurosurgical teams to places like Griffith.

107. It took about seven-and-a-half hours to get Brendan to St Vincent's Hospital after he presented at the Hay Hospital on 26 January. The position was irretrievable well before that.

108. Dr Gary Tall, a full-time emergency retrieval consultant for NSW Ambulance, gave evidence that the minimum time in which a retrieval could theoretically have been completed was in about six hours. The average time taken for such services is, however, about seven-and-a-half hours. Mannitol or a similar agent would have been administered to enlarge the window of opportunity.

109. Dr Hamzeh saw Brendan some time after 1700 hours that afternoon. Had Dr Hamzeh organised a retrieval directly from Hay Hospital rather than getting in touch with the clinicians at Griffith, Brendan's chances of survival would have significantly improved. In retrospect it can be seen that he was respectful of the

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[10] Desai KI, Nadkarni TD, Muzumdar DP, Goel AH "Surgical management of colloid cyst of the third ventricle--a study of 105 cases." *Surg Neurol.* 2002 May;57(5):295-302; discussion 302-4.

expertise of Dr Wark, he believed that there were a number of possible diagnoses, one of which was a space-occupying lesion in Brendan's brain, that a CT scan would enable a firmer diagnosis to be reached and that the clinicians at Griffith, especially Dr Wark, were in a better position to decide how to proceed than he was. While we can now see that an opportunity was lost in this process of referring Brendan to Griffith, it is difficult to be critical of his thought-process.

110. Whether Brendan could have been saved if Dr Hall and Dr Wark had seen Brendan shortly after he arrived at Griffith, ordered a CT scan and then arranged a retrieval straight away is very difficult to say. But it would have been a touch-and-go affair at best. By that time odds of Brendan surviving were not good.

What can be learned from this event?

(i) Flaws in the clinical decision-making process – possible explanations

111. Both Drs Hall and Wark are highly experienced doctorsIn my view, the decisions made by Drs Hall and Wark at Griffith were flawed for a number of reasons. Both made their starting point a provisional diagnosis of alcohol withdrawal. Why they did so is difficult to say but some clues can be found.

112. Dr Hamzeh, quite correctly, included a reference to a history of alcohol abuse in the history he related to the Griffith clinicians both on the telephone and in his letter of referral. Despite the fact that he immediately qualified this by elaborating that his partner reported that he had not been drinking for two weeks and Brendan himself gave a history of not having drunk for about 10 days, and despite the fact that the alcohol withdrawal test showed minimal signs of alcohol withdrawal, the provisional diagnosis was never overtly challenged. Why not?

113. Dr Hall had previously worked in a "drug and alcohol hospital" (as he described the Mater in Newcastle. His evidence shows that he had a predisposition to scepticism of claims by patients in the emergency department that they had stopped using alcohol or drugs if there were signs that could be interpreted as alcohol- or drug-related.[11] Emergency departments treat many people for the effects of drug and alcohol abuse or misuse. Emergency department staff see many more of such cases than cases of brain tumours.

114. The fact that Dr Hall's provisional diagnosis was alcohol withdrawal suggests that he was relying on the cognitive "heuristic" (or mental short-cut) of "availability".

115. This is "the tendency to judge the likelihood of an event by the ease with which relevant examples come to mind… Familiarity points the way to [the doctor's] thinking."[12] This kind of thinking happens intuitively and is based on experience. In many cases, the intuitive interpretation will be correct or very nearly so precisely because it is based on the recognition of patterns that have been observed previously and are familiar.

[11] See transcript 10.10.13 p10 lines 39-46

[12] Groopman, J *How Doctors Think* Scribe, Melbourne (2007) pp 64,65.

116. Dr Wark also appears to have jumped to a premature conclusion concerning Brendan's alcohol issues. In the circumstances, it seems likely that Drs Hall and Wark reinforced one another's provisional diagnoses of Brendan's condition.

117. The downside of this type of "fast thinking"[13] is that people can jump to conclusions prematurely based on insufficient or misleading evidence. They may then sub-consciously cherry-pick information that confirms the conclusion in their minds and ignore or fail to give proper weight to information that does not support that conclusion.

118. Secondly, the challenge for the diagnostician is to ensure that serious illnesses or conditions are not overlooked due to this natural pattern-recognising tendency. Obtaining a full history is one of the keys to finding the correct diagnosis and preventing serious diagnostic mistakes. As we have seen, for reasons that have not been adequately explained, this did not happen at Griffith Base Hospital.

119. Thirdly, the telephone call from Dr Hamzeh and his letter of referral were given insufficient weight at Griffith Hospital. In his classic medical text *Proper Doctoring,* Professor David Mendel remarked:

> Reading the doctor's letter [of referral] is an art in itself… There is a very good chance that if he is consulting you, it is because he is stuck and up a blind alley. It is easy to get up the same alley if you pay too much attention to what he says, so you have to read the letter but suspend judgment on it until you have seen the patient.[14]

120. This is certainly true but the point in this case was that Dr Hamzeh was concerned about the possibility of a space-occupying lesion. Before he spoke to Drs Wark and Hall, he had spoken to a surgeon, Dr Krishna. Although it is denied by Drs Wark and Hall, it seems highly unlikely that he did not mention this particular concern to them because this was the very reason he had first spoken to the surgeon and why he wanted Brendan examined at Griffith Hospital. Although he was "stuck", Dr Hamzeh was not up a blind alley at all.

121. Had Drs Hall and Wark shown greater respect for Dr Hamzeh's concerns, as evidenced by the fact that he sent the patient all the way to Griffith, and to the history, their approach to the differential diagnosis might have been different and they may have concentrated less on what was "likely" (ie, familiar to them) and more on excluding life-threatening conditions. This was not a case in which someone just walked through the doors of the hospital with a headache and asked for a CT brain scan. An experienced doctor had raised a red flag and was effectively ignored.

122. Finally, and allied to the third point, it appears to me that Dr Wark paid insufficient attention to the patient. The direct evidence of this is his remark to Dr Hamzeh on the telephone. The indirect evidence is that he painted a portrait of Brendan at Griffith Hospital as a person who did not appear to have very much wrong with him; he failed to obtain a full history of the headaches and other signs and symptoms; and his did not make a determined effort to persuade Brendan to stay in hospital for observation overnight. Dr Hall's evidence is that he thought Brendan was ill and

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[13] See generally Kahneman, D *Thinking, fast and slow* Penguin Books, London (2011).
[14] Mendel, D *Proper Doctoring: a book for patients and their doctors* Springer-Verlag, Berlin (1984) reprinted NY Review Books, NYC 2013 p.25.

should be admitted to the hospital. Dr Wark, however, does not appear to have any significant concerns. Many patients will express a desire to go home: doctors can generally persuade them to stay at the hospital if they think that this is in the patient's best interests. Nor did he speak to Ms Newman and warn her that he had serious concerns or ask the emergency department staff to keep a close eye on Brendan.

123. Other factors may have adversely affected the decision-making process as well. Tiredness may have affected both Drs Hall and Wark. Brendan arrived at Griffith Base Hospital towards the end of Dr Hall's shift. Dr Wark was on call but not actually present in the emergency department at that time. Common sense but also numerous psychological studies and other analyses of decision-makers at work demonstrate that the quality of decision-making deteriorates as energy levels decrease. [15]

124. Making decisions (as doctors in hospitals do all day) is mentally tiring. Decision-making consumes energy. "The more choices you make throughout the day, the harder each [successive] one becomes for your brain, and eventually it looks for shortcuts. One shortcut is to become reckless… the other shortcut is the ultimate energy saver: do nothing. Ducking a decision often creates bigger problems in the long run, but for the moment, it eases the mental strain."[16]

125. To organise a CT scan that night meant calling in a radiographer. This would have taken about 30 minutes and was an inconvenience that, as far as Drs Hall and Wark may have been concerned, could have been avoided that night. There was also the prospect that a CT scan may have been difficult to interpret or inconclusive causing further difficulties that would be more easily addressed the following day.

126. Lastly, as Drs Stoodley and Stening noted, NSW did not at that time have an easily managed system for quickly exchanging CT scans and other radiographical images between distant hospitals. This may also have operated as some sort of subconscious disincentive to undertaking a CT scan that night.

127. In fairness to Drs Wark and Hall, I did not allude to these matters during the inquest. Nevertheless, I raise them now because, as I have reflected on what happened at Griffith, it seems to me that they may indicate serious lessons that can be learned from Brendan's death.

(ii) Better systems?

Fly in neurosurgeons?

128. Dr Tall's evidence that it took approximately 7.5 hours to get Brendan to a neurological unit in Sydney highlights this question. During his evidence and that of Drs Stening and Stoodley, the suggestion was made that the gap in time could have

[15] See, for example, Danziger, S; Levav, J & Avnaim-Pesso, L "Extraneous factors in judicial decisions" PNAS 26 April 2011, Vol 108, No 17 pp 6889-6892; Chanmugan, A.J. "Understanding decision-making fatigue and how it influences your clinical judgment" in Mattu, A & ors *Avoiding Common Errors in the Emergency Department* Wolters Kluwer, Philadephia (2010) pp 173-175; Tierney, J "Do You Suffer from Decision Fatigue?" NY Times Magazine 19/08/11; Sufka, P "Decision Fatigue in Physicians and Medicine: the Importance of Routines and Habits" http://paulsufka.com/decision-fatigue accessed 17/04/14.

[16] Tierney, J Do You Suffer from Decision Fatigue (2011)

been reduced had a neurosurgeon been available to send from Sydney and a regular system had been established to facilitate this.

129. While in this case it would probably have been too to save Brendan's life, the idea has some merit. If Brendan had been scanned at Griffith, and a neurosurgeon had been despatched soon afterwards, ventricular drains could probably have been inserted at Griffith Base Hospital and Brendan's condition may have been stabilised before irreparable brain damage occurred.

130. NSW Health, however, has pointed out a number of problems with the suggestion:

- There are only a limited number of neurosurgeons available in NSW to staff such a roster
- The requirements to undertake neurosurgery are not limited to the availability of a neurosurgeon
- Smaller hospitals are unlikely to have the physical resources needed to safely support neurosurgery, such as suitable operating theatres, appropriate instruments and equipment, consumables, diagnostic imaging and specialised drugs
- Smaller facilities are also unlikely to have appropriately experienced and trained nursing and medical staff to assist the neurosurgeon in theatre or to undertake the associated anaesthetic and post-operative care requirements to ensure patient safety
- It is not practical to fly this range of additional resources into small centres for cost reasons
- There may not be sufficient demand to justify or maintain a "ready-to-go" service of this type.

131. I accept that the validity of at least some of these arguments although the South Australian experience suggests that the problems of flying in neurosurgeons are not as great as is implied by NSW Health. Nevertheless, NSW Health and the Neurosurgical Society of Australasia (which, I assume, has considered these issues in tandem with NSW Health) are in a better position than I to assess where the balance of costs and benefits lies.

Neurosurgery training for regional general surgeons?

132. Alternatively, this case suggests that there is a strong argument for general surgeons in regional hospitals receiving or having available to them regular refresher courses in basic neurosurgical technique, and regional hospitals being equipped with basic neurosurgical instruments. Local surgeons, familiar with their own hospitals and staff, if they have sufficient training, may be able to undertake such procedures as the insertion of ventricular drains in preparation for the transfer of patients to the city while retrieval is being arranged.

133. There may be countervailing arguments, such as the possibility that some regional general surgeons may be emboldened to attempt procedures for which they are

insufficiently trained or experienced. Such incidents, however, are likely to be rare unless a general surgeon had no other choice in an emergency but to operate.

134. There seems to be merit in this idea and I propose to make a recommendation that it be considered by NSW Health, the Royal Australasian College of Surgeons and the Neurosurgical Society of Australia.

Sharing digital imagery more efficiently between public hospitals?

135. Criticism was made of the difficulty in NSW of medical staff in hospitals being able to gain quick access to electronic images from distant hospitals. Drs Stening and Stoodley both complained that doctors were unable to view imagery from across the state whereas in Queensland and elsewhere doctors had access statewide to such imagery.

136. NSW Health has informed me that Recommendation 113 of the Garling Report,[17] which advocated a statewide system, had been accepted and was being implemented. All Local Health District have electronic imaging systems. A statewide image repository (the "Enterprise Image Repository") has been established to enable the sharing of images across the state. In November 2013, the repository was being used by five LHDs. It was expected that most of the remaining LHDs would be able to do so by the end of 2013 and all LHDs, including the Murrumbidgee LHD, would be able to do so by June 2014. This is designed to be a secure system, accessible through LHD digital imaging archive systems or the patients' electronic health records kept at public hospitals.

137. A recommendation would now be superfluous.

Conclusion

138. In his manual on emergency medicine, Dr Gordion Fulde states that "First Emergency Department Law" is "All patients are trying to die before your eyes".[18] Sadly, that is exactly what Brendan was doing when he went first to Hay Hospital and then was taken to Griffith Base Hospital on 25 January 2009.

139. He makes a number of points that resonate in this case. He emphasises that representations to an emergency department and another healthcare professional sending a patient to an emergency department are "red flags". He writes, "If pain is severe and unrelieved, worry! You have probably missed something. Continuing out of character pain is a very common feature of misdiagnosis – so rethink!" And "Poor history, poor examination. History and examination are the cornerstones of the diagnosis. If you are unable to get good facts, be very careful and conservative, and worry." [19]

140. It is tragic enough that Brendan Burns died aged only 24 years of age. But the tragedy is heightened by the fact that he needed help and he came to hospital for

[17] *Final Report of the Special Commission of Inquiry into Acute Care Services in NSW Public Hospitals* (2008)(Commissioner Peter Garling QC)
[18] "The seriously ill patient: tips and traps" in Fulde, GWO (ed) Emergency Medicine: the principles of practice (5th ed) Churchill Livingstone Elsevier, Sydney (2009) p 350-357 at p352.
[19] Fulde (2009) p351.

help and the help he needed was not provided. Whether he could have been saved I cannot say. But the fact that he was sent away from Griffith Base Hospital without his lethal condition being investigated when that was the reason for him being there is unutterably sad.

141. It is not just his death but the circumstances of his death that has so distressed Brendan's family. And the lengthy wait for this inquest and for this decision have added to the burden of grief they feel.

142. Although it has taken too long to reach this point, I hope that they will know that their concerns have been listened to and taken seriously by me and all involved in this inquest. I hope that they will accept my apology for the length of time it has taken to bring this inquest to a conclusion. And I hope that they will accept my very sincere and respectful condolences.

Findings s 81 Coroners Act 2009

143. I find that Brendan Burns died on 27 January 2009 at the St Vincent's Hospital, Darlinghurst, New South Wales of acute hydrocephalus due to an undiagnosed colloid cyst of the third ventricle of the brain.

Recommendations

144. I recommend to the Minister for Health, the Royal Australasian College of Surgeons and the Neurosurgical Society of Australasia that they consider implementing a scheme for organising regular short-form neurosurgical skills training for general surgeons operating in NSW regional centres.

Magistrate Hugh Dillon
Deputy State Coroner