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 21st, 22nd, 25th, 26th and 27th days of September 2006, and the 13th day of November 2006, by the Coroner's Court of the said State, constituted of Mark Frederick Johns, State Coroner, into the death of Daniel Brindley Salmon.

The said Court finds that Daniel Brindley Salmon aged 27 years, late of 15 Lawson Crescent, Woodville West died at the Royal Adelaide Hospital, North Terrace, Adelaide, South Australia on the 27th day of September 2002 as a result of airway obstruction due to sublingual and submandibular cellulitis (Ludwig's angina) following right lower molar tooth extraction. The said Court finds that the circumstances of his death were as follows:

1. Introduction and background

1.1. Daniel Brindley Salmon was aged 27 years at the time of this death in the Royal Adelaide Hospital on 27 September 2002. Mr Salmon was in good health during the months preceding his death apart from a severe toothache from which he had been suffering since approximately May 2002.

1.2. On 26 May 2002 he attended at the Emergency Department of the Queen Elizabeth Hospital complaining of toothache for the previous week. He was told to contact the Royal Adelaide Hospital Dental Clinic and provided with analgesics in the form of panadeine forte.

1.3. He presented again at the Queen Elizabeth Hospital Emergency Department on 1 June 2002. A note of that attendance stated that he was awaiting dental extraction on 3 June 2002. Again he was provided with panadeine forte and discharged.

1.4. He attended again at the Queen Elizabeth Hospital Emergency Department on 6 July 2002. A note relating to that attendance stated that he had been suffering from toothache for two months at that stage and he been seen six weeks previously at the Royal Adelaide Hospital Dental Clinic where he had been informed that he would have to have the tooth extracted or repaired. He was waiting for an appointment time but had not heard anything as at that date. The medical officer described the tooth at that time as "rotten and shattered" but there was no sign of infection or abscess. He recorded that Mr Salmon was given a shot of Xylocaine into the mouth, clove oil and that he had panadeine forte. The note stated that he was to be seen at the Dental Clinic at the Royal Adelaide Hospital the following day. There was nothing in the note to explain the contradiction between this last statement and the earlier assertion that he was waiting for an appointment at the Royal Adelaide Hospital Dental Clinic. It is possible that an appointment was arranged by staff of the Emergency Department at the Queen Elizabeth Hospital while Mr Salmon was there.

1.5. He attended again at the Queen Elizabeth Hospital Emergency Department on 26 September 2002 and was seen by Dr Stephen Hawkyns who was a resident medical officer in that Department. Dr Hawkyns diagnosed Ludwig's angina which is a form of cellulitis or swelling of the tissue planes in the sublingual and submandibular region. It is caused by a bacterial infection and is a known consequence of tooth extraction. It can make swallowing difficult and in extreme cases it can affect breathing. It is considered to be a potentially life threatening condition and almost inevitably requires surgery for definitive treatment.

1.6. For reasons, which will become apparent later, Mr Salmon was not treated definitively at the Queen Elizabeth Hospital, but was transferred by means of his mother's private vehicle to the Royal Adelaide Hospital on the morning of 27 September 2002. On the afternoon of that day he had an operation to drain an abscess that was found in the right submandibular and sublingual space. Following the surgery he was transferred to the Recovery Ward and extubated. He was then returned to Ward Q6 at the Royal Adelaide Hospital and some time shortly after 8:45pm suffered a respiratory arrest. He was certified ceased at 9:15pm.

2. Overview of events of 25 – 27 September 2002

2.1. Mrs Dianne Mustard is the natural mother of Daniel Salmon. She gave evidence at the Inquest and her evidence provides a useful broad overview of the events that occurred between 25 September 2002 and 27 September 2002. Mrs Mustard stated that Mr Salmon had attended a dentist on Trimmer Parade on Wednesday 25 September 2002. The dentist had performed an extraction of a lower molar tooth. I am uncertain why the earlier appointments apparently arranged at the Royal Adelaide Hospital Dental Clinic did not result in the extraction of the tooth and why it was ultimately extracted by a private dentist.

2.2. Mrs Mustard stated that on the evening of 26 September 2002 she had been concerned about Mr Salmon because of swelling on his face following the tooth extraction the previous day. She had driven him to the house of some friends of his and had attended to some further business of her own. She arrived at home at 8:40pm and noted that there was a message on her answering machine from Mr Salmon requesting that she pick him up because he was feeling unwell. She picked him up as requested and noted that the swelling on his face was much greater than it had been previously. The swelling was in his neck and his face. She considered that he was running a temperature because his face was red. She took him to the Queen Elizabeth Hospital at approximately 9:30pm and returned to her home intending to contact the hospital later. She rang the Queen Elizabeth Hospital and spoke to a doctor later in the evening who informed her that he would be sending Mr Salmon home. She told the doctor that she was not prepared to accept responsibility for looking after Mr Salmon because he was having trouble breathing. Mr Salmon contacted her shortly after this to inform her that the Queen Elizabeth Hospital was to keep him overnight and then transfer him to the Royal Adelaide Hospital in the morning.

2.3. Mrs Mustard stated that she was contacted again at 7:00am and was asked if she would take Mr Salmon to the Royal Adelaide Hospital. She attended at the Queen Elizabeth Hospital and found Mr Salmon in a cubicle in the Emergency Department. She stated that a nurse was with him and that he was having difficulty breathing. A doctor came in and asked her to transfer Mr Salmon by means of her own vehicle to the Royal Adelaide Hospital Outpatients Department and to have him there by 9:30am. The doctor did not tell her what was wrong with Mr Salmon. She stated that

Mr Salmon was agitated and was scared. The swelling was worse than it had been the night before. He had swelling all around his neck running the full length of neck.

2.4. Mrs Mustard stated that she was not given any documents to take to the Royal Adelaide Hospital with Mr Salmon. She stated that no one gave her any information as to why he was being transferred. She took Mr Salmon home and he waited in the car while she went and gathered together some toiletries for him on the assumption that he would be staying at the Royal Adelaide Hospital for some time. She then drove Mr Salmon to the Royal Adelaide Hospital Dental Clinic arriving roughly between 9:00 and 10.00am. She stated that Mr Salmon was complaining about his chest and finding it hard to breath. She stated that he was "going down". She said that he was dribbling from his mouth and that a nurse gave him a box of tissues to absorb saliva.

2.5. She stated that Mr Salmon was seen at 11:30am by a female doctor. The doctor informed Mrs Mustard that Mr Salmon would have to have an operation and it was more than likely that he would have a "trachy" and be "put in ICU", to use Mrs Mustard's words, and that she was not to be alarmed when or if those things occurred. The doctor stated that the surgery would take place that afternoon and requested that Mrs Mustard take Mr Salmon to the ward. Mrs Mustard stated that she did not know what a "trachy" was and that she did not realise the seriousness of the situation.

2.6. Mrs Mustard took Mr Salmon to Ward Q6 and stayed with him until approximately 2:10pm. She left at that time because Mr Salmon wanted to have a shower and she needed to move her vehicle which she had left in a short-term car park.

2.7. Mrs Mustard then remained at her home. Her daughter, Mr Salmon's sister, was with her. Mrs Mustard rang the hospital on approximately six occasions starting from about 5:00pm. Mrs Mustard eventually spoke to Mr Salmon between approximately 7:45 and 8:15pm. At that stage he was not really able to speak to Mrs Mustard and he passed the telephone over to a nurse. Mrs Mustard spoke to the nurse instead and the nurse told her that Mr Salmon was having trouble either talking or breathing, Mrs Mustard could not recall which. Subsequently, Mr Salmon's sister also called. This call took place some time between 8:30 and 8:40pm. She also spoke to a nurse first of all because of Mr Salmon's difficulty in speaking. Mandy Salmon was able to

tell Mr Salmon over the telephone that he should go and lie in his bed and try to get some sleep. She asked if Mr Salmon would like she and his mother to come up to the hospital but he said no. She told Mr Salmon that she would instead visit him in the morning.

3. Events at the Queen Elizabeth Hospital

3.1. Dr Stephen Hawkyns

Dr Hawkyns was the registered medical officer who examined Mr Salmon on the evening of 26 September 2002 and the early hours of 27 September 2002. Dr Hawkyns is now practising medicine in the United States of America. Instead of calling him to give evidence I decided to rely upon his record of interview which was received as Exhibit C3g in these proceedings.

3.2. Dr Hawkyns stated that Mr Salmon was one of the first patients he saw on the nightshift that evening. His complaint was swelling to the lower jaw, inability to open his mouth and tooth pain. Dr Hawkyns did not find that he had a temperature or fever and took a history of Mr Salmon's tooth having been extracted the day before. Dr Hawkyns determined that Mr Salmon was suffering from the condition Ludwig's angina which he described as infection and inflammation of the soft tissue spaces of the airway. At the point at which he examined Mr Salmon he did not note any stridor or other evidence of immediate airway compromise. He thought that the Ludwig's angina was most likely due to the removal of the infected tooth, having been aware from the hospital records that Mr Salmon had been seen on several previous occasions with toothache.

3.3. Dr Hawkyns decided to attempt to contact both the on-call Ear Nose and Throat (ENT) Surgeon and the on-call Oral Surgeon who, according to his understanding, covered all the hospitals in the city including the Queen Elizabeth Hospital, but was not an in-house doctor at the Queen Elizabeth Hospital. Dr Hawkyns did speak to the on-call ENT surgeon who declined to see or to assume responsibility for the patient. He also contacted the on-call Oral Surgeon, Dr Thomas Jaunay. At line 555 to 557 of the record of interview, Dr Hawkyns stated that Dr Jaunay accepted Mr Salmon as a patient and agreed to treat him.

3.4. Dr Hawkyns was asked about the appropriateness of Mr Salmon being transferred by his mother to the Royal Adelaide Hospital. Dr Hawkyns responded that it might have

been considered that as Mr Salmon had been stable throughout the night and because there is what he described as "a notoriously long wait for ambulance transfers and 'non-urgent patients' that it might have been the most expeditious way to get him to the proper care at that point in time"[1].

4. Dr Thomas Jaunay

4.1. Dr Jaunay is a dental surgeon and has been a specialist trainee at the Royal Adelaide Hospital as an Oral and Maxillofacial Registrar since 2001. He is currently employed at the Royal Adelaide Hospital as a medical intern and will complete his qualification as an Oral and Maxillofacial Surgeon in 2007. He was an Oral and Maxillofacial Registrar at the Royal Adelaide Hospital in 2002 and was the on-call registrar on the night of 26 to 27 September 2002.

4.2. Dr Jaunay gave evidence at the Inquest. He stated that he received a telephone call from a doctor at the Queen Elizabeth Hospital at approximately 1:00am on Friday, 27 September 2002 when he was at home in bed. He stated that the doctor had an American accent. I conclude that the caller was Dr Hawkyns.

4.3. Dr Jaunay stated that he was informed by Dr Hawkyns that a patient had presented some days after a tooth extraction with a florid mouth and swelling. Dr Hawkyns had discussed the case with the ENT registrar and was asking whether Dr Jaunay would accept management of the patient. Dr Jaunay stated that he advised that he was happy to accept the patient, and that he believed that it was appropriate for the ENT registrar to decline the patient because the problem was odontogenic and therefore should be treated by the Oral and Maxillofacial Unit.

4.4. Dr Jaunay was told by Dr Hawkyns that the patient was clinically stable. There was no stridor or noise in the airway and all other clinical signs were stable. There was a degree of trismus (inability to open the mouth). On the basis of this description, Dr Jaunay knew that the patient had a medical condition that required treatment. He said that he accepted the patient and asked for him to be transferred by ambulance to the Royal Adelaide Hospital with the intention that he would then attend at the Royal Adelaide Hospital to deal with the matter. His intention was that the transfer take place immediately.

[1] Exhibit C.3.g, line 627-633

4.5. Dr Jaunay informed Dr Hawkyns that the latter should make sure that the patient was adequately fasted and was placed on intravenous antibiotics.

4.6. Dr Jaunay received a second telephone call some fifteen minutes later to inform him that Mr Salmon was unable to be transferred as no ambulance was available. Dr Jaunay asked why that was so and was informed that because the patient was a medical transfer it would not be a priority transfer. Dr Jaunay then asked Dr Hawkyns to recap the patient's clinical status. He was informed that the clinical status was unchanged. Dr Jaunay asked Dr Hawkyns to confirm that the intravenous antibiotics and fasting had been commenced. Dr Jaunay asked if a family member was available to transfer the patient and when advised that no family member was then present, Dr Jaunay asked that the patient be transferred as soon as possible in the morning. He stated that the patient should not be brought to the Royal Adelaide Hospital Emergency Department but instead to the Outpatients Department in the Dental Hospital. This would result in speedier admission and therefore speedier treatment.

4.7. Dr Jaunay stated that had the patient, whom I conclude for obvious reasons was Mr Salmon, had in fact been transferred to the Royal Adelaide Hospital, that Dr Jaunay would probably not have seen him until approximately 3:00am. In that event, if Mr Salmon had been seen to be in actual or incipient airway distress, Dr Jaunay stated that he could have been in theatre by 4:00am.

4.8. Dr Jaunay stated that the following morning at the 8:00am ward round he described the case to the second on-call registrar, Dr Sharifah Syed-Zainal. He explained that the patient was likely to arrive during the course of the morning from the Queen Elizabeth Hospital. Dr Jaunay then performed his own scheduled operating list for the morning. He stated that he rang the nursing station at some point in the morning, perhaps around 10:00am to check upon whether Mr Salmon had arrived. At that stage he was informed that the patient had not yet arrived.

4.9. Dr Jaunay stated that when he finished his operating list he was informed that Mr Salmon had presented at the hospital and was to be operated upon. Dr Jaunay was present at a 5:00pm ward round which finished at around 6:00pm. He stated that after that ward round he and Dr Syed-Zainal were doing some paperwork when they saw Mr Salmon's bed being pushed past their office into Ward Q6. Dr Syed-Zainal then

followed the orderlies into the ward. On Dr Jaunay's estimate this took place between 6:00 and 7:00pm.

4.10. Dr Jaunay stated that although Dr Hawkyns had diagnosed this as a case of Ludwig's angina he considered that he or another oral and maxillofacial surgical registrar would need to look at the patient to confirm that diagnosis.

5. Dr Thomas Soulsby

5.1. Dr Soulsby is a Fellow of the Australian College of Emergency Medicine and was working at the Queen Elizabeth Hospital in 2002. He is presently working at the Royal Adelaide Hospital in Emergency Medicine. He was a consultant in emergency medicine at the Queen Elizabeth Hospital on 27 September 2002 and commenced a dayshift at 8:00am that day. He stated that there was a handover from the night team to the dayshift and he ran that handover as the on-duty consultant.

5.2. Dr Soulsby encountered Mr Salmon soon after his arrival at the hospital that morning. He examined Mr Salmon and found that Mr Salmon could open his mouth and move his tongue. Mr Salmon was able to talk and was not exhibiting stridor nor was he drooling. Dr Soulsby formed the view that Mr Salmon had a mandibular infection and considered that it was Ludwig's angina. He stated that there was a risk of airway obstruction, but there were no signs of it at that time. Mr Salmon had then been in the department for 10½ hours. An antibiotic intravenous drip had been inserted.

5.3. Dr Soulsby considered at the time whether it was appropriate for Mr Salmon to travel to the Royal Adelaide Hospital by private vehicle. He stated that he was less than happy with that course of action but agreed to it because he did not think that Mr Salmon was in imminent danger of airway obstruction.

5.4. Dr Soulsby was asked whether he considered that a CT scan should have been conducted at the Queen Elizabeth Hospital. He did not agree with this proposition because the treatment for Ludwig's angina is surgical and a CT scan would not have served any purpose. He stated that secondly from a practical perspective in the middle of the night it was unlikely that a CT scan would have been agreed to by the Radiology Department. Dr Soulsby confirmed that he had seen cases of Ludwig's angina both before and since Mr Salmon's presentation.

6. Dr Kar Woh Ng

6.1. Dr Kar Who Ng is a consultant anaesthetist having been admitted to the Fellowship in 2003. He is currently the supervisor of anaesthetic training at Modbury Hospital. He was working at the Royal Adelaide Hospital on 27 September 2002 as a senior anaesthetic registrar.

6.2. Dr Ng recalled that he was the anaesthetist who treated Mr Salmon on 27 September 2002. He stated that he and a junior registrar, Mr Lynton Stephens, conducted a preliminary interview with Mr Salmon. The purpose of this was to conduct a preoperative assessment of Mr Salmon's airway. Mr Salmon was able to speak and respond. He could open his mouth but not greatly. He had a swelling which was consistent with a dental infection and Dr Ng thought that the procedure to be carried out was the removal of an infected tooth. He was clearly under a misapprehension in this respect, as the tooth had been removed two days previously. It became apparent that, even at the time of giving his evidence, Dr Ng still had not appreciated that the tooth had been removed before the procedure in which he was involved.

6.3. Dr Ng recorded in the Royal Adelaide Hospital notes that Mr Salmon had no allergies nor was he taking regular drugs. He had a history of mild asthma. Dr Ng regarded the case both at the time, and at the Inquest, as a fairly routine dental matter. He said that there was no stridor and no drooling. He stated "we see these patients very regularly".

6.4. Dr Ng said that the method of intubation was fibre-optic. In this procedure a flexible camera is inserted through the nose and the endotracheal tube is then inserted via the nose through the vocal cords. The reason that Dr Ng chose this method of intubation was in order to provide a teaching opportunity to his junior registrar Dr Stephens. This method of intubation was not chosen because of any inability of Mr Salmon to open his mouth sufficiently for oral intubation.

6.5. Dr Ng stated that the vocal cords when inspected fibre-optically appeared to be normal and were not swollen. This was a further indication to him that the airway was not threatened at that stage.

6.6. Dr Ng was questioned about an opinion provided to Counsel Assisting me by Dr David Wiesenfeld, Oral and Maxillofacial Surgeon and Head of the Oral and

Maxillofacial Surgery Unit at the Royal Melbourne Hospital. Dr Wiesenfeld had noted that fibre-optic intubation can lead to oedema but Dr Ng said that this was not a traumatic fibre-optic intubation. He stated that the tube went in very smoothly and there were no difficulties. As a consequence he did not believe that there would have been any trauma to the throat and accordingly no oedema.

6.7. Dr Ng confirmed that the surgeon who performed the procedure upon Mr Salmon's infection was Dr Syed-Zainal. The operation was duly performed and then Mr Salmon was extubated. Dr Ng stated that once the surgical procedure was completed, Dr Ng could open Mr Salmon's mouth further than before. He stated that the swelling had gone down with the removal of the infected material. Dr Ng examined the airway with a laryngoscope and could see his epiglottis and the posterior part of his vocal chords[2]. Dr Ng was confident that he could re-intubate Mr Salmon if that was necessary. Dr Ng noted that there is always a possibility with a patient who has undergone an anaesthetic that re-intubation will be necessary[3]. He stated that in Mr Salmon's case the chance of this happening was "slightly higher", but that Dr Ng did not think it was excessive.

6.8. Dr Ng stated that after surgery and extubation Mr Salmon went to the recovery area. Dr Ng reviewed Mr Salmon in the Recovery Ward at approximately 5:30pm. At this time Mr Salmon was sitting upright in his bed and Dr Ng asked him how he was going to which he responded "fine". Dr Ng asked him whether he was in pain and Mr Salmon denied that he was. According to Dr Ng at this time Mr Salmon sounded normal and did not have any stridor. He tongue looked slightly swollen but not abnormally so[4]. Dr Ng then asked the consultant anaesthetist in charge of the Recovery Ward, Dr Lisa McEwin, to examine Mr Salmon. She had a quick look at Mr Salmon and then signed him out of the Recovery Ward to Ward Q6.

6.9. Dr Ng stated that he had requested that the staff in the Recovery Ward administer pain relief according to their morphine protocol and that this had happened. He confirmed that, by reference to the hospital charts, Mr Salmon was administered 32mg of morphine in 4mg doses while in the Recovery Ward.

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[2] Transcript, page 103
[3] Transcript, page 77
[4] Transcript, page 81

6.10. Dr Ng stated that he did not receive any information directly from the surgeon as to the nature of the procedure[5]. However Dr Lynton Stephens had been informed, according to Dr Ng's understanding, that Mr Salmon "had an infected tooth that needed to be removed". Dr Ng stated that he had done some oral cases with Dr Syed-Zainal previously. Dr Ng stated that prior to the surgery being undertaken he had not heard any reference to a diagnosis of Ludwig's angina. He stated:

> 'If I had been told that he had Ludwig's angina I would have insisted on the help of a senior colleague and most likely would have left the tube in place.'[6]

6.11. Dr Ng explained that he had not done a case of Ludwig's angina in his previous experience and hence would have sought the assistance of a consultant[7]. He stated:

> 'My understanding at the time was that if someone tells me there's Ludwig's angina, we need to secure the airway. At that time I wasn't aware it could happen after.'[8]

I take him to be referring to the possibility of airway obstruction occurring post operatively in this passage.

6.12. Dr Ng stated that had he understood in 2002 that it was a case of Ludwig's angina he would have considered leaving the breathing tube in but that in any event he would certainly have obtained the assistance of a consultant[9].

6.13. Dr Ng acknowledged that the decision to extubate was his own decision[10]. He stated that there was no discussion with Dr Syed-Zainal about the decision to extubate. He was asked about an opinion expressed by Dr Wiesenfeld who stated that although ultimately it is the anaesthetist who makes a decision as to extubation, it is a decision made after discussion with the surgeon to see whether there is an agreement between the two. Dr Ng stated that he agreed with that proposition. He stated that normally it is the surgeon who might say that the infection was really bad and the airway was not one hundred percent clear and could the tube be left in. He acknowledged that he is dependent upon the surgeon to pass on particular information about the decision to extubate. He stated that he assumed that Dr Syed-Zainal did not think that the infection was out of the ordinary and as she had not raised anything in particular that

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[5] Transcript, page 95
[6] Transcript, page 97
[7] Transcript, page 98
[8] Transcript, page 98
[9] Transcript, page 99
[10] Transcript, page 104

there were no difficulties[11].

7. Dr Sharifah Syed-Zainal

7.1. Dr Syed-Zainal was not called to give evidence at the Inquest. She returned to Malaysia at the beginning of 2005. When inquiries were made in April 2006 in preparation for the Inquest, she was believed to be at an unknown location in Pakistan with the Malaysian Armed Forces, her employer, as part of an international contingent providing aid to earthquake victims[12]. Accordingly she was not called to give evidence.

7.2. Professor Goss, whose evidence will be considered later in these findings, told the Court[13] that Dr Syed-Zainal is a Malaysian national who graduated in dentistry from the University of Malaysia. She had joined the Malaysian Armed Forces and had four years training after graduation before coming to Adelaide. She had been appointed as a Lecturer in Oral and Maxillofacial Surgery and a Consultant at the University of Malaysia Kota Bharu. By the time she came to Australia for further training in Adelaide she had sat and passed the Fellowship of the Royal College of Surgeons in the discipline. She was already, according to Professor Goss, well trained and experienced and had come to Adelaide for advanced training. Professor Goss considered her well qualified to perform the procedure that she did on Mr Salmon.

8. Dr Lisa McEwin

8.1. Dr Lisa McEwin is employed at the Royal Adelaide Hospital as an anaesthetist. She was the duty anaesthetist in the Department of Anaesthesia on 27 September 2002. In part, her duties involved supervising in the Recovery Ward including signing patients out.

[11] Transcript, page 105
[12] Exhibit C.3.a
[13] Transcript, pages 250-251

8.2. Dr McEwin stated that her recollection of Mr Salmon was very vague. From the fact that her signature appeared on the recovery room nursing record she was able to confirm that she reviewed Mr Salmon and signed him out of recovery. She stated that before signing a patient out, she satisfies herself that the patient is awake, comfortable, the observations are stable and the nurses had no problems to report. Furthermore, she ensures that appropriate post-operative orders have been written. She stated that the average stay in recovery in 2002 was approximately one hour and that three sets of observations would be conducted approximately fifteen minutes apart.

8.3. Dr McEwin stated that she understood that Mr Salmon had a drainage of a submandibular abscess. She was not aware of the diagnosis of Ludwig's angina. She knows that Ludwig's angina is associated with a marked degree of airway compromise but she stated that this was not evident in his situation.

8.4. She stated that the 32mg of morphine administered in the Recovery Ward was not an excessive dose and that it was given according to the morphine pain protocol. She stated that the recovery room record did not show any evidence of significant respiratory depression and referred in particular to the nursing observation chart recordings for 1810 and 1900 hours which indicated that there was no sign of respiratory depression.

9. Nurse Barbara Demetriou

9.1. Nurse Demetriou is an Enrolled Nurse at the Royal Adelaide Hospital. She was working in Ward Q6 between 1:00pm and 10:00pm on 27 September 2002.

9.2. Nurse Demetriou stated that Ward Q6 has four bays. Each bay is assigned to one registered nurse who is assisted by one enrolled nurse. Nurse Demetriou was working with Registered Nurse Joanne Perry on that shift. She stated that the usual number of patients assigned to a bay is eight. She recalled Mr Salmon arriving in the ward from recovery and described him as alert and orientated. She directed the orderly to the bay and assisted Mr Salmon into the bed. She stated that the ward staff were expecting him to arrive and were aware that he had a submandibular abscess to be drained. That information was provided by the recovery staff. She stated that the recovery nurse gave her and Registered Nurse Perry a handover.

9.3. The recovery nurse told nurses Demetriou and Perry that Mr Salmon had undergone a procedure for drainage of a submandibular abscess and that he was alert and orientated. The recovery nurse outlined the drugs he was prescribed.

9.4. Nurse Demetriou stated that the observation regime within the ward as at 27 September 2002 in these circumstances was hourly observations checking sedation scores, temperatures, oxygen saturations and blood pressure. Nurse Demetriou stated that Mr Salmon arrived on the ward at 1810 hours and that observations were recorded in the notes as having been done by Registered Nurse Perry at 1810 and 1900 hours. Another set of observations were done at 2000 hours.

9.5. Nurse Demetriou stated that she assisted Mr Salmon to have a shower and she changed his dressing. She stated that he had a shower soon after he arrived in the ward and that she remained close by while he was in the shower. She stated that he responded to her with yes or no answers and did not converse.

9.6. Nurse Demetriou put a telephone call through to Mr Salmon after his shower and change of dressing. She thought that there was a second telephone call but she did not know from her own knowledge.

9.7. Nurse Demetriou stated that she performed and recorded on the composite chart observations conducted at 2000 hours. The composite chart did not make provision for a recording of a sedation score, however Nurse Demetriou stated that Mr Salmon was alert and orientated at that time.

9.8. Nurse Demetriou stated that the next time she saw Mr Salmon he was in the nurses station when Nurse Demetriou and Nurse Perry walked into that area. Nurse Demetriou had been attending to a bedpan for a patient and Nurse Perry was returning from the Intensive Care Unit after having taken a patient from Ward Q6 to that unit.

9.9. Nurse Demetriou stated that Mr Salmon was standing at the sink in the nurses station. Nurse Perry asked him if he was having trouble breathing and he said “yes”. Nurse Perry asked him to follow Nurse Demetriou back to his bed which he did. Nurse Demetriou stated that when she arrived with Mr Salmon at his bed she heard a stridor. She quickly turned around and grabbed Mr Salmon and put him on the bed. She noted that his pupils were fixed and dilated. She called out for Nurse Perry to

attend. In the meantime she placed Mr Salmon in the correct position for CPR to be conducted, and was calling out his name. Nurse Perry arrived together with two doctors who happened to be on the ward as well. At this point Nurse Demetriou closed off other parts of the bay from view by other patients. Another registered nurse made a call for the medical emergency team to attend.

9.10. Nurse Demetriou stated that since 2002 there has been what she described as a "dramatic turnaround" in that all patients tend to stay in either the Intensive Care Unit or the High Dependency Unit for approximately twenty-four hours of airway management after undergoing an operation of the kind performed on Mr Salmon. She stated that patients are only brought up to the ward after they have been "fully cleared".

9.11. Nurse Demetriou had never heard about the diagnosis of Ludwig's angina. She did not know what the condition was. She was aware that Mr Salmon was at risk of airway compromise stating "they all fall into that category".

10. Nurse Joanne Perry

10.1. Nurse Perry is a Clinical Nurse and currently works on Ward Q6 at the Royal Adelaide Hospital. She has worked on that ward since 1993 and was on duty between the hours of 2:30 and 11:00pm on 27 September 2002. At that time she was the Senior Registered Nurse on duty on the ward.

10.2. Nurse Perry gave evidence at the Inquest and confirmed that she was on duty with Nurse Demetriou. She stated that she had a recollection of Mr Salmon being returned from recovery at approximately 5:45pm. The recovery nurses had stated that he was agitated initially and striking out at staff but had settled after obtaining pain relief. She confirmed that his post-operative treatment orders and medication chart accompanied him from the Recovery Ward. She stated that Mr Salmon seemed to be comfortable and settled and was able to speak but could not recall if he said more than short yes or no answers.

10.3. Nurse Perry stated that Mr Salmon was reviewed at some point by Dr Syed-Zainal but could not recall at what time.

10.4. Nurse Perry administered some morphine to Mr Salmon at 2005 hours for pain relief. She stated that at this time he was not sedated but was alert and orientated.

10.5. Her next recall was when she returned from the Intensive Care Unit having been away with another patient for approximately twenty minutes. She stated that she entered the nurses station and observed Mr Salmon standing by the sink. She stated that two other staff, Barbara and Kate, were with him and were unable to settle him. He appeared to be distressed. He nodded when Nurse Perry asked him if he was having trouble breathing. Shortly after this Nurse Demetriou yelled and Nurse Perry went immediately to Mr Salmon's bed. He was not breathing and his pupils were fixed. She commenced cardiopulmonary resuscitation without response but shortly after commencing the resuscitation the doctors who happened to be on the ward took over from her. She confirmed that a medical emergency team call was made and that when the medical emergency team arrived they took over.

11. Cardiac arrest call

The Royal Adelaide Hospital notes show that the cardiac arrest call was received by the medical emergency team at 2055 hours. They found Mr Salmon in cardiorespiratory arrest. He was cyanosed, with fixed and dilated pupils. They could not ventilate Mr Salmon, because his airway was obstructed. No view of the vocal cords could be obtained with a laryngoscope. There was gross facial and submandibular swelling. A cricothyrotomy (incision of the larynx through the cricothyroid ligament) was performed to obtain an airway. Resuscitation continued for 20 minutes. Death was certified at 2115 hours.

12. Dr Paul Duke

12.1. Dr Paul Duke is an Oral Surgeon, and practises as a consultant, at the Royal Adelaide Hospital. He was on-call on 27 September 2002 from 12 midday.

12.2. Dr Duke gave evidence at the Inquest and stated that he did not himself examine Mr Salmon. He state that it was customary at that time for the registrar to ring the consultant before taking a patient to theatre. He said that he could not remember having received such a telephone call about Mr Salmon from Dr Syed-Zainal but believed that it would have happened.

12.3. Dr Duke stated that Dr Syed-Zainal came to the Royal Adelaide Hospital from Malaysia for post graduate training. She had had four years post graduate training in oral and maxillofacial surgery before she came to Australia. He considered her to be at the senior end of the registrar scale of experience.

12.4. It was put to Dr Duke that Dr Wiesenfeld's opinion is that normally a patient such as Mr Salmon would be seen by a consultant oral surgeon prior to surgery. Dr Duke did not agree with that contention, stating that he has faith in many of his staff.

12.5. Dr Duke stated that he understood that Ludwig's angina is a bilateral swelling of the sublingual area, with external swelling as well. He stated that Mr Salmon's condition as he understood it was "not my appreciation of Ludwig's angina"[14].

12.6. Dr Duke also stated that contrary to Dr Wiesenfeld he saw no benefit in a consultant reviewing a patient such as Mr Salmon post-operatively.

12.7. On the subject of an anaesthetist's decision to extubate, and the degree of discussion that might take place with a surgeon prior to that decision being made, Dr Duke did not see that he, as the surgeon, would have significant input into that decision.

12.8. Dr Duke referred to Mr Salmon's condition in a number of parts of his evidence as a "swollen face". He commented that "there are a lot of patients coming through with swollen faces"[15]. Dr Duke stated that he, and other consultants "don't see every swollen face, a patient with a swollen face that comes through"[16].

13. Professor Alastair Goss

13.1. Professor Alastair Goss gave evidence at the Inquest. He is an Oral and Maxillofacial Surgeon and is currently the Head of the Oral and Maxillofacial Surgery Unit at the Royal Adelaide Hospital.

13.2. He gave evidence that the registrar responsible (Dr Syed-Zainal) reported the details of Mr Salmon's case to him at his professional ward round on the evening of 27 September 2002 after the operation had taken place[17]. She advised him that Mr Salmon was a patient with a unilateral submandibular abscess secondary to a tooth

[14] Transcript, page 211
[15] Transcript, page 213
[16] Transcript, page 209
[17] Transcript, page 237

cause. She informed Professor Goss that Mr Salmon had been transferred from the Queen Elizabeth Hospital to the Royal Adelaide Hospital and she had performed an operation for drainage of the abscess which had gone satisfactorily and that the patient was back in the ward. Professor Goss did not himself examine Mr Salmon.

13.3. Professor Goss explained that the ward round which he conducted that evening was not a ward round in the traditional sense in which the doctors move from patient to patient in the ward itself. Instead, no patients were observed because the ward round took place in the nurse's office at the outpatient clinic. Professor Goss explained:

> '.. what we do is then there's myself and the registrars and the registrar on call then outlines to me all of the cases who have either been recently discharged or are in hospital … and we discuss them...'[18]

13.4. Professor Goss stated that Dr Syed-Zainal had reported the outcome of Mr Salmon's case as one, which had proceeded well, and she stated that she had examined and explored all of the relevant spaces around the areas where the infection might go. She had identified that this was a microabscess or cellulitis type case. He said that she explored the relevant areas, put in the appropriate drains and expressed no opinion or concern about the fact that Mr Salmon had been extubated. So far as she was concerned it was a routine case.

13.5. Professor Goss was involved in a "root cause analysis" of the circumstances of Mr Salmon's case. In the course of that root cause analysis he had obtained a detailed understanding of Mr Salmon's case. Professor Goss stated that Ludwig's angina is a severe infection involving the neck bilaterally from the chin down to the level of the clavicle[19]. On the other hand he stated that a submandibular abscess is an infection involving at most a quarter of the neck. He described the two conditions as "fundamentally different". He stated:

> 'No, Mr Salmon had a classical submandibular abscess with no features of Ludwig's angina.'[20]

13.6. Professor Goss appeared to dismiss Dr Hawkyns' diagnosis of Ludwig's angina:

> '…there's a common medical officer, shorthand of calling any infection in the neck as a Ludwig's angina, that is incorrect, both technically and clinically.'[21]

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[18] Transcript, page 265
[19] Transcript, page 243
[20] Transcript, page 243

13.7. Of course I must weigh this evidence in the knowledge that Professor Goss never actually saw Mr Salmon. Nevertheless, despite never having seen Mr Salmon, Professor Goss very confidently asserted at the Inquest that Mr Salmon's was the clearest case of submandibular abscess. He described the procedure for treatment as a "straight forward operation"[22].

13.8. Professor Goss stated vehemently that his opinion that this was not a case of Ludwig's angina was "clear cut"[23]. When asked if he had read the post mortem report or had access to it, he acknowledged that he had never read the post mortem report. An opportunity was provided to him during the course of his evidence to do so. After reading the post mortem report, he stated that his opinion remained the same, notwithstanding that Dr Gilbert (the pathologist who conducted the post mortem) had arrived at a diagnosis of Ludwig's angina following his autopsy.

13.9. Professor Goss stated vehemently that his opinion that this was not a case of Ludwig's angina was "clear cut"[24]. When asked if he had read the post mortem report or had access to it, he acknowledged that he had never read the post mortem report. An opportunity was provided to him during the course of his evidence to do so. After reading the post mortem report, he stated that his opinion remained the same, notwithstanding that Dr Gilbert (the pathologist who conducted the post mortem) had arrived at a diagnosis of Ludwig's angina following his autopsy.

13.10. I do not agree with Professor Goss' opinion that this was not a case of Ludwig's angina. Professor Goss never saw the patient. His consideration of Dr Gilbert's post mortem report was brief, almost perfunctory. I prefer Dr Gilbert's opinion that this was a clear case of Ludwig's angina.

13.11. Professor Goss disagreed with the opinion of Dr Wiesenfeld already referred to that a patient such as Mr Salmon should not go to theatre unless he had been reviewed by a consultant.

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[21] Transcript, page 245
[22] Transcript, page 251
[23] Transcript, page 268
[24] Transcript, page 268

13.12. Professor Goss accepted more readily than Dr Duke that a surgeon in a case such as this has some part to play in consultation with the anaesthetist in relation to the decision to extubate[25].

13.13. Professor Goss gave evidence about a protocol which was introduced to the Royal Adelaide Hospital in the period following, and as a result of, Mr Salmon's death[26]. He stated that the Oral and Maxillofacial Unit, the ENT Department and the Anaesthetic Department promulgated a protocol for the guidance of staff about the appropriate evaluation of such patients. The protocol has been widely promulgated throughout the hospital in unit meetings, surgical rounds and is available on the hospital intranet. The protocol is reviewed annually and updated as required.

13.14. Professor Goss stated that the protocol has resulted in certain changes:

> 'One is that all of these infections are not dismissed as simply dental infections, they are treated seriously.'[27]

13.15. The second is that the number of patients who remain intubated following surgery has increased considerably. In other words, there is a reduction in the number of patients who are extubated immediately following such procedures. Professor Goss stated that according to the protocol Mr Salmon would be a patient who, if operated upon today, would have remained intubated following the procedure for a more prolonged period[28]. Professor Goss stated that under the new protocol, if the anaesthetist could not see more than half of the vocal cords, the decision would be made to leave the patient intubated[29].

13.16. Rather unfortunately, Professor Goss added that he had been informed by one of the nurses who had been on duty that day that that nurse had detected cigarette smoke on Mr Salmon's breath. This, according to Professor Goss, provided evidence to suggest that Mr Salmon's airway could not have been compromised in the period leading up to this observation by that nurse. The observation was reported to have taken place at or about the time of Mr Salmon's arrival at the Royal Adelaide Hospital.

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[25] Transcript, page 255
[26] Transcript, page 259
[27] Transcript, page 261
[28] Transcript, page 263
[29] Transcript, page 274

13.17. I regard this as a very unreliable basis upon which to arrive at the conclusion that Mr Salmon's level of airway distress upon arrival at the Royal Adelaide Hospital was such as to preclude a diagnose of Ludwig's angina, particularly in the face of the autopsy report by Dr Gilbert which proves conclusively otherwise. There are a myriad of explanations for what might have been mistaken as cigarette smoke on Mr Salmon's breath. His mother gave evidence at the Inquest that she is a heavy smoker and was probably smoking in the vehicle when she transported Mr Salmon to the Royal Adelaide Hospital. This by itself would account for a smell of cigarette smoke, and demonstrates the unreliability of an observation by a nurse who had no involvement in Mr Salmon's clinical treatment, and who made no notes in the hospital records, about the presence or otherwise of cigarette smoke on Mr Salmon's breath. I note furthermore that neither Professor Goss nor Dr Duke made any notes of their involvement with Mr Salmon, passing though it was. Nor for that matter did Dr Jaunay. All in all, I conclude that the record keeping by the practitioners involved was quite inadequate.

13.18. Although Professor Goss was quite dogmatically of the view that this was not a case of Ludwig's angina, the fact remains that on his own evidence, the case gave rise to significant and major change to post-operative protocols at the Royal Adelaide Hospital.

13.19. I have had regard also to the descriptions referred to earlier by Mr Salmon's mother of his difficulty in breathing and general circumstances while she was with him during the morning and early afternoon of 27 September 2002.

14. Dr David Wiesenfeld

14.1. Dr David Wiesenfeld is an Oral and Maxillofacial Surgeon and is Head of the Oral and Maxillofacial Surgery Unit at the Royal Melbourne Hospital. He provided an overview of this case for the Court and gave evidence at the Inquest.

14.2. Dr Wiesenfeld stated that he has seen fifteen or twenty cases of Ludwig's angina over his career. He described it as a spreading cellulitis and infection affecting the sublingual (under tongue), submandibular (between the floor of the mouth and the skin) area of the face and neck. He stated that the tongue is elevated and that the key issue in the condition is management of the airway so that the patient does not suffocate.

14.3. He stated that, as with all conditions, Ludwig's angina presents in different degrees of severity. A severe case is one in which the patient will be leaning forward and drooling. He stated that it is true that if the infection is unilateral only, it is not a strict case of Ludwig's angina.

14.4. Dr Wiesenfeld provided a report to the Court dated 21 December 2005. The report was admitted as Exhibit C17 in these proceedings.

14.5. Dr Wiesenfeld noted that Mr Salmon had multiple presentations to hospital without definitive treatment. He was of the opinion that the period spent at the Queen Elizabeth Hospital overnight probably delayed the timing of the definitive treatment (surgery) and during this time Mr Salmon's condition would have become a little more severe. Dr Wiesenfeld stated that the ENT registrar contacted by Dr Hawkyns was correct in referring the patient to the Oral and Maxillofacial Unit at the Royal Adelaide Hospital.

14.6. Dr Wiesenfeld was asked about the theory that Mr Salmon's was not a case of Ludwig's angina because of suggestions that the infection was unilateral and not bilateral. In the end Dr Wiesenfeld reached the sensible conclusion that if the forensic pathologist found that the infection was present on both sides of the neck it was a case of Ludwig's angina. Dr Wiesenfeld stated that from his reading of the post mortem report, there was some ambiguity on this subject. Dr Gilbert was called to give evidence at the Inquest and as will be seen when I review his evidence, he confirmed that the cellulitis was bilateral thus confirming the diagnosis of Ludwig's angina. However, Dr Gilbert had not given evidence when Dr Wiesenfeld gave his evidence.

14.7. Dr Wiesenfeld stated that in his opinion the decision to extubate should be a shared decision. He stated that the anaesthetist "owns the tube" and that the surgeon "owns the patient". He stated that it would be his approach as a surgeon to finish the operation, assess how much oedema had been present in the neck and jaws, consider how successful the operation had been in removing all of the infection and if he felt that the source of the problem had been entirely removed he would feel comfortable in the patient being extubated. If he felt that he had not found the source of the infection and had conducted a considerable amount of surgical exploration, he would remain concerned. He stated that if he thought he were dealing with a case of Ludwig's angina then maintenance of the tube or an elective tracheostomy would be

part of the management of the patient. He stated that at the Royal Melbourne Hospital if there is any doubt about the patient's capacity to maintain an airway post-operatively, the patient goes to the Intensive Care Unit. If that does not happen, an elective tracheostomy is performed.

14.8. In his report to the Court, Exhibit C17, Dr Wiesenfeld stated that the management protocols referred to by Professor Goss, and introduced in 2003 following Mr Salmon's death, are appropriate. However, Dr Wiesenfeld considered that the protocol is deficient in that it does not require that a patient be assessed by a consultant anaesthetist and surgeon pre-operatively. At the Inquest he maintained that position[30]. However, Dr Wiesenfeld conceded that his opinion as to the need for pre-operative examination by consultants is not universally applied at all of the hospitals in Melbourne[31]. He insists upon it at Royal Melbourne Hospital.

14.9. Dr Wiesenfeld expressed the opinion that Mr Salmon's airway obstruction was probably caused by a progressive swelling of his airway caused by the original infection or post-operative oedema, but probably from the original infective process[32].

14.10. Dr Wiesenfeld stated that he considered that there was no need for the involvement of the ENT speciality in Mr Salmon's case while at the Royal Adelaide Hospital[33]. Furthermore, Dr Wiesenfeld felt that there was no particular need in Mr Salmon's case for the administration of steroid therapy post-operatively as had been suggested by another reviewer in this case, Dr Frayne[34]. Furthermore, Dr Wiesenfeld did not agree that it would have been appropriate to send Mr Salmon for a CT scan because of the risk of airway blockage while the scan was being carried out.

[30] Transcript, page 301
[31] Transcript, page 310
[32] Transcript, page 304
[33] Transcript, page 305
[34] Transcript, page 306

15. Dr John Gilbert

15.1. Dr Gilbert is a Forensic Pathologist and is a Member of the Royal College of Pathologists of Australasia. He has had extensive experience in the field of forensic pathology and is highly regarded as a medico legal expert. He prepared a post mortem report in this case which was admitted as Exhibit C2a. The report was dated 31 January 2003. The cause of death was given in that report as airway obstruction due to sublingual and submandibular cellulitis (Ludwig's angina) following right lower molar tooth extraction.

15.2. Dr Gilbert stated that cellulitis is another description for inflammation of subcutaneous tissue. He stated that his finding at post mortem as to the nature and extent of cellulitis was that there was diffuse hardening and swelling of the soft tissues of the upper neck above the level of the larynx. He stated that there was evidence of recent surgical intervention there but that the major finding was diffuse oedema of that area and on microscopic examination he stated that he could see acute inflammatory changes in all the soft tissues of the upper neck.

15.3. Dr Gilbert stated that photographs were taken at the post mortem procedure, and Dr Gilbert reviewed those photographs before giving evidence. He stated that from his review of those photographs and the way he had recorded his findings in the report he believed that the oedema and inflammation was diffuse, covering the area right around the upper neck and underneath the lower jaw[35]. Dr Gilbert confirmed that all four of the recognised criteria for Ludwig's angina were determined to have been met according to his post mortem examination[36]. He stated that he did not believe that any of the swelling that he observed would have been due to resuscitative attempts made following Mr Salmon's collapse (Professor Goss had suggested that resuscitative efforts may have accounted for the findings at autopsy). Finally, Dr Gilbert stated that, based on the naked eye appearances and also the microscopic appearances of multiple sections that he took from around the upper neck, that Mr Salmon's was a case of Ludwig's angina[37]. He stated that the bacteriology results taken were consistent with this diagnosis as was the clinical picture and its origin from an

[35] Transcript, page 354
[36] Transcript, page 358
[37] Transcript, page 359

infected molar tooth which he described as "absolutely classic". He stated that he had not seen anything that caused him to doubt the diagnosis of Ludwig's angina.

16. Conclusions

16.1. In my opinion it was appropriate for Dr Hawkyns to contact the ENT and Oral and Maxillofacial registrars on call that evening as he did. I am not critical of the ENT registrar for refusing involvement. This was an appropriate case for referral to the Oral and Maxillofacial Unit at the Royal Adelaide Hospital as eventually happened.

16.2. It is unclear why Mr Salmon was unable to be transferred to the Royal Adelaide Hospital in the early hours of Friday morning 27 September 2002.

16.3. As a result of the method of transferral, by private vehicle driven by his mother, no hospital notes accompanied Mr Salmon to the Royal Adelaide Hospital. In my view this is a serious deficiency for which the Queen Elizabeth Hospital must bear responsibility.

16.4. I am of the opinion that there was a deficiency in the handling of Mr Salmon's case in that the transfer was not effected in a sufficiently timely manner, and that no records accompanied Mr Salmon when he was transferred. The effect of this was that his condition continued to deteriorate while he remained at the Queen Elizabeth Hospital and Dr Syed-Zainal was never provided with the information that Ludwig's angina had been diagnosed by an earlier practitioner.

16.5. Dr Ng stated that had he been told that Mr Salmon's was a case of Ludwig's angina he would have involved a more senior anaesthetist pre-operatively. I find that had this diagnosis been clearly made at the Royal Adelaide Hospital before the procedure was carried out, a consultant would have probably been involved in the operation. In these circumstances it is possible that a consultant may have decided to leave Mr Salmon intubated for a longer period following his operation.

16.6. I find that Mr Salmon was indeed suffering from Ludwig's angina. According to Dr Wiesenfeld the key feature of this condition is the bilateral involvement of more than one space. Dr Gilbert confirmed at post mortem that this was certainly the case. Professor Goss never saw Mr Salmon. At the end of the day Dr Gilbert's assessment is the most reliable of all.

16.7. There was no discussion between Dr Ng and Dr Syed-Zainal before the surgery about the nature of the condition. This was a clear deficiency in the management of Mr Salmon. Even at the time of the Inquest Dr Ng still thought that a tooth was removed during the procedure when in fact that did not happen at all.

16.8. In my opinion Mr Salmon was extubated earlier than he should have been with the effect that one of the known complications of Ludwig's angina, namely airway obstruction post-operatively, claimed his life.

16.9. I recommend pursuant to section 25(2) of the Coroner's Act 2003 that the Queen Elizabeth Hospital review its processes and guidelines to ensure that in all cases of transfer, whether by ambulance or by private patient vehicle, the appropriate notes accompany the patient to the hospital to which the patient is being referred.

16.10. I recommend pursuant to section 25(2) of the Coroner's Act 2003 that the Minister for Health take this opportunity to remind the public that it is most unwise to continue to ignore signs of dental infection over a prolonged period. While Mr Salmon's death is extremely tragic, the fact remains that he appears to have delayed the seeking of definitive treatment for his infected tooth for far longer than was wise. Earlier dental treatment of his infected tooth may have prevented the deterioration of his condition to the point where the infective process from which he eventually suffered gained a foothold. I am unable to express a view as to the cause of Mr Salmon's delay in seeking definitive treatment. It may be that he was unable to afford private treatment and was reliant on the public dental system. We know that he eventually had the tooth removed privately. He may have been unable to wait any longer for treatment in the public system.

Key Words: Hospital treatment; Ludwig's angina; Record Keeping/Clinical Records.

In witness whereof the said Coroner has hereunto set and subscribed his hand and

Seal the 13th day of November, 2006.

State Coroner