CORONERS ACT, 2003

SOUTH  *AUSTRALIA*

FINDING OF INQUEST

An Inquest taken on behalf of our Sovereign Lady the Queen at Adelaide in the State of South Australia, on the 15th, 16th, 17th, 18th and 21st days of March 2011 and the 7th day of March 2012, by the Coroner's Court of the said State, constituted of Anthony Ernest Schapel, Deputy State Coroner, into the death of Allan Kenneth Miller.

The said Court finds that Allan Kenneth Miller aged 56 years, late of 57 Fifth Street, Koolunga, South Australia died at the Royal Adelaide Hospital, North Terrace, Adelaide, South Australia on the 17th day of November 2007 as a result of disseminated nocardiosis involving central nervous system, kidneys, liver and thyroid with bilateral lower lobe pneumonia. The said Court finds that the circumstances of his death were as follows:

1. Introduction and cause of death

1.1. Mr Allan Kenneth Miller, a 56 year old married man with no children, died at the Royal Adelaide Hospital (RAH) on 17 November 2007. He had been admitted to the RAH on the afternoon of Monday 5 November 2007 and had remained there until his eventual death.

1.2. The cause of Mr Miller's death was only identified after a full autopsy had been conducted at the Institute of Medical and Veterinary Science. The disease that would claim Mr Miller's life had not been diagnosed at any time during his admission at the RAH. The inability to definitively diagnose Mr Miller's condition was for the most part the consequence of his inability in the first instance to tolerate the necessary diagnostic procedures and more latterly the fact that he was incapable, due to a deterioration in his cognitive capacity, to give effective consent to any further

diagnostic measures. In the event, Mr Miller's wife who could have provided such consent pursuant to section 59(2)(b)(i) of the Guardianship and Administration Act 1993, did not give that consent. Clinicians responsible for Mr Miller's management respected that decision. In the period preceding Mr Miller's death, it was thought that his most likely diagnosis was metastatic lung cancer and it has to be said at the outset of these findings that from a clinical perspective his presentation had been very much in keeping with such a diagnosis. This diagnosis, if correct, would have signified an extremely poor outcome for Mr Miller. However, following autopsy this diagnosis proved not to have been the case. In truth Mr Miller had been suffering from a rare infection that might have been amenable to antibiotic treatment if the same had been commenced early enough.

1.3. Mr Miller's autopsy was conducted by Dr Daniel Houghton under the supervision of consultant pathologist, Dr David Moffat. Dr Houghton's post-mortem report, as verified by his affidavit, was tendered to the Inquest[1]. In his report Dr Houghton expresses the cause of Mr Miller's death as disseminated nocardiosis involving central nervous system, kidneys, liver and thyroid with bilateral lower lobe pneumonia. I accept that opinion. I find that to have been Mr Miller's cause of death.

1.4. It is necessary at this point to say something about the disease nocardiosis.

1.5. Nocardiosis, due to infection by the nocardia bacterium, was described to me in evidence as an atypical infection; a very uncommon disease said to have an annual incidence of just under five cases per million within the South Australia population[2]. The nature of the disease was explained to the Court by Professor David Gordon who is the Professor and Head of Infectious Diseases and Microbiology at Flinders University as well as Head of Microbiology and Infectious Diseases with SA Pathology in the southern region. Professor Gordon explained that a high percentage of patients with nocardiosis possess an underlying risk factor for the development of infection. Patients who have been on prolonged courses of steroids have such a risk factor. People with underlying lung diseases such as chronic obstructive airways disease, bronchiectasis, cystic fibrosis and tuberculosis are also more prone to develop pulmonary nocardiosis. Other persons at risk include those with non-respiratory diseases, particularly malignancies and lymphomas, and HIV patients. While persons

[1] Exhibits C2 and C2a
[2] Transcript, page 334

who contract nocardiosis very frequently have some underlying compromise of their immune system, Mr Miller seems to have been atypical in this regard because no such underlying compromise was identified in his case. The absence of any such condition would possibly be another reason why an uncommon infection such as nocardiosis would not be high on a list of clinically suspected diagnoses.

1.6. Professor Gordon informed the Court of the various means by which nocardiosis might be diagnosed in a clinically ill patient. The first point worth noting is that nocardiosis is an infective disease involving a bacterium. It is not a disease that involves cancer of an organ. However, in some ways it might resemble a malignancy insofar as the disease might spread from one part of the body to another and on radiological examination might look like, and be difficult to be distinguished from, a malignancy. The definitive diagnosis for nocardiosis is provided by way of microbiological testing. As I understood the evidence of Professor Gordon, an effective means by which a diagnosis of nocardiosis can be arrived at in cases of pulmonary nocardiosis is through testing and culturing of a specimen of sputum. Professor Gordon told the Court that a presumptive diagnosis might be made by way of the examination of a gram stain of the sputum, an exercise that might possibly take half an hour. The nocardia bacterium has a characteristic appearance under the microscope. Should it characteristics be identified, then further staining might also be undertaken and within another hour or so one might arrive at a confident, working diagnosis of nocardiosis. Further testing by way of culture would definitively confirm the diagnosis, but that might take some days. Professor Gordon cautioned that one might not necessarily identify nocardia from a sputum sample by way of gram staining in every case. He said that the likelihood of seeing nocardia on a gram stain might be 50%. However, another means by which a diagnosis might be made is through histological analysis of a sample of tissue obtained by way of biopsy. A biopsy, as guided by CT, would need to take a sufficient sample of affected tissue. Professor Gordon suggested that one might not as readily identify nocardia on examination of the tissue sample, but the point can be made that the histological analysis of such a tissue sample might eliminate other suspected pathology such as a malignancy which would then heighten the suspicion that some other pathology, such as an atypical infection, was present.

1.7. Professor Gordon further explained that nocardiosis might successfully be treated by antibiotics specifically targeted at the identified organism. Clearly the sooner such treatment begins the greater the chances of survival. A rider was added that treatment for the actual infection might be complicated and rendered more difficult by having to identify and manage the underlying immuno-pathology that has debilitated the patient to the point where that person has contracted the nocardiosis illness. A disseminated infection, for example one that has spread from the lungs to the brain, would also render antibiotic treatment all the more difficult and give rise to a less certain prognosis.

1.8. Mr Miller, 56, did not have any significant medical history that might have rendered him more susceptible to contracting an infection such a nocardiosis. He did have a background of smoking. However, his wife, Mrs Pauline Miller, gave evidence that he had quit smoking when they had first started seeing each other many years ago. Mr Miller did have some recent symptoms such as a cough, shortness of breath and some cognitive difficulties. But these symptoms seemed to have been the manifestations of his developing infection rather than evidence of some underlying condition. Mrs Miller described Mr Miller as a generally healthy man who looked after himself and who had an appropriate diet. The post mortem report of Dr Houghton reveals that Mr Miller had lesions that were identified as having an origin of nocardia infection within both his lungs and his brain as well as in other organs. However, no mass effect in either organ was identified, and no infiltrative tumour was identified within the lungs. In other words it can be safely concluded that Mr Miller had not suffered from any malignancy throughout his body. Furthermore, there is no evidence of any other acute or chronic illness or condition that might have been regarded as immuno-pathological or which may have predisposed Mr Miller or rendered him more vulnerable to contracting an atypical infection such as nocardiosis.

1.9. It is clear that the findings of nocardiosis made at autopsy account for Mr Miller's clinically undiagnosed presentation throughout his admission at the RAH.

2. Reason for Inquest

2.1. I have already alluded to the fact that at no time during Mr Miller's admission at the RAH was an infection diagnosed as the cause of his clinical presentation, either generally or specifically a nocardia infection. Throughout his admission it was considered that the most likely diagnosis was a disseminated malignancy that

involved the lungs and the brain. This is not to say that the possibility of an atypical infection as being the correct diagnosis was entirely ignored. As will be seen, it is plain that the possibility of such a diagnosis remained on the diagnostic table. The point is that at no time during the course of Mr Miller's admission to the RAH were tests conducted that would have either confirmed or refuted a diagnosis of malignancy and which might at the same time have established the correct diagnosis of an atypical infection amenable to antibiotic treatment.

2.2. In this Inquest I examined the circumstances in which the correct diagnosis was not arrived at and the circumstances in which tests that might have refuted the presence of a malignancy, and established the involvement of a treatable infection, were not carried out. I also examined the question as to whether, if such a diagnosis had been made, Mr Miller's death might have been prevented.

3. Mr Miller is admitted to the RAH

3.1. Mr Miller was admitted to the RAH during the afternoon of Monday 5 November 2007. During the preceding week Mr Miller had consulted Dr Allen Gale who is a consultant physician specialising in the field of allergy medicine. Mr Miller was examined by Dr Gale on Thursday 1 November 2007, having been referred by his general practitioner. Mr Miller provided Dr Gale with a history of lack of energy for the preceding 3 to 4 weeks and of not having worked for several days. Mr Miller complained of coughing when going to sleep and then waking up hours later bathed in sweat. The coughing had produced a creamy white phlegm. Dr Gale conducted an examination and performed some tests for laboratory analysis, but these proved not to be definitive. He saw Mr Miller again on the following Monday 5 November 2007 and on this occasion he sent Mr Miller for urgent chest X-rays and a chest CT which were taken later that day. Having reviewed the X-rays and other test results, and taking into account Mr Miller's symptoms, Dr Gale formed a suspicion that Mr Miller had a carcinoma in his left lung. That day Dr Gale referred Mr Miller to the Accident and Emergency Department of the RAH with a view to having Mr Miller examined there by the Thoracic Medicine team. His referral letter refers to Mr Miller's loss of weight and general malaise and the CT chest result revealing:

> '… what would appear to be a **Carcinoma left lung invading the mediastinum & pulmonary vein with thrombus formation.** '[3]

[3] Exhibit C3c – the emboldening and underlining appear in the original text

3.2. Mr Miller presented at the RAH Accident and Emergency Department with the letter of referral.

3.3. I add here that there is no suggestion that Dr Gale's analysis of Mr Miller's presentation was in any way deficient. His opinion regarding Mr Miller's presentation was at that stage naturally based on suspicion only and it was for this reason that he referred him to the RAH for more detailed medical analysis.

3.4. Upon admission to the RAH on 5 November 2007 it was recorded that Mr Miller had suffered from shortness of breath and a cough. He also reported intermittent fevers and sweats. There had been some significant weight loss and lack of appetite. He had been a smoker, albeit until 26 years previously. A provisional diagnosis of probable lung cancer was made. In realistic terms, this diagnosis could only have been confirmed by way of tissue sampling from the suspected site within the lung and histological analysis of the same. This analysis would not occur at any time during Mr Miller's admission and so the diagnosis remained one that was thought to be probable, and on a provisional basis. In the event, post mortem examination would ultimately reveal that there was no evidence of lung cancer anywhere in Mr Miller's body.

3.5. On the following day, 6 November 2007, Mr Miller exhibited confusion, headache and a fever. A CT scan of his head was conducted that day and lesions suggestive of metastases within the brain were identified. These metastases were thought to be the result of a likely spread of lung cancer. There is no doubt that the radiological observations were consistent with such a picture. If such a diagnosis were correct, the prognosis for Mr Miller would have been extremely poor.

3.6. In order to confirm a tissue diagnosis of lung cancer, a bronchoscopy was arranged. However, the difficulty was that Mr Miller had been placed on Clexane, an anticoagulant that had been prescribed in respect of the suspected pulmonary vein thrombosis. It was believed that the risks of bleeding that this would present during an invasive procedure such as bronchoscopy were not acceptable. The bronchoscopy was therefore postponed and in the event an alternate decision was thenmade that Mr Miller should undergo a CT guided biopsy.

3.7. On 8 November 2007 a CT guided lung biopsy was attempted by a radiologist, Dr Brett Lorraine. A local anaesthetic was used to facilitate this invasive procedure.

This procedure had to be abandoned because Mr Miller was irritable and unable to tolerate it. Dr Lorraine noted that just prior to entering the lesion within Mr Miller's lung, Mr Miller complained of shortness of breath and 'a sore bottom' and did not wish to continue with the procedure. This reaction was said to be an unusual one in a patient undergoing such a procedure, and there was no identifiable clinical basis why Mr Miller would experience either shortness of breath or pain in his hindquarters. In any event, the proceduralist had no real option but to abandon the procedure. It is worthwhile observing here that there is a nursing note to the effect that while Mr Miller in the morning was observed to be unsteady on his feet, there were no problems at that time in relation to his behaviour and he neither appeared to be confused nor aggressive. Mr Miller had given his own personal consent to the procedure, but in effect withdrew it.

3.8. The following morning, Friday 9 November 2007, a nursing note timed at 6:30am suggests that Mr Miller had been confused overnight and that his conversation was not making much sense. He had refused to wear pyjamas or a gown and had been walking around the ward naked. He had been restless for the whole night. Mr Miller is also noted as having felt a little muddled and had confused responses at times. Although the provisional diagnosis remained as likely lung cancer with possible cerebral metastases, the diagnosis still required further exploration and confirmation. There is a further nursing notation of continuing confusion and walking around the ward naked. Nevertheless, Mr Miller was able to give proper consent to a further attempt at a CT biopsy. This attempt was carried out during the afternoon of 9 November 2007. The proceduralist on this occasion was Dr Timothy Geake. This attempted CT biopsy was also unsuccessful. However, on this occasion Dr Geake was able to perfect the required needle position adjacent to the lesion but a specimen that was taken gave rise only to an unhelpful result that would have required further attempts at obtaining tissue. Unfortunately, again Mr Miller indicated that he was unable to tolerate any further attempts. Thus it was that no diagnosis was made on this occasion. Dr Geake made a note as follows:

> 'Any further attempts would require serious anaesthetic assistance.'

In his evidence at Inquest Dr Geake explained what he had meant by this entry. He said that from that point onwards the patient would require proper sedation in order for such a procedure to be successfully performed. He explained that something in

excess of local anaesthetic would be required, either sedation or even a general anaesthetic, either of which would require the input of an anaesthetist.

3.9. On 10 November 2007, which was a Saturday, the dilemma that had been identified as far as Mr Miller's lack of diagnosis was concerned, and the difficulty now presented by the added complication of his inability to tolerate the required diagnostic procedure together with a marked deterioration in his mental state, was discussed with Mrs Miller. The discussion was conducted by Dr Dien Dang who at that time was the Senior Thoracic Medicine Registrar at the RAH. Dr Dang is now a fully qualified physician. Dr Dang gave evidence in the Inquest.

3.10. Prior to speaking with Mrs Miller that morning, Dr Dang examined Mr Miller. On this occasion Dr Dang formed the view that Mr Miller was more confused than when Dr Dang had first seen him on 5 November 2007, the day of Mr Miller's admission. This observed deterioration is in keeping with recorded observations made by nursing and other staff in the intervening period. Specifically, Dr Dang observed that Mr Miller was simply not answering questions and, accordingly, was not considered competent to give consent for any procedures that were contemplated. Dr Dang formulated a plan that radiology be consulted with a view to repeating the biopsy on the Monday and that liaison with the duty anaesthetist should be undertaken for that purpose. Although what Dr Dang contemplated was a repetition of the two unsuccessful procedures that had already been undertaken, this time he thought that Mr Miller would be suitably sedated or even generally anaesthetised in order to facilitate that. Of course, consent to such procedures from a competent source would be required.

3.11. Later that morning Dr Dang discussed Mr Miller's current presentation with Mrs Miller. Dr Dang made a comprehensive and apparently contemporaneous note of his discussion with Mrs Miller. Dr Dang also gave evidence on oath in accordance with this notation. He discussed Mr Miller's possible diagnoses with Mrs Miller. He suggested that the likely diagnosis was Stage 4 cancer but that there had been no positive diagnosis made so far. He also raised with Mr Miller, very appropriately in my view, that there were, at least on the table, other possible diagnoses such as a lymphoma that might be potentially treatable and that Mr Miller's behavioural difficulties might be reversed with treatment if that were the case. Dr Dang told me that, notwithstanding the fact that he considered and raised with Mrs Miller this other

possible diagnostic scenario, it did look as if Mr Miller did have Stage 4 cancer at that time. Cancer was '*very high up on that list*'[4]. The chances of Mr Miller's presentation being explained by an infection were assessed to be very slim. It would be easy in hindsight to say in the light of what was discovered at post-mortem that the chances of Mr Miller's presentation being explained by way of an atypical infection were greater than slim. In my view such a line of reasoning would be unfair, taking into account firstly that Mr Miller's presentation was quite in keeping with Stage 4 cancer originating from the lung and having metastasised to the brain, secondly that medical practitioners involved in Mr Miller's treatment at all times remained acutely conscious of the need to confirm such a diagnosis, thirdly that they had not dismissed the possibility that Mr Miller might have been suffering from something that was potentially treatable and fourthly that the tests that the doctors wished to perform with respect to Mr Miller may well have given rise to a correct diagnosis in the end.

3.12. Dr Dang has noted, in respect of his conversation with Mrs Miller, the following:

> 'Despite these points, she has opted to not put him through further investigation and has agreed -
> He is NOT for resuscitation *
> * NOT for MET calls' [5]

The recorded position as taken by Mrs Miller at that point was that Mr Miller would not undergo any further investigation, which would include a biopsy under sedation or anaesthetic, and that if Mr Miller were to experience a cardiac arrest he would not be resuscitated. Dr Dang then noted that the plan for Monday would be altered so as to involve palliative care only.

3.13. Dr Dang told me in evidence that he believed that the position that Mrs Miller took was not an unreasonable one having regard to Mr Miller's likely diagnosis of metastasised cancer, his poor prognosis if that was correct and a desire on her part not to subject her husband to any further invasive procedure.

3.14. Mrs Miller, who gave evidence herself, explained her own mindset in this regard. It included a consideration on her part that any further biopsy, whilst possibly diagnostic, was not in itself going to prolong her husband's life or be of any further benefit. Mrs Miller was, in my view, certainly under the impression that a diagnosis

[4] Transcript, page 165
[5] Exhibit C8

of metastasised lung cancer was virtually assured. Mrs Miller did acknowledge that there had been discussion between herself an Asian medical practitioner, whom she could not identify by name but who was undoubtedly Dr Dang, about the possibility that they might diagnose something that was treatable if they could successfully perform a biopsy. She said that she could not remember who had actually spoken to her about that, '*but I vaguely remember somebody saying something like that to me*'[6]. When asked in evidence as to what she had understood the other possible diagnoses might have been, Mrs Miller acknowledged that she had understood that it could have been '*an infection type thing*'[7]. As to the lack of any resuscitative measures in the event of a terminal collapse, Mrs Miller told the Court that she was concerned about her husband being resuscitated successfully but ending up a vegetable, referring of course to the possibility of profound brain damage. Mrs Miller also referred to the fear of a biopsy piercing her husband's heart, but to my mind there is little evidence to support the notion that any medical practitioner had overstated what in reality was not a particularly high risk and one which, in any event, would be overshadowed by the clear need to perform invasive diagnostic measures.

3.15. To my mind Dr Dang explained to Mrs Miller in clear terms what the options were and Mrs Miller made her decision accordingly.

3.16. On Sunday 11 November 2007 a rapid deterioration in Mr Miller's cognitive state was noted. He was febrile, non-conversant, irrational, agitated and restless. On further consultation with Mrs Miller, she was adamant that there should be no further investigations. Dr Dang again examined Mr Miller on this day. The plan was maintained that Mr Miller would be subject to comfort measures only and that Palliative Care would be called the following day.

3.17. The following day, which was Monday 12 November 2007, there was a further assessment of Mr Miller by the thoracic medical team that included the consultant, Dr Peter Robinson and Drs Rowe, Narayan and Travers. There was further discussion between Dr Dang and Mrs Miller, who again stated that she required no further intervention for her husband. By then Mr Miller exhibited no response to commands and no vocalisation. The provisional diagnosis of malignancy remained the one considered most likely. Mr Miller's deterioration over the course of the weekend was

[6] Transcript, page 53
[7] Transcript, page 54

regarded as significant. A note was made by Dr Emily Rowe to the effect that the diagnosis at that time was suggestive of metastatic lung cancer and referred to the need for a general anaesthetic to perform a further biopsy. She noted other 'possible diagnoses' as lymphoma and atypical infection and there was a further notation that such illnesses would in any event be very difficult to treat. As well, it was noted that by this time, given his current state, Mr Miller might not recover from a general anaesthetic were it to be administered in order to carry out a diagnostic procedure. A long discussion with Mrs Miller was recorded on this day and it was noted that Mrs Miller understood that diagnostic certainty would only be possible with a repeat biopsy. It was noted that she also recognised that this would be difficult given her husband's deterioration. She was again adamant that she did not want Mr Miller to have further invasive tests and that her wish for him was to be kept comfortable.

3.18. In the next two days Mr Miller showed no improvement. By 15 November 2007 his condition was said to have plateaued. On that day a multidisciplinary meeting that involved various medical practitioners was held in respect of Mr Miller. Mrs Miller agreed on this day to a further CT brain scan which would not be invasive. On 16 November 2007 the CT scan was recorded as showing multiple small lesions throughout the brain which was consistent with the scan that had been conducted ten days earlier upon which a likely diagnosis of metastatic cancer with poor prognosis had been based. In reality, this final CT scan did not alter or clarify the diagnostic picture.

3.19. On 17 November 2007 Mr Miller passed away.

3.20. I should add at this point that in the absence of Mrs Miller's consent to further procedures, the Guardianship Board pursuant to section 59(2)(b)(ii) of the Guardianship and Administration Act 1993 could have provided such consent upon the application of one of Mr Miller's medical practitioners. Such a measure was not contemplated in this case as Mrs Miller's decision was not considered to be unreasonable. It should be understood, however, that the powers of the Guardianship Board are independent of the powers of a relative such as a spouse and that the Board's exercise of its own jurisdiction is not contingent upon a relative's refusal to provide consent. That said, there is no reason to believe that a proper presentation of Mr Miller's case to the Board, not influenced by the wisdom of hindsight now enjoyed, would have resulted in a Board decision different from that of Mrs Miller.

4. The expert evidence of Professor John Cade

4.1. Professor Cade is the Principal Specialist in Intensive Care at the Royal Melbourne Hospital. Professor Cade was asked to provide an expert opinion in relation to a number of matters arising from the death of Mr Miller. Professor Cade provided three reports[8] to the Inquest and he gave oral evidence. I accepted Professor Cade as an expert in respect of intensive care matters. Professor Cade confirmed that the disease of nocardiosis is a rare one and difficult to diagnose. In his first report[9] Professor Cade opines that the eventual diagnosis, revealed as it was at autopsy, was unexpected and that by far the most likely diagnosis in Mr Miller's case, clinically, had been metastatic lung cancer. Professor Cade rightly acknowledges that RAH staff had experienced the appropriate level of discomfort that a definitive diagnosis had not been made and that they were correct to have entertained the possibility of other explanations for Mr Miller's presentation including atypical infection. The point that Professor Cade makes, which is important, is that this is an infection that would have required definitive diagnosis prior to treatment, and could not be treated merely on suspicion. This is due to the fact that the range of required antibiotics is considerable and it would be unrealistic to prescribe all of them merely on unconfirmed speculation that nocardiosis was at work. Professor Cade expressed the view that the correct diagnosis would only have been made, and in this case would almost certainly have been made, if one of the CT guided biopsy attempts had been successful. Neither in his reports nor in his evidence did I understand Professor Cade to be in any way critical of decisions that had been taken by medical staff at the RAH. Nor was he critical of the position taken by Mrs Miller in respect of her husband in not giving consent. Professor Cade believed that the appropriate advice had been tendered to Mrs Miller and that an appropriate person, namely Dr Dang who was the Senior Registrar in Thoracics, had given that advice.

4.2. The only area in which Professor Cade did voice some disquiet was in respect of what appears to have been an inability within the RAH to have conducted an immediate further attempt at a CT biopsy on the afternoon of Friday 9 November 2007, this time by way of sedation or general anaesthetic either of which would have required administration by an anaesthetist. Evidence was given during the Inquest that the services of an anaesthetist would only have been available at such short notice in an

[8] Exhibits C9, C9a and C9b
[9] Exhibit C9

emergency setting and that this explains why no further attempt before the following Monday was contemplated. It will be remembered that after the second unsuccessful attempt on the Friday afternoon, Dr Geake had recommended 'serious anaesthesia' and that before Dr Dang spoke to Mrs Miller on the Saturday morning, he made a note that a repeat attempt at CT biopsy involving radiology and liaison with the duty anaesthetist would require consideration on the Monday. Unfortunately by the Saturday Mr Miller was no longer able to give consent to any further procedures and Mrs Miller did not give it in his stead. There is therefore a question as to whether or not anaesthetic services should have been made available on the Friday afternoon in order to facilitate a further attempt at biopsy at a time when Mr Miller's consent could still have been obtained as it had been in respect of the earlier attempt that day. It appears that the explanation is that Mr Miller's situation in the immediate aftermath of the failed biopsy on the Friday afternoon was not regarded as an emergency. Moreover, his deterioration over the weekend to a point where he could not consent to such further invasive procedures was not predicted.

5. Mr Miller's chances of survival if Nocardiosis had been diagnosed

5.1. A considerable body of evidence was adduced concerning the time that may have been taken in diagnosing nocardiosis definitively. It is true that several days would have been required before the necessary cultures could be undertaken and results provided. However, in this regard I have already referred to the evidence of Professor Gordon who suggested that a working diagnosis could have been made by gram staining in the first instance and that treatment could have been commenced on that basis. Of all the opinions that I heard on the subject I prefer that of Professor Gordon who is an undoubted expert in respect of microbiology and infectious diseases.

5.2. In short the evidence is that if either of the biopsies respectively conducted on 8 and 9 November 2007 been successful, it is likely that a working diagnosis of nocardiosis would have been made with some alacrity and that the necessary treatment could have been commenced by the end of that week. As well, the provisional diagnosis of metastatic lung cancer would likely have been wholly discounted.

5.3. As to Mr Miller's chances of survival if the correct antibiotic treatment had been commenced prior to the weekend of 10 and 11 November 2007, it is fair to say that the evidence was that even then his prognosis would have been guarded having regard

to the fact that the infection by then had undoubtedly spread to Mr Miller's brain. Professor Cade points out that although nocardiosis is treatable with antibiotics, such a course has to be prolonged for many months, particularly when the infection is cerebral and/or disseminated, both of which were the case here. He opines, however, that a favourable long-term prognosis would be expected, especially if the patient had not deteriorated greatly at the time treatment commenced. On the other hand, Professor Cade was of the view that if Mr Miller's treatment had been commenced at a time following his deterioration over the weekend, his chances of survival would have questionable.

5.4. The caveat was also expressed in the course of evidence by a number of sources that one complicating factor in the treatment of nocardiosis was the identification and treatment of an underlying immuno compromise that might have rendered the patient susceptible to developing such an infection. As to this, it is worthwhile observing that tests were in fact conducted in an attempt to identify whether Mr Miller did have any underlying immuno compromise. The tests in question included those for HIV status as well as for hepatitis. Moreover, Mr Miller did not have any intrinsic risk factors such as a history of use of drugs or corticosteroids. According to the evidence of Dr Robinson, the consultant physician involved in Mr Miller's treatment, there was no evidence of an immuno compromise whatsoever. This potential complication in treatment therefore probably did not exist in Mr Miller's case.

5.5. It is therefore possible that if Mr Miller had been diagnosed with nocardiosis at a time before the end of the week ending Friday 9 November 2007 he may have survived.

6. Conclusions

6.1. Mr Miller was admitted to the RAH on 5 November 2007. He died while still admitted as an inpatient on 17 November 2007. The cause of his death was disseminated nocardiosis involving central nervous system, kidneys, liver and thyroid with bilateral lower lobe pneumonia.

6.2. The disease that would ultimately cause his death was not at any time diagnosed during the course of Mr Miller's admission at the RAH. Attempts were made to definitively diagnose Mr Miller's illness by way of two unsuccessful CT guided biopsy attempts which Mr Miller was unable to tolerate. Mr Miller himself had given

full consent to those procedures but, in effect, withdrew his consent during the course of each procedure.

6.3. Further diagnostic attempts were contemplated, but Mr Miller's cognitive abilities had deteriorated to a point where he was unable to provide effective consent to any further procedures. His wife, Mrs Pauline Miller, did not provide her consent pursuant to Section 59(2)(b)(i) of the Guardianship and Administration Act 1993.

6.4. In the absence of definitive measures to identify Mr Miller's diagnosis, the most likely diagnosis was thought to have been disseminated lung cancer. This provisional diagnosis was objectively the most likely diagnosis. Such a diagnosis would have involved an extremely poor prognosis for Mr Miller.

6.5. In the event, the provisional diagnosis of disseminated lung cancer proved not to have been the case. Mr Miller's actual diagnosis was not established until an autopsy was performed after his death.

6.6. In the opinion of the Court, Mr Miller's treating medical practitioners did all they could to diagnose his illness. They rightly considered other alternative diagnoses such as an atypical infection. It would not have been reasonable, in all of the circumstances, to have treated Mr Miller for an atypical infection without firstly having identified the specific organism.

6.7. In all of the circumstances, the decision of Mrs Miller not to provide consent to further diagnostic measures was not an unreasonable position for her to have taken. Furthermore, the decision that she made was based on a properly explained set of circumstances.

6.8. The decision by Mr Miller's treating medical practitioners to respect Mrs Miller's decision was not an unreasonable one in all of the circumstances.

6.9. It cannot be said with absolute certainty what Mr Miller's actual prognosis would have been if his infection had been diagnosed by the conclusion of the week ending Friday 8 November 2007. However, it is possible that if he been properly diagnosed that day and antibiotic treatment commenced on that day, he may have survived. Thus his death might have been prevented had a further diagnostic procedure, involving sedation or general anaesthetic, been conducted on Friday afternoon, 8

November 2007. There is no reason to believe that Mr Miller would not have been in a position to have consented to such a procedure. It cannot be known with certainty whether he would have so consented. In the event this further measure was not carried out because Mr Miller was from that point forward not able to give his consent to that procedure and Mrs Miller did not give that consent on his behalf.

7. Recommendations

7.1. By virtue of section 25(2) of the Coroners Act 2003 the Court may add to its findings any recommendation that might, in the opinion of the Court, prevent, or reduce the likelihood of, a recurrence of an event similar to the event that was the subject of the Inquest.

7.2. I recommend that these findings be drawn to the attention of the General Manager of the Royal Adelaide Hospital with a view to that person examining the issue as to whether or not, if a repetition of the circumstances in this case should occur, immediate anaesthetic services could be provided to a patient such as Mr Miller.

Key Words: Multiple Diagnoses; Misdiagnosis; Hospital Treatment; Norcardiosis

In witness whereof the said Coroner has hereunto set and subscribed his hand and Seal the 7th day of March, 2012.

Deputy State Coroner