OFFICE OF THE STATE CORONER

FINDING OF INQUEST

CITATION:	Inquest into the death of David Jones MUCKAN
TITLE OF COURT:	Coroner's Court
JURISDICTION:	Brisbane
FILE NO(s):	COR 246/98
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FINDINGS OF:	Mr Michael Barnes, State Coroner
CATCHWORDS:	**CORONERS: Inquest, hospital deaths, benzodiazepines, obstructive sleep apnoea etc…**

REPRESENTATION:

Counsel:

Assisting:	Sergeant Jen Jacobsen
Family:	Ms Julie Sharp
Prince Charles Hospital:	Ms Jean Dalton

Findings into the death of David Jones Muckan

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The Coroners Act 1958 provides in s43(1) that after considering all of the evidence given before a coroner at an inquest the coroner shall give his or her findings in open court. What follows are my findings in the inquest held into the death of David Jones Muckan.

Introduction

David Muckan had a lengthy history of mental illness extending back at least until 1973. However, as a result of numerous, sometimes extended admissions to mental health facilities, David's condition was mostly well managed and he lived a relatively normal life. On 21 April 1998, when David was 49 years old, he was again admitted to the Winston Noble Unit, a mental health facility attached to the Prince Charles Hospital at Chermside as a voluntary patient. The next day his status was changed to that of an involuntary patient and he was given a number of sedatives. Four days after his admission, David was found dead in a locked ward.

These findings seek to explain how that happened. They also contain recommendations aimed at reducing the likelihood of similar tragedies occurring in the future.

The Coroner's jurisdiction

Before turning to the evidence, I will say something about the nature of the coronial jurisdiction.

The basis of the jurisdiction

Although the inquest was held in 2005, as the death being investigated occurred before 1 December 2003, the date on which the *Coroners Act 2003* was proclaimed, it is a "*pre-commencement death*" within the terms of s100 of that Act and the provisions of the *Coroners Act 1958* (the Act) are therefore preserved in relation to it.

Because the hospital staff recognised that Mr Muckan had died "*while detained in any psychiatric hospital*" within the terms of s7(1)(b)(i) of the Act, they reported the death to police who were obliged by s12(1) to report it to a coroner. Section 7(1) confers jurisdiction on a coroner to investigate such a death and s7B authorises the holding of an inquest into it.

The scope of the Coroner's inquiry and findings

A coroner has jurisdiction to inquire into the cause and the circumstances of a reportable death.

The Act, in s24, provides that where an inquest is held, it shall be for the purpose of establishing as far as practicable:-

- the fact that a person has died,

- the identity of the deceased,
- when, where and how the death occurred, and
- whether anyone should be charged with a criminal offence alleging he/she caused the death.

After considering all of the evidence presented at the inquest, findings must be given in relation to each of those matters to the extent that they are able to be proved.

An inquest is not a trial between opposing parties but an inquiry into the death. In a leading English case it was described in this way:-

> *It is an inquisitorial process, a process of investigation quite unlike a criminal trial where the prosecutor accuses and the accused defends… The function of an inquest is to seek out and record as many of the facts concerning the death as the public interest requires.* [1]

The focus is on discovering what happened, not on ascribing guilt, attributing blame or apportioning liability. The purpose is to inform the family and the public of how the death occurred with a view to reducing the likelihood of similar deaths. As a result, the Act authorises a coroner to make preventive recommendations[2], referred to as "*riders*", but prohibits findings being framed in a way that appears to determine questions of civil liability or suggests a person is guilty of any criminal offence.[3]

The admissibility of evidence and the standard of proof

Proceedings in a coroner's court are not bound by the rules of evidence because s34 of the Act provides that "*the coroner may admit any evidence the coroner thinks fit"* provided the coroner considers it necessary to establish any of the matters within the scope of the inquest.

This flexibility has been explained as a consequence of an inquest being a fact-finding exercise rather than a means of apportioning guilt: an inquiry rather than a trial.[4]

A coroner should apply the civil standard of proof, namely the balance of probabilities, but the approach referred to as the *Briginshaw sliding scale* is applicable.[5] This means that the more significant the issue to be determined, the more serious an allegation or the more inherently unlikely an occurrence, the clearer and more persuasive the evidence needed for the trier of fact to be sufficiently satisfied that it has been proven to the civil standard.[6]

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[1] *R v South London Coroner; ex parte Thompson* (1982) 126 S.J. 625
[2] s43(5)
[3] s43(6)
[4] *R v South London Coroner; ex parte Thompson* per Lord Lane CJ, (1982) 126 S.J. 625
[5] *Anderson v Blashki* [1993] 2 VR 89 at 96 per Gobbo J
[6] Briginshaw v Briginshaw (1938) 60 CLR 336 at 361 per Sir Owen Dixon J

It is also clear that a coroner is obliged to comply with the rules of natural justice and to act judicially.[7] This means that no findings adverse to the interest of any party may be made without that party first being given a right to be heard in opposition to that finding. As *Annetts v McCann*[8] makes clear that includes being given an opportunity to make submissions against findings that might be damaging to the reputation of any individual or organisation.

The investigation

I turn now to a description of the investigation into the death.

The police officers who received the report of Mr Muckan's death attended at the hospital and arranged for his body to be transported to the John Tong Centre where an autopsy was subsequently conducted. They also sent the hospital records with Mr Muckan's body to assist the forensic pathologists better understand the treatment he had been receiving.

A detective and a scenes of crime officer attended at the hospital and were present while initial inquiries were made, as was an Aboriginal police liaison officer who attended because Mr Muckan was Indigenous. None of them considered that there was any evidence of violent or suspicious circumstances. Mr Muckan's mother was also at the hospital and expressed her concern at the possibility that the medication he had been administered during his hospitalisation may have contributed to his death.

Statements were taken from a number of the treating doctors and nurses and some of the patients were interviewed. An autopsy was undertaken by a forensic pathologist and a sample of Mr Muckan's blood was analysed to determine if any drugs had contributed to his death.

The coroner who originally considered the matter recommended that an inquest not be held on the basis that the death was not suspicious and did not occur in such circumstances as to require the holding of an inquest. That view was endorsed by the director general of the Department of Justice. However the solicitors acting for the family subsequently made representations to the Attorney General and he apparently directed that an inquest be held. I say "apparently" because regrettably the court file was lost and no record of the Attorney General's response is available in this office. The loss of the file also explains why the inquest into this death was held so long after it occurred. I can readily accept that the delay has added to the distress the death caused the family of Mr Muckan and I unreservedly apologise to them for that. The delay has also obviously made it more difficult for the staff of the Winston Noble Unit to accurately recall everything that transpired during the time that Mr Muckan was a patient there and I apologise to them also for the added stress that has caused.

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[7] *Harmsworth v State Coroner* [1989] VR 989 at 994 and see a useful discussion of the issue in Freckelton I., "Inquest Law" in *The inquest handbook*, Selby H., Federation Press, 1998 at 13

[8] (1990) 65 ALJR 167 at 168

The inquest

The inquest commenced on 23 March 2005 in Brisbane and continued on 31 March. Twelve witnesses were called to give oral evidence and 40 exhibits were tendered.

Sgt Jen Jacobson was appointed the coroner's assistant. The family of Mr Muckan and the Prince Charles Hospital (TPCH) were given leave to appear and were represented by counsel.

No contentious points of law were raised during the hearing.

The evidence

I turn now to the evidence. I can not, of course, even summarise all of the information contained in the exhibits and transcript but I consider it appropriate to record in these reasons the evidence I believe is necessary to understand the findings I have made.

Background – a history of mental illness

Mr Muckan was diagnosed with schizophrenia in the early 1970s when he was only 23. Before that he seems to have led a normal and productive life. Although he suffered from mental illness for the rest of his life, variously described as schizophrenia, or bipolar affective disorder, his acute psychotic episodes were effectively resolved by occasional admissions to mental health facilities during which he responded well to the neuroleptic agents which were the principal anti-psychotic drugs generally used during that period.

Between 1973 and 1998, Mr Muckan had 11 in-patient admissions to these institutions, mostly as an involuntary patient. The last six admissions were to the Prince Charles Hospital. These admissions were often prompted by quite dangerous and destructive behaviour that on occasions led to criminal charges and caused difficulties in his relationships with his wife and family members. On occasions, alcohol and cannabis abuse and non compliance with medication regimes were thought contribute to these crises.

In between his florid stages, Mr Muckan lived a relatively normal life with his wife, their four children and his extended family who were supportive of him. He was active in his local church and some Indigenous organisations. He showed considerable insight to his condition and could often constructively discuss possible treatment regimes with his therapists. He undoubtedly suffered greatly as a result of his illness. The inability of medical science to provide a lasting remedy for his condition meant that like many thousands of other mental health patients, Mr Muckan had a far less productive and rewarding life than would have otherwise been the case.

At times, Mr Muckan had difficulty strictly adhering to his medication regime and therefore, in the last few years of his life, his maintenance medication was administered by monthly intramuscular injections.

Sleep apnoea and a change of medication

In late 1997, as a result of consulting a doctor at the Caboolture Hospital about sleeping difficulties, Mr Muckan and his doctor became concerned that he may be suffering from sleep apnoea and arrangements were made for him to have tests to investigate this possibility The specialist who examined Mr Muckan wrote to the referring doctor:-

The history certainly suggests that Mr Muckan does have obstructive sleep apnoea and I feel that the sleep apnoea is quite severe in this case.[9]

This development led to Mr Muckan expressing to his mental health therapist, Dr Behan, a desire to cease all anti-psychotic medication until the sleep tests ordered by the specialist had been completed. Although Dr Behan did not consider the medication Mr Muckan was taking was likely to have any impact on his sleep problems, in view of the length of time since Mr Muckan had last had a psychotic episode and in view of the supportive family environment in which he lived, Dr Behan agreed to Mr Muckan's proposal on the condition that Mr Muckan submit to regular reviews at the Caboolture Community Mental Health Service where he had been a long time patient.

Under this regime, Mr Muckan stopped receiving the anti-psychotic injections in late January 1998 but was left with low dose sedatives in tablet form that he could take as he felt necessary. There is no evidence that he suffered as a result of the drugs withdrawal until early April in the same year when Mr Muckan raised with his case worker, Mental Health Nurse Lee Strachan, that he was experiencing symptoms which may have indicated an onset of his psychosis.

Mr Muckan also contacted the Winston Noble Unit at TPCH in early April advising that he felt suicidal and wanting admission. He was referred back to Dr Behan who had already arranged a full review of his condition for a few days after this approach. Staff of the Winston Noble Unit also advised the Community Mental Health Service of Mr Muckan's call and as a result the case worker telephoned Mr Muckan and spoke with him and his wife about his condition. Nurse Strachan recorded Mr Muckan as being stressed and anxious but not overtly psychotic.

A few days later, the case worker visited Mr Muckan at home who confirmed that he was continuing to experience various symptoms that indicated he was in danger of relapsing into a psychotic state. At about this time Mr Muckan agreed to trial an oral form of another more modern antipsychotic drug, Risperidone, that was thought less likely to compound sleep apnoea or make Mr Muckan feel drowsy and drugged as he had previously complained about before his regular medication was suspended.

Dr Behan met with Mr Muckan and his mother on 14 April and Mr Muckan's behaviour confirmed Dr Behan's concerns that he was in danger of relapsing into full-blown psychosis. In evidence he described Mr Muckan as exhibiting

[9] Letter Dr Kennedy to Dr Buckmaster 05/04/98

symptoms of hypomania during this meeting. It was agreed they would meet again in a week for a full review and it was agreed that Mr Muckan would continue to take Risperidone in the meantime.

Plan to hospitalise Mr Muckan

On 21 April, Mr Muckan's wife and mother attended at the Community Mental Health Service as arranged but Mr Muckan did not. They were not sure where he was. They told of his increasing hyperactivity over the preceding week, of his driving long distances for no apparent reasons (even though he had been instructed of the dangers of driving with his suspected sleep disorder), of his sleeplessness and of some out of character behaviour such as his giving a sermon at their church.

The family's description of this behaviour led Dr Behan to conclude that Mr Muckan should be hospitalised to enable his antipsychotic drugs to be significantly increased and for him to be in a secure location while they took effect. He said in evidence that he thought that the family supported this proposal and the medical notes contain a similar observation. Further Dr Behan recalls discussing with the family how the admission could be arranged and indicating that he would attend at the hospital with Mr Muckan to better facilitate his admission. He asked the family to continue with their efforts to locate Mr Muckan and to contact the Community Mental Health Service when they succeeded. Nurse Strachan contacted the Winston Noble Unit and advised of the plan to admit Mr Muckan. A bed was reserved for him.

Dr Behan says that Mr Muckan's mother telephoned him later that day to advise that Mr Muckan had retuned home. Dr Behan and Nurse Strachan went to Mr Muckan's home and discussed with him their plan to admit him to hospital. Dr Behan says that it was apparent to him that Mr Muckan was experiencing a manic episode and that he was likely to deteriorate further unless he resumed more intense anti-psychotic mediation quickly. He says Mr Muckan was quite agreeable to this proposal and accepted that it might assist him "*get sorted out*." Dr Behan also says that if Mr Muckan had not agreed to be hospitalised he considered that it would have been incumbent on him to force the issued by resorting to an involuntary treatment order pursuant to the Mental Health Act.

There may have been some miscommunication around this issue as Mr Muckan's mother now says she was not consulted about this plan. I'm inclined to the view that she may be mistaken about this as a result of the length of time since the incident. In any event I accept that the decision to hospitalise Mr Muckan was appropriate and in his best interests. From the evidence I have seen it is apparent that Mr Muckan was very well cared for by the staff of the Caboolture Community Mental Health Service and I understand that this is the view of his family also.

Mr Muckan is admitted to the Winston Noble Unit

Nurse Strachan drove Mr Muckan to TPHC and Dr Behan followed in another car. They arrived there at about 6.00 pm. At the Winston Noble unit Dr Behan spoke with the admissions psychiatric registrar, Dr Soriano, and wrote a two page letter outlining something of Mr Muckan's history and recent treatment. The belief that Mr Muckan was suffering from OSA was mentioned by Dr Behan and included in the admission notes as was the plan for him to undergo a sleep test in the near future.

Mr Muckan was interviewed at some length and then admitted to an open ward as a voluntary patient and given 100mg of Thioridazine or Melleril, a major tranquilizer with anti psychotic effects that also helps with anxiety. Mr Muckan had asked for this drug when admitted as he had used it before. The admitting registrar also noted that Mr Muckan would be seen by Dr Astill's team in the morning; a reference to the consultant psychiatrist who had treated him in the past. The registrar ordered that Mr Muckan be given up to 400mg/day of Melleril in does of 50 – 100 mg on a PRN, pro re nata, basis, i.e. nursing staff were given a discretion to administer the drug to Mr Muckan as they considered appropriate within the bounds of that order.

The nursing notes indicate that after this Mr Muckan had a settled night until he awoke at about 5.30 and was given another 100 mg of Melleril "*for agitation."*

Later in the morning of 22 April, Mr Muckan was seen by Dr Astill and his registrars. His suspected sleep apnoea was again noted as was his psychosis. Dr Astill explained to Mr Muckan that the plan was to stabilise him on neuroleptic medication and get him home as soon as possible. With this in mind, Dr Astill ordered that Mr Muckan be given 4 mg of Risperidone per day in two, two mg doses. Dr Astill said in evidence that Mr Muckan seemed accepting of this approach.

However, Mr Muckan was apparently not so compliant later in the day and refused the first dose of the Risperidone when it was offered to him that evening. At about 9.00pm he accepted a further 100 mgs of Melleril and took with it 0.5mg of Cogentin, a drug used to counteract the side effects of Melleril, but his mood worsened as the evening progressed.

Mr Muckan is regulated

Around 11.00pm, Mr Muckan became very demanding and violent, lashing out a staff member and demanding to be moved to a locked ward. Security was called and a violent struggle ensured. A psychiatric registrar was present and he caused Mr Muckan to be regulated, that is, his admission was changed from voluntary to compulsory as a result of the medical practitioner forming the opinion that Mr Muckan would be a risk to himself or others unless he remained in hospital and received the drug therapy determined by his treating clinicians. This caused Mr Muckan to be moved to a locked ward, which was one of his demands in any event.

Mr Muckan was held in a seclusion room, a locked room not occupied by any other patient. Before this happened and while he was being restrained by security officers, he was injected with 10 mg of Midazolam, a quick acting major tranquilizer used to enable violent or aggressive patients to be brought under control, and 10mg of Droperidol, an anti – psychotic designed to address the underlying problem. The registrar who ordered these drugs also made a PRN order in relation to them so that the nurses could administer those drugs again when they felt Mr Muckan's condition warranted it.

These drugs quickly resolved Mr Muckan's violence and he was observed to sleep soundly throughout the rest of the night. At 9.30 am he was found to be doubly incontinent and incapable of walking to the shower. In fact he was so sedated that the staff on duty determined that no PRN medication was needed.

Later in the day, at about midday Mr Muckan was given 2 mg of Risperidone and reviewed by a psychiatric registrar who ordered he not be given any more of that anti-psychotic that day and instead receive 100 mg of Clopixole – Acuphase. It was apparently given to him between 6.00 and 7.00pm that night. This drug was described by Dr Astill, when he gave evidence, as a strong, long lasting antipsychotic used for patients who are aggressive and where there is apprehension that administering drugs that require more frequent dosage will involve risk for the patient or the staff as a result of violent conflict.

The registrar who ordered this drug also felt sufficiently concerned about the possibility of an adverse interaction between the PRN drugs ordered when Mr Muckan was regulated and his suspected OSA that she wrote a note of caution on the drug charts as a warning to the nurses involved in his care. This warning referred to Midazolam which is a benzodiazepine and known to repress the central nervous system and respiration.

Later that night and early the next morning, that is the morning of 24 April, Mr Muckan was apparently still very unsettled, pacing about and interfering with the rest of other patients. He was given 100 mg of Melleril but this apparently provided little respite and so a short time later he was given a further 50 mg of Melleril and 5 mg of Diazepam or Valium.

It seems this pharmaceutical cocktail did little to assist Mr Muckan as the nursing notes record that he "*appeared to become disorientated and he appeared slightly delirious, clutching at the air in front of him. Patient was continually put back in bed and finally placed in a stimulus free room where he fell asleep almost immediately. Patient was asleep at 4.30 and still asleep at 6.00"*

This rather extreme conduct on Mr Muckan's part obviously concerned the consultant, Dr Astill, as when he attended later in the day he ordered that the Risperidone and the Clopixole Acuphase not be given that day and that an electro encephalogram (EEG) be done to check that there was no organic or physical cause contributing to the delirium Mr Muckan was experiencing. He

did not however cancel the other PRN medications that had been ordered when Mr Muckan was regulated on the night of the 22nd.

It seems Mr Muckan's condition improved only slightly throughout the rest of that day. The nursing notes refer to him as being "*very sedated*". He awoke in the early hours of 25 April, just after midnight, and was given 10 mg of Midazolam and 10 mg of Droperidol in response to him being "*agitated*."

The nurses who were on duty at this time say that Mr Muckan was checked half hourly from that time on throughout the night and on each occasion he was seen to be sleeping normally and usually snoring loudly. At about 4.00am Mr Muckan was found on the floor next to his bed and found to have soiled himself. He was cleaned up and returned to bed. One of the nurses who was involved in that said that Mr Muckan was very sedated and slept through it. That is, neither the fall from the bed, nor the cleaning of him and the lifting of him back into the bed apparently caused him to wake.

That same nurse says that he last checked Mr Muckan just before he went off duty at 7.00am and found him to be sleeping normally, and again to be snoring loudly.

The death

Nurse Blackwell came on duty at 7.00am on 25 April and commenced going around the ward to check on the patients at about 7.20. She says that when she walked past the room in which she expected to see Mr Muckan and looked through the observation window, the room appeared empty. Therefore when she had completed her check of the other patients in the ward she returned to Mr Muckan's room and went in.

Nurse Blackwell found Mr Muckan on the floor between the bed and the wall. She observed a brownish secretion coming from his mouth and heard him making what she called a "*throaty noise*" that she had heard him make before and which she associated with his OSA.

She went for assistance and returned with three others nurses who helped her lift Mr Muckan back onto his bed. When she could not find a pulse, Nurse Blackwell summoned an emergency resuscitation team consisting of a cardiac registrar, an intensive care senior registrar, a house doctor and a senior nurse manager, all of whom attended promptly.

Mr Muckan was given CPR, he was ventilated, he was given the usual drugs to try and stimulate cardiac activity and a defibrillator was used when some ventricular fibrillation was detected. However, none of these techniques succeeded in establishing a normal cardiac output or spontaneous respiration. At 8.07 on 25 April Mr Muckan was declared dead. I am satisfied that the clinicians involved in the attempts to resuscitate Mr Muckan did all that they could reasonably have done to try and save him.

The investigation commences

Police were notified of the death and Mr Muckan's body was transported to the John Tonge Centre where, two days later, an autopsy was performed by Dr Ashby an experienced forensic pathologist.

The autopsy found some mild to medium atheroma in the coronary arteries but no evidence of an acute infarction. Indeed there was no anatomical evidence sufficient to explain the death.

The expert evidence concerning cause of death

Having considered the histology results and having regard to the history contained in Mr Muckan's medical records which were provided to her, Dr Ashby certified the cause of death to be "*1(a) Acute myocardial insufficiency*" which, at the inquest, she explained to mean a restriction in the blood supply from the coronary arteries leading to a compromise of the heart muscles. As she considers this was contributed to by the atheroma found at autopsy she listed a second cause of death as *1(b) Coronary artery atherosclerosis*. Further, Dr Ashby had also noted significant haemorrhaging in the lungs which she said were asphyxial; either brought on by the aspiration of stomach contents, presumably an agonal event, or, an episode of sleep apnoea. She did not note any aspirated stomach contents in the lungs. Accordingly she listed as a secondary underlying cause of death *2. Possible sleep apnoea.*

Dr Ashby also made reference to the possible adverse impact of some of the drugs given to Mr Muckan. She mentioned that Haloperidol had been associated with laryngeal spasms which could also account for the haemorrhages in the lungs

At autopsy, Thioridazine – or Melleril, was found in the blood at the rate of 1.6 mg/kg

Professor Drummer, an eminent pharmacologist, advised that in these quantities, Melleril can cause depression of the central nervous system which can result in a reduced respiratory rate. The drug has also been associated with death due to cardiac arrhythmia and indeed Dr Astill advised it has since been withdrawn from the market as a result of concerns about these side effects.

Dr Drummer stressed that there was great difficulty in assessing the contribution, if any, Melleril had to the death as a result of there being a substantial overlap between the therapeutic and toxic concentrations which was compounded by the difficulty in deducing ante mortem levels from autopsy samples. It is also pertinent that the last dose of Melleril was given to Mr Muckan some 30 hours before his death, although Dr Drummer acknowledged that there would still be a residual effect of this drug when Mr Muckan was given further sedation in the form of Midazolam and Haloperidol 24 hours later

These drugs, Haloperidol and Midazolam, were also found by the toxicology screening, both at level of less than 0.1 mg/kg. Professor Drummer was confident that these reading were well within the therapeutic range but agreed that the sedative effects of these drugs could have been higher than normal on account of the residual Melleril in Mr Muckan's system and that these effects could have been made more problematic on account of Mr Muckan's OSA.

Evidence in relation to the possible adverse interaction between these drugs and OSA was provided by a specialist in respiratory and sleep medicine, Dr Douglas. He expressed the view that having regard to Mr Muckan's history and symptoms it was more likely than not that he suffered from OSA. He indicated that Midazolam and Diazepam should be avoided in patients suffering from sleep apnoea because of the widely held belief among the relevant medical specialists that these drugs can suppress respiration.

Dr Lawrence, a very experienced psychiatrist, was also consulted. She acknowledged the risk of using Midazolam in patients suffering from OSA but considers its therapeutic benefits to be so important that those risks are justified in appropriate cases. She refers to the practice of prescribing the drug in situations such as prevailed in this case as "*a necessary clinical compromise*"

Conclusions as to cause of death

In this case, none of the possible causes of death can be demonstrated by anatomical or other physical evidence to have been the operative cause and this is perhaps why Dr Ashby settled on "*acute myocardial insufficiency*." However, with all due respect to her, that seems to me a symptom rather than a cause.

When, as in this case, no direct evidence is available it is obviously acceptable for a tribunal of fact to consider circumstantial evidence. When the criminal standard is applicable, the general rule is that to be sufficiently satisfied on the basis of circumstantial evidence all other reasonable hypotheses inconsistent with guilt must be able to be discounted. In civil cases however, it is only necessary that "*the circumstances raise a more probable inference in favour of what is alleged" - Chamberlain v R (No. 2)*.[10]
In Briginshaw it was put thus; "*In a civil case, fair inference may justify a finding upon the basis of a preponderance of probability*."[11]

When basing a finding on circumstantial evidence it is not appropriate to look at each item of evidence in isolation but rather to look at the evidence as a whole to determine whether it enables the tribunal to conclude the issue to its reasonable satisfaction having regard to what is sought to be established.

[10](1984) 153 CLR 521 at 535.
[11] Briginshaw v Briginshaw (1938) 60 CLR 336 at 339

Applying that approach to this case, I consider coronary atherosclerosis can be dismissed as the dominant operative cause. Both at gross examination and after histology, the atheroma was found to be not so severe as to make death from that cause likely. Dr Walters was one of the registrars involved in the attempts to resuscitate Mr Muckan. He is now a cardiologist. He reviewed the autopsy report and considered that there "*didn't seem to be significant atheroma."*

Arrhythmia, either spontaneously or as a side effect of the Melleril, is also a possible explanation of the death but I do not consider there is sufficient evidence for me to reach the level of satisfaction that I require to make a finding to that effect.

That leaves OSA; either spontaneously or as exacerbated by the benzodiazepines and contributed to by the coronary atheroma as the most likely cause of death. Against this conclusion are the relatively low levels of those drugs found at autopsy and the length of time that transpired between their administration and the death. Conversely, the following factors suggest these may have been the dominant causes of death:-

- Benzodiazepines suppress respiration, a tendency that would increase the chances of a fatal OSA episode. That was recognised by the registrar who was so concerned by the possibility of such an interaction that she wrote a warning on the PRN order to encourage those exercising the discretion to administer these drugs to exercise more caution than she presumably thought they would in an ordinary case.

- Despite the time since the drugs were administered, at about 4.00am Mr Muckan was not rousable.

- The effect of the benzodiazepines would be cumulative with the relatively high levels of Thioridazine found at autopsy

- Dr Ashby said of the petechial haemorrhages found in Mr Muckan's lungs at autopsy, "*they would be particularly prominent in something like sleep apnoea… and they were prominent here."*

- And finally, I can not ignore the evidence of Dr Astill who, while not specific about the fora and audience said "*most people assumed Mr Muckan had died from sleep apnoea, when one presents the case clinically to other clinicians, people practising I mean*."[12]

Findings required by s43(2)

I am required to find, so far as has been proved, who the deceased was and when, where and how he came by his death.

As a result of considering all of the material contained in the exhibits and the evidence given by the witness I am able to make the following findings.

[12] Transcript p 73

Identity of the deceased – The deceased was David Jones Muckan.

Place of death – He died in the Winston Noble Unit of the Prince Charles Hospital at Chermside in Queensland.

Date of death – He died on 25 April 1998

Cause of death – The cause of death was obstructive sleep apnoea, contributed to by the sedating effects of therapeutic drugs and made more likely to be fatal as a result of the patient having moderate coronary atheroma.

Criminal charges – No person should be committed to stand trial

Issues of concern and recommendations

There are a number of issues of concern raised by the circumstances of this matter that deserve comment. Pursuant to s43(5) of the Act I am authorised to make riders or recommendations designed to reduce the occurrence of similar deaths to the one investigated by this inquest. In accordance with that power I make the following observation and recommendations.

Communication with the family

Mr Muckan's family have expressed concern about the lack of communication with them concerning both the decision to admit Mr Muckan to hospital and the decision to regulate him.

I consider that in so far as the decision to hospitalise him is concerned, Dr Behan's version of events is to be preferred because it is consistent with his contemporaneous notes and his usual practice. He is adamant that the proposal to hospitalise Mr Muckan was discussed with his wife and his mother. In addition, Dr Behan was entitled to expect that when he discussed the admission with Mr Muckan at his house and Mr Muckan began making the necessary preparations, he would have discussed this development with his wife who was also present at their home.

The family is also concerned that they were refused permission to visit Mr Muckan when he was in the Winston Noble Unit. This issue was raised during conciliation undertaken by the Heath Rights Commission and I understand that the hospital explained that the nurses to whom family members spoke may have wished to protect the close relatives from Mr Muckan's anger and the hurtful comments the staff anticipated he may direct at those relatives if they visited while Mr Muckan was in a florid state. The notes certainly support the claim that Mr Muckan was making harsh allegations against his wife and mother and one can readily appreciate the motivation of hospital staff for seeking to discourage those relatives from visiting and the difficulty they would have faced in explaining their reasons.

The family is also concerned that they were not advised when Mr Muckan was regulated. Dr Astill explained that there were privacy issues that had to be considered in such cases but that hospitals generally now paid greater attention to these issues than had been the case in the past. This is a vexed issue that has been the subject of litigation and legislation in other places. I do not feel that I have enough evidence from this case to make any substantive recommendation for change. I can only hope that the conciliation process referred to earlier ameliorated the family's distress to some extent.

Prescribing benzodiazepines to a patient with OSA

Dr Douglas indicated that Midazolam and Diazepam should be avoided in patients suffering from sleep apnoea because of the widely held belief among the relevant medical specialists that these drugs can suppress respiration. He said that *"(t)he studies which have been undertaken provide limited evidence to support the contention Benzodiazepines worsen OSA."*

Dr Lawrence also acknowledged the dangers associated with it but she is adamant that in 1998 there was no alternative drug available to rapidly sedate Mr Muckan and that the decision to utilize it was an acceptable clinical compromise. She also advised that an alternative now exits.

In the circumstances, I do not think the decision to administer the drugs can reasonably be criticised.

Monitoring OSA patients after the administration of benzodiazepines

However, in view of what was known about those drugs at the time, the hospital had a duty to carefully monitor the possible adverse affects on Mr Muckan. I do not consider they adequately discharged this duty. The most obvious evidence of this is that on two occasions he was found on the floor and barely rousable. On the last occasion it is obvious that Mr Muckan was not observed between 7.00am and some time after 7.20 am when he was found in a state of arrest.

Dr Douglas suggested, that ideally, patients suspected of suffering from OSA, who are none the less given benzodiazepines, should be carefully monitored. He said monitoring should include the visual observation of the patient and the measuring of blood oxygen saturations, pulse rate, respiration rate and blood pressure. It is easy to accept Dr Lawrence's concern that some of these measures would be likely to lead to further difficulties in managing the patient. However, once it became apparent the patient was asleep, constant visual observation of the patient would at least allow his respiration rate to be monitored and facilitate speedy intervention if an OSA episode occurred that would reduce the likelihood of it being fatal.

This was not done in Mr Muckan's case because the hospital procedures were at that time in my view deficient. That has now been addressed with the

rapid tranquilisation guidelines issued in 2004 requiring constant visual observations and pulse oximetry for an hour after Midazolam is administered.

Those guidelines contain no warnings about the added risk faced by patients suspected of suffering from OSA. It might be that the requirement to notify a medical officer whenever a dose of Midazolam is given is intended to address this complicating factor. In my view this assumption should be confirmed or the guidelines reviewed and amended.

Further, it seems that these guidelines were developed at and only apply to practice at the Prince Charles Hospital. Obviously they are equally apposite to all settings where the drugs in question are being used.

Recommendation – Review of rapid tranquilisation guidelines
Accordingly, I recommend that the rapid tranquilisation guidelines be reviewed to ascertain whether they adequately inform clinicians and nurses of the added risks posed by benzodiazepines to sufferers of obstructive sleep apnoea

Further, I recommend that either the Chief Health Officer or the Director of Mental Health take steps to ensure the guidelines are adopted in all health care facilities where the drugs in question are used.

Record keeping

The records of the drugs ordered and administered to Mr Muckan were grossly inadequate in that they were in many instances illegible. Lest it be thought this difficulty was only a function of a lawyer's unfamiliarity with the material, I point out that Dr Lawrence, Professor Drummer and Dr Astill all also had difficulty deciphering the records and seem to have made mistakes in relation to them.

I recognise that the records in question were made nearly eight years ago and I have no evidence about the current method of recording these important data. I will therefore refrain from making any specific recommendation in relation to the problem in the hope that hospital managers have taken appropriate action in the meantime.

I close the inquest.

Michael Barnes
State Coroner
Brisbane
3 February 2006