Coroners Act, 1996

[Section 26(1)]

Western  **Australia**

RECORD OF INVESTIGATION INTO DEATH

Ref No. 5034/07

I, Susan Peta Richardson, Coroner, having investigated the death of ***Kylie Anne LYNCH,*** *with an Inquest held at Carnarvon Coroners Court on 13 – 15 April 2010 find that the identity of the deceased person was* ***Kylie Anne LYNCH*** *and that death occurred on 2 September 2007 at the Coral Bay Nursing Post, Coral Bay as a result of Anaphylaxis in the following circumstances -*

Counsel Appearing:

Dr Celia Kemp assisting the Coroner

Michael Vasilli (instructed by Elli Gan, Pilbara Community Service) on behalf of the family of the deceased

Belinda Bourke (instructed by Chapmans) on behalf of the ANF and Nurse Marion Pederson

Carolyn Thatcher (instructed by Bronwyn Peters, State Solicitor's Office) on behalf of the Department of Health

Melanie Naylor (Tottle Partners) on behalf of Drs Geert Dijkwel, John Collis, Casey Parker and Adrian De Francesco

Georgia Mortley (Clayton Utz) on behalf of Anaphylaxis Australia

Hugh O'Sullivan (SRB Legal) on behalf of Giovanni Di Costa, proprietor of Finns Cafe

INDEX

INTRODUCTION

Kylie Lynch was a vibrant and fun loving young woman who lived in Karratha with her parents, Peter and Tiyaba Lynch, and her brothers and sister. She was one of eight children. Kylie was born on 13 April 1987 and was only 20 years old at the time of her death.

Kylie's brother, Craig, gave moving evidence to the inquest about his sister who he described as "a sister, a daughter and a friend to many. She was very beautiful, outgoing, liked everything about life and gave 100% to everything she did … She was the height of the family. She was the one who brought us close together …. she proved to herself that her medical history, her situation with her asthma and her allergy, was not going to stop her from doing anything .. and that's the thing I loved about Kylie. Nothing was no for her. Everything was a yes."

From the time when she was a very young child, Kylie suffered with chronic asthma, at times complicated by croup and bronchitis, and presented on many occasions for treatment and admission to the emergency department of Nickol Bay Hospital in Karratha. Kylie also suffered with eczema and was allergic to peanuts, and possibly other food allergens.

As a result of her illness, Kylie missed many days of school. Despite her absences, Kylie graduated from school and earned the principal's award for courage and excellence in recognition of her tenacity in pursuing her education. After she completed school, Kylie obtained qualifications in

hospitality, and was working with the Karratha Housing Youth Project at the time of her death.

In early September 2007, Kylie and her boyfriend, Matthew Garratt, went on a holiday to Coral Bay, a little town on the West Australian coast about 400 kms south of Karratha. On their second night in Coral Bay, on 2 September 2007, Kylie and Matthew went to the Ningaloo Reef Resort Hotel for dinner. They then walked up the road to Fins Café where they each had a dessert.

About 15 minutes after leaving Fin's café, at about 8.00 pm, Kylie started coughing. She used her Ventolin inhaler, but could not stop coughing. Matthew called the on duty nurse at the Coral Bay Nursing Post and took Kylie to the nursing post.

Nurse Marion Pederson was on call and attended at the Coral Bay Nursing Post where she found Kylie in severe respiratory distress. After providing initial care to Kylie, Nurse Pederson telephoned Dr Dijkwel, the on duty doctor at the Exmouth District Hospital. She then continued her care of Kylie under instructions from Dr Dijkwel who remained on the telephone. Tragically Kylie's condition continued to deteriorate and she passed away at about 9.50 pm that night. The cause of Kylie's death was anaphylaxis – in this case, likely to be an allergic reaction to peanut, or other tree nut.

Kylie's tragic and untimely death has deeply affected her family. They want to do what they can to increase awareness of anaphylaxis so as to prevent a similar fate occurring to someone else and their family. The family have put

a large amount of time and preparation into this inquest. They were of particular assistance to Counsel Assisting in gathering evidence for the inquest and I am very grateful for their assistance and thank them sincerely for their efforts. I also extend my heartfelt sympathy on their immeasurable loss.

WEEKEND AT CORAL BAY – 1 & 2 SEPTEMBER 2007

Kylie Lynch lived in Karratha, in the north west of Western Australia. Her boyfriend was Matthew Garrett. They had been in a relationship for about four months. In early September 2007, Kylie and Matthew decided to visit the small and remote coastal town of Coral Bay, about 400 kms south of Karratha.

The night before their trip Kylie and Matthew shopped in Karratha for food items to take on their holiday and Kylie purchased a box containing eight muesli bars. The ingredients in these bars, as listed on their packaging, included almonds; the labelling also noted that the milk chocolate chip used in the muesli bars was made on equipment that produces products containing other tree nuts. Matthew told the inquest that when "we shopped for them on the Friday, when she said she was going to grab a box of muesli bars, I said "They've got nuts in them. Don't have them," but she said she's been eating them for years and never had a problem with them at all." (T147)

Kylie and Matthew drove to Coral Bay in Kylie's father's car on Saturday, 1 September 2007. During the drive, Kylie and Matthew ate some of the muesli bars Kylie had purchased. They arrived in Coral Bay at about 10.00

am and set up their tent in the Bayview Caravan Park, over the road from the beach at Coral Bay.

The next day, being Sunday, was spent on the beach and generally relaxing by Kylie and Matthew. While she was at the beach in the morning, Kylie ate one of the muesli bars. Kylie and Matthew had Chicken Kiev for lunch.

Later in the day, after dressing for dinner, Kylie and Matthew went back to the beach and watched the sunset before going to the Ningaloo Reef Resort Hotel for dinner at about 6.30 pm. They each ordered the Sunday roast and a Coca Cola and only remained at the hotel for about 30 minutes. They did not drink any alcohol. Kylie and Matthew then walked up the road to Fin's Café for dessert.

FIN'S CAFE

Fin's Café is a short walk from the hotel and Kylie and Matthew arrived there at about 7.15 pm.

Fin's Café serves breakfast, lunch and dinner and is open 7 days a week. It operates as a café during the day and turns into a 'plated restaurant' at night – meaning that at dinner time, orders are placed with a waitress at the table rather than at the counter. Staff at the café are employed both from Perth and from the available pool of backpackers and locals in Coral Bay. As would be expected in a small and remote coastal town, staff turn over often and at times are hard to find.

Kylie ordered the sticky date pudding with old English toffee ice cream and Matthew ordered a caramel ice cream sundae. The sticky date pudding was covered with vanilla coloured icing and garnished with pistachio nuts.

The waitress who took Kylie and Matthew's dessert order at Fin's Café was Kristy Weller. Ms Weller was visiting and working in Australia from England. She held a working holiday visa and had been working at Fin's Café for about 3 months in 2007. She also worked at Fin's Café for about 3 months in 2006. Ms Weller provided a statement to the inquest but could not be contacted to give evidence at the time of the inquest, when she was travelling in Columbia.

Ms Weller's statement was dated 6 September 2007 and made four days after Kylie's death. In her statement, she said that before taking Kylie's order she had a conversation with her about the flavour of ice cream Kylie would like with her sticky date pudding. She said Kylie went to the ice cream display freezer and selected the old English toffee ice cream. Ms Weller said Matthew ordered a caramel sundae and "I asked him if he wanted cream and nuts with it. He told me he didn't want any nuts. The girl (Kylie) confirmed with me that she wanted sticky date with old English ice cream and nothing else was mentioned by either of them."

Matthew Garratt gave differing versions of what was said to Ms Weller. In his Statement dated 12 July 2008 (made some 10 months after Kylie's death), he said that both he and Kylie asked the waitress if there were any nuts in the sticky date pudding. He said "we asked because Kylie is allergic

to them and I hadn't touched them since I had been with her." He said the waitress "told us no straight away, she didn't go and ask anyone else." He went on: "We were satisfied that the sticky date pudding would not have any nuts on it, so Kylie ordered it. I ordered a caramel sundae. We ate the dessert, and as far as we could tell the dessert did not contain nuts. I tasted hers and couldn't taste any kind of nut."

Matthew subsequently gave oral evidence at the inquest. He said that he now remembered that when he and Kylie asked the waitress, Ms Weller, whether there were any nuts in the dessert, she (the waitress) went and "asked one of the chefs that were on duty (and) came back and said, no, there wasn't any at all." (T137) Matthew said this was not in his original statement because "it slipped my mind" and "it was just something which I just didn't take seriously at the time." (T137)

Matthew said he and Kylie ordered their own dessert and he did not order for Kylie. He said that he "asked for no peanuts on the sundae at all". Matthew did not remember any conversation between Kylie and Ms Weller about the flavour of ice cream and thought that Kylie had vanilla ice cream on her sticky date pudding. He also could not remember whether the sticky date pudding was iced or not. He said that by the time that he got to have a taste of Kylie's dessert, she had eaten the top of the pudding. He said that as well as eating her own dessert, Kylie ate "half mine." (T138)

Later in his oral evidence, Matthew said he asked the waitress if there were nuts in the sticky date pudding because "when Kylie originally told me she

was allergic to nuts, it wasn't just peanuts she said she was allergic to hazelnut, walnuts and all the others as well." He then said he told Ms Weller, "We can't have nuts in our meals because we are both **allergic** to nuts." (my emphasis) He said Kylie did not say anything about allergy to Ms Weller but rather he said it for both of them. (T140) When questioned about why he had not mentioned that he told the waitress that he and Kylie were allergic to nuts in his statement, Matthew said there were "lots of things I'd just forgotten along the way" and that he had been helped to remember by "just reading back over it again recently .. it just made me remember about some of the stuff that actually happened that night." (T141) At this point in his evidence he said he was "really positive" that he said they were both allergic on the night.

Although Matthew initially said he was "really positive" about giving notice to the café about allergy, he then changed his evidence to "still pretty positive" when pressed on whether he told Ms Weller that "we are both allergic to nuts." He further went on: "I think when I said it the waitress may not have heard me when I was saying it … because when I asked for no nuts, I think she may have been kind of moving to walk away at the time." Then later Matthew said: "And I'm pretty positive I said, "We're both allergic to nut." (T150) Matthew's evidence changed in important aspects as his examination at the inquest proceeded. Clearly it was very difficult for Matthew to give evidence about this night and his memory has been affected by the painful and tragic events that followed his meal with Kylie at the Cafe.

Kristy Weller says she made Matthew's sundae from three scoops of vanilla ice cream, caramel topping and whipped cream. The sticky date pudding for Kylie's order was taken from the fridge and a slice was cut from the pudding with a knife. The slice of pudding was put on a plate and butterscotch sauce was poured over the pudding before it was warmed in the microwave oven. A scoop of old English toffee ice cream was then added to Kylie's order.

The ice cream in each dessert was Peters Ice Cream; the caramel topping was made by Cottees; and the butterscotch sauce was made from sugar and cream by staff at Fin's Café. The sticky date pudding was made by Regines Patisserie in Perth. Its ingredients did not include nuts but the top of the pudding was iced with white chocolate and cream and garnished with crushed pistachio nuts. A picture of the pudding was produced to the inquest and the icing and nuts were clearly visible on top of the pudding. The evidence was that the butterscotch sauce melted in the microwave and would be on the plate around the pudding rather than on top when the pudding was served. A scoop of ice cream then was placed on the side of the plate so that the pistachio nuts were visible to the consumer.

Kylie and Matthew ate their desserts and left Fin's Café at about 7.45 pm. They walked across the road towards the beach and sat on a park bench. Kylie did not eat anything further after she left Fins Café. (T146) After about 15 minutes Kylie started coughing. She used the Ventolin inhaler which she was carrying in her handbag. However her coughing did not stop and Kylie and Matthew walked back to their tent. Matthew told the inquest that Kylie said she thought "she might have had something that she shouldn't

have had" and was having a minor reaction. (T143) Kylie started to feel like vomiting and continued to cough. Matthew ran to the Coral Bay Nursing Post and took note of the after hours phone number for the on call nurse. He then went back to Kylie who by now was bent over, red in the face and still coughing. It was 8.18 pm and Matthew called the on call nurse.

CORAL BAY NURSING POST

Matthew and Kylie walked across the road to the Coral Bay Nursing Post. Kylie was starting to say she couldn't breathe. The on call nurse, Marion Pedersen, arrived at the nursing post within five minutes of being called out.

Marion Pedersen is a registered nurse who has extensive nursing experience including in emergency nursing and critical care. (T45) The Coral Bay Nursing Post is staffed by a single clinical nurse. There are no other nurses or medical professionals in Coral Bay. (T46) The closest doctor and hospital is in Exmouth. The Exmouth Hospital is staffed by doctors who are general practitioners and by nurses. If the nurse at Coral Bay needs assistance, she must "call the doctor (at Exmouth) to get orders over the phone for what medications to give and what treatment to give. There is a volunteer ambulance service in Coral Bay but none of (the volunteers) are paramedics." (T46) Exmouth is 150 kms from Coral Bay, or two hours away by road. The closest emergency medicine specialists are in Perth. The Coral Bay Nursing post operates in a remote area, isolated from any medical backup.

Nurse Pedersen said Kylie was in severe respiratory distress when she arrived at the Coral Bay Nursing Post. She had an audible wheeze, was pale, was cyanotic, and had an audible stridor. A stridor is the sound that the upper airway makes when it is constricted, or partially obstructed. Kylie was hypoxic and with an oxygen saturation rate of 80%. She told Nurse Pedersen that she could not breathe but otherwise was too unwell to answer questions. (T69)

Nurse Pedersen asked Matthew questions about Kylie and on the basis of Matthew's advice that Kylie had an allergy and because of her symptoms diagnosed Kylie as suffering from an anaphylactic reaction. She said Kylie also displayed the symptoms of someone having a severe asthma attack. (T54) Nurse Pedersen said Matthew told her that Kylie was allergic to peanuts and other nuts. She said Matthew said they had dessert at Fin's Café and that he ordered the dessert for both of them. She thought Matthew said he ordered a milkshake for himself. She said Matthew told her that Kylie had a sticky date pudding and he had asked the waitress at Fin's Café if the sticky date pudding had nuts in it. Matthew said he told Nurse Pedersen that "Kylie was allergic to peanuts but we hadn't eaten anything with nuts in it at all". (T142)

Nurse Pedersen asked Kylie to sit on the treatment bed and gave her an oxygen mask, which Matthew helped to hold on Kylie's face as she was very restless because she was finding it difficult to breathe. Nurse Pedersen then gave Kylie nebulised atrovent, ventolin and adrenaline and intra-muscular (IM) injections of adrenaline (0.5mg) and promethazine. Nurse Pedersen's

evidence is that all these treatments occurred very close in time – "within the same minute"- at about 8.25 pm. (T55) She could not recall whether she gave the nebulised medication or the intramuscular medication first. Nurse Pedersen said she cracked open the two vials of adrenaline at the same time and gave one in a nebuliser and the other in the injection. Nurse Pedersen injected Kylie's anterior thigh with the adrenaline and promethazine. This is the area of the thigh that the Remote Nursing Area Guidelines recommend should be injected. The concentration of adrenaline used in the intramuscular injection was 1:1000. (T57) Nurse Pedersen said she didn't consult the guidelines because they are "more than 200 pages" and "for anaphylaxis I knew the first line of treatment off-heart so I initiated treatment before I called the doctor." (T57)

Nurse Pedersen monitored Kylie's vital signs. For the first 5 to 10 minutes there was little change in Kylie's condition. Then, at about 8.35 pm, Kylie further deteriorated with her oxygen saturation rate going down and her blood pressure dropping to 90 on 45.

Nurse Pedersen said that because Kylie "displayed both the symptoms of a severe asthma attack and anaphylaxis .. she initiated treatment for both and I needed to contact the doctor to get more orders for what to do next." (T59) Nurse Pedersen said she was not confident to give a second dose of adrenaline without consulting a doctor. At about 8.40 pm, Nurse Pedersen phoned Dr Dijkwel who was the doctor on call at the Exmouth Hospital. Dr Dijkwel then took charge of the treatment of Kylie and remained on the phone throughout Nurse Pedersen's care of Kylie.

Nurse Pedersen called Dr Dijkwel on the nursing post's mobile phone. There was no headset and Nurse Pedersen was not aware of any speaker phone function on the phone. At times, Nurse Pedersen held the phone with her shoulder but otherwise had to put the phone down in order to free up both hands to treat Kylie. It was a very difficult treatment situation.

Nurse Pedersen said that she relayed "all the information over the phone of what Kylie's symptoms were, what had happened prior to her coming to the nursing post, what her vital signs were, what treatment I was giving her, what medications she had had and how she had responded to all of that. .. (Dr Dijkwel) told me that the treatment was the correct treatment .." (T60) She said she "then asked him what to do next, and he gave orders, and I followed through and ….. then had to relay how she responded to that, and then asked him what to do next. Because he wasn't there in person I had to be his eyes and tell him all the symptoms that she had and what had been done." (T63) Nurse Pedersen told Dr Dijkwel that Kylie was still in respiratory distress. She said Dr Dijkwel told her to continue to give Kylie the nebulised adrenaline and ventolin, and also to try to get intravenous access and administer hydrocortisone. Intravenous access had not been achieved at that point and was difficult to access as Kylie continued to be very restless.

Dr Dijkwel did not take any notes of his instructions to Nurse Pedersen, or at all, in relation to his treatment of Kylie on this night. He received a copy of Nurse Pedersen's nursing notes the next day - that is, on 3 September 2007. He told the inquest that when he is asked to give advice over the phone –

such as in this case - it is not his usual practice to make notes. (T120) Dr Dijkwel agreed it would be better practice to do so. He said that Ms Pedersen's notes were a true and accurate account of his involvement in Kylie's treatment. (T111) He said he relied on his own recollection as well as reference to Nurse Pedersen's notes in giving his evidence to the inquest.

Dr Dijkwel told the inquest that he was contacted at home at 8.40 pm on 2 September 2007 by Nurse Pedersen, who he described as a competent nurse. He said he then stayed on the phone for the duration of the "resuscitation attempt". (T112) He said that Nurse Pedersen was treating a girl with a history of severe peanut allergy who had acutely developed respiratory distress with a stridor after eating a meal at a local café. Dr Dijkwel said he had "some experience of acute allergic reactions, but not reactions as severe as Miss Lynch appeared to be experiencing." (T112) He said he had trained in Holland, completing his medical degree in 1999. He later came to Australia in 2005. He said he had not received "intensive training" on the emergency treatment of anaphylaxis in Australia, or elsewhere. (T112) Dr Djikwel said that he was not aware at the time of this incident of any written guidelines or policies or procedures in relation to the treatment of anaphylaxis.

Dr Dijkwel said that based on what Nurse Pedersen told him and the treatment she had given Kylie and the fact that Kylie was still in respiratory distress, "the most likely problem was that (Kylie) was having an acute anaphylactic reaction with mainly respiratory problems and that there was the likelihood of an acute asthmatic reaction." (T112) He said he told Nurse

Pedersen that she had given the right treatment and that she should "continue giving adrenaline and ventolin as needed and to insert an intravenous cannula and give hydocortisone 200mg stat." (T112)

In a statement made by Dr Dijkwel dated 6 April 2010, Dr Dijkwel said that Nurse Pedersen told him that Kylie "appeared to be responding to the medication and her saturation levels were increasing and she had deceased respiratory distress" between 8.40 pm and 8.55 pm. However, that does not accord with Nurse Pedersen's notes and Dr Dijkwel told the inquest that he could not explain how he came to remember this. He said it was possible that he was mistaken. (T114) In my view, Dr Dijkwel was mistaken about the condition of Kylie at this time and I accept Nurse Pedersen's notes as a correct account of her condition.

Dr Dijkwel said he did not consider instructing Nurse Pedersen to give a second dose of intramuscular adrenaline at 8.40 pm. He said he knew Kylie was receiving nebulised adrenaline and thought at that point the nebulised adrenaline that Kylie was receiving "would be enough". (T117) Dr Dijkwel accepted that it would have been better to give Kylie a second dose of intra muscular adrenaline at 8.40 pm. (T118)

At 8.55 pm Kylie's oxygen saturation had gone down to 66%, her pulse was down, the sound of her stridor had increased (as her upper airways became more swollen) and she was unable to breathe. (T61) Dr Dijkwel instructed Nurse Pedersen to give Kylie a second intramuscular injection of adrenaline

and to prepare for an emergency cricothyroidotomy. Kylie was given a second dose of 1 mg of intramuscular adrenaline.

At about 9.00 pm Kylie seemed to respond to the treatment and her oxygen saturations went up and her breathing calmed, giving Nurse Pedersen an opportunity to gain an intravenous (IV) access to Kylie, and give her the IV hydrocortisone as instructed by Dr Dijkwel.

Kylie then deteriorated again and by 9.25 pm Kylie's oxygen saturation rate was 78% and her pulse was 40. Dr Dijkwel said that at this time Kylie was in a "very critical" state and he considered she only had minutes to live. He said her treatment then with adrenaline was based on her being in a critical state and adrenaline was given as a resuscitative tool rather than as a treatment for anaphylaxis. (T119-20)

Dr Dijkwel instructed Nurse Pedersen to administer intravenous adrenaline to Kylie. (T115) He could not remember the instructions he gave Nurse Pedersen about this dose of adrenaline but said "everything that was done was discussed and okayed ..". (T116) He said the intravenous dose of one milligram of adrenaline given by Nurse Pedersen at 9.25 pm was given under his instruction. (T116-7) He said he had no concerns about how the intravenous dose of adrenaline was administered and that "it is a very common – that's a very common way to give an adrenaline bolus in a (indistinct) pain situation." (T116) Dr Dijkwel said that at 9.25 pm he also instructed Nurse Pedersen to perform a cricothyroidotomy and attempt to

ventilate Kylie. He said that Nurse Pedersen did this with his guidance over the phone.

Nurse Pedersen administered adrenaline intravenously, using a 1:1000 ampoule which she diluted with 9 mls of saline in a syringe to 1:10,000. (T61-63) She said she injected the dose of adrenaline into Kylie's IV cannula slowly over about "30 seconds to one minute. But I don't recall timing myself .." (T63) Nurse Pedersen's notes at this time record that Kylie "has respiratory effort but I'm unable to hear any air movement. The next 10 minutes patient deteriorates further. My last readings of SaO2 (oxygen saturation) 54% and pulse 32. From here onwards I was unable to obtain SaO2 readings."

Nurse Pedersen attempted a cricothyroidotomy which is a difficult emergency procedure where a tube is inserted into the neck into the trachea to try to assist a patient to breathe. Nurse Pedersen had never performed a cricothyroidotomy before – it is a procedure usually performed by a doctor. Under instructions from Dr Dijkwel, four attempts were made by Nurse Pedersen to obtain an airway. On the last attempt a biro (without the ink) was used but Nurse Pedersen was unable to get air into the lungs or hear any air movement in Kylie's chest.

Tragically Kylie did not improve and at 9.45 pm, there was no pulse or blood pressure, and there were no heart sounds. At 9.50 pm, a decision was made to stop the resuscitation.

Dr Dijkwel told the inquest that in hindsight he would have given more frequent doses of intramuscular adrenaline. (T125) He said he now was aware that most protocols recommend intra muscular adrenaline at 5 minute intervals. (T125) He said it would help to get better training on anaphylaxis and also to have peer review of critical incidents, which has not happened in this case. He said no one has spoken to him or reviewed his treatment in this case. (T126)

Matthew remained in the nursing post during Kylie's treatment and helped Nurse Pedersen – he held the oxygen mask on Kylie's face, put the blood pressure band on Kylie, and got a pen to assist with the cricothyroidotomy.

Nurse Pedersen called the ambulance officer in Coral Bay, Sandra Lymbery, and asked her to come to the nursing post. Ms Lymbery arrived shortly afterwards and sat with Matthew who was shaking and appeared to be in shock. Nurse Pedersen called the Exmouth police to report the death and they advised that they would attend in Coral Bay as soon as possible.

Nurse Pedersen then wrote up her nursing notes. She said that she had written "points on a piece of paper as I performed procedures and treatment …. and (then) I wrote up (Kylie's) nursing notes immediately after Kylie had passed away." (T52) (Exhibit 19) She said she "jotted down the times when I was giving treatment and when I was giving injections." She said that when a number of things were recorded as having been done at a particular time in her notes, then that was the time at which she commenced to carry out the listed procedures and treatments. (T53) After Nurse Pedersen

completed her nursing notes, she asked Matthew if Kylie had an Epipen "and he said, "Yes, she has one but she doesn't want to carry it. She thinks it takes up too much room in her handbag." (T52)

Sandra Lymbery said she received a call from Nurse Pedersen at about 9.40 pm on 2 September 2007. She is a volunteer ambulance officer and a justice of the peace. She said she went to the nursing post and sat with Matthew. She said Matthew repeatedly told her that he and Kylie had dinner at the Ningaloo Reef Resort and then walked to Fin's Café for dessert. She said Matthew said he asked if the ice cream sundae "had peanuts and if so he didn't want the nuts." She said Matthew said Kylie ordered a sticky date pudding. She said Matthew told her Kylie had suffered a similar reaction about a month before, and that Kylie had been taken to hospital on that occasion – presumably Matthew was referring to Kylie's July 2007 hospital admission. Ms Lymbery said Matthew said Kylie had an Epipen but reckoned it was too bulky to carry around in her hand bag." (Statement dated 18 September 2007)

Ms Lymbery said Matthew stayed with her that night and the next day until about 3.00 pm on 3 September 2007 when friends arrived to take him back to Karratha. (T34) She said that she did not remember Matthew making any mention of telling the restaurant that Kylie suffered from an allergy. (T34) She said she did remember that Matthew said that if he ate nuts, then he could not even kiss Kylie. (T34)

POLICE INVESTIGATION AT CORAL BAY ON 2 and 3 SEPTEMBER 2007

Senior Constable Hughes received a phone call from Nurse Pedersen at about 10 pm on 2 September 2007 saying that a young woman had died and that "the death may have been as a result of an allergic reaction to a nut allergy." (T205)

Senior Constable Hughes and First Class Constable Lienert departed Exmouth and arrived at the Coral Bay Nursing Post at about 12.35 am on 3 September 2007. Nurse Pedersen, Matthew and Sandra Lymbery were at the nursing post when the two police officers arrived in Coral Bay. Kylie's body was identified to police by Matthew Garrett and she was taken to the Carnarvon Hospital and certified dead by Dr Rudeforth at 8.00 am on 3 September 2007.

Nurse Pedersen explained to the police officers what had happened and provided a copy of her notes to Constable Lienert. The police officers examined and photographed the scene at the nursing post. Constable Lienert searched Kylie's handbag and found two ventolin inhalers and a muesli bar. The packaging on the muesli bar listed almonds as an ingredient and noted the possibility of traces of other nuts.

Senior Constable Hughes spoke to Matthew who told him that Kylie had a known allergy to nuts. He said that Matthew said Kylie and he had dessert at Fin's Café and Kylie ordered the sticky date pudding and Matthew ordered a caramel sundae. Senior Constable Hughes said Matthew said he asked for

"no nuts on his sundae, as we couldn't have them. I then asked if there were nuts on the sticky date pudding. I was told no." (T208) He said Matthew told him that Kylie had vanilla ice cream with her sticky date pudding. It was for this reason that the police officers later took a sample of the vanilla ice cream only and not the old English toffee ice cream from Fin's Cafe. (T212)

Senior Constable Hughes said Matthew said that "Kylie says she doesn't have any medication at the camp or in her purse because they are too big to carry." (T210) He said Matthew said that "about one month ago she (Kylie) had a reaction and she was in and out of hospital in Karratha after she noticed she had eaten nuts." (T210)

Senior Constable Hughes searched Matthew and Kylie's car to see if there was any food that may have nuts in it. He seized a box of muesli bars - Uncle Toby's Choc Chip bars - and a packet of rice crackers. The muesli bars contained almonds and possible traces of other nuts according to the information on their packaging. (T13)

Senior Constable Hughes said Matthew said Kylie had eaten muesli bars before "and had not had any reaction." (T146) The muesli bars in the car were those that Kylie and Matthew purchased in Karratha on the Friday night before their trip. Of the eight bars originally in the box, there were two left in the box and there was one in Kylie's handbag. Matthew said he and Kylie had eaten some of the bars on the drive to Coral Bay and Kylie had eaten one at the beach on the day she died.

At about 5.00 am that morning, the two police officers went to the home of Giovanni Di Costa, the proprietor of Fin's Café, and asked him to open the café. Mr Di Costa had not been at the restaurant on the previous evening when Kylie and Matthew had dessert there, and did not know about Kylie's death. (T173) Mr Di Costa consented to the police officers searching his café.

Mr Di Costa opened the cafe for the police officers and showed them the sticky date pudding. It was the only sticky date pudding in the café. (T165) The pudding and other items were photographed. The police officers took a sample of the sticky date pudding and the butterscotch sauce which was served with the pudding. They also took a sample of the vanilla ice cream and the caramel sauce. All these items were kept in the same fridge except the ice cream which was kept in a separate display freezer. The samples were flown to Perth to be tested for peanut. The police officers were not aware at the time that Kylie had eaten old English toffee ice cream, and so did not seize a sample of that ice cream. Constable Lienert said that he discovered that Kylie had old English toffee ice cream when he spoke to Ms Weller several days later. Mr Di Costa said the police officers did not ask for the docket used by Ms Weller to take Matthew and Kylie's dessert order.

Constable Lienert said the top of the sticky date pudding was garnished with pistachio nuts, but there "were no signs of peanuts in any of the foods." He said the "method of storage of the food and other preparation area made it unlikely for a cross-contamination from another source." (T14)

Constable Lienert said that all the ice cream served at Fin's Café was Peters brand and "all of the Peters ice cream containers, regardless of flavour, stated that the product may contain traces of nuts." (T14) However, nuts were not listed as an ingredient in any of the flavours, including the old English toffee ice cream. The caramel sauce was Cottees brand and the label did not list nuts as an ingredient. The open ice cream containers did not have labels on them. There was no list of ingredients for the sticky date pudding in the café that the police officers could find; and Constable Lienert said that they did not ask for an ingredient list at the time. (T21)

Constable Lienert subsequently spoke to the head chef at the Ningaloo Reef Resort Hotel who told him that the Sunday roast that Kylie and Matthew ordered for dinner did not contain nuts. He also spoke to Albert Stickney, the manager of Regines Patisserie, the maker and supplier of the sticky date pudding, and was told that the sticky date pudding supplied to Fin's Café was "made without nuts although it was garnished with pistachio nuts." (T14)

A statement was taken by Constable Lienert from the waitress, Ms Weller, on 6 September 2007. On the same day, Constable Lienert also spoke to other staff at the café who all said they had not heard any of the conversation between Ms Weller and Kylie and Matthew. (T18) The chef on duty at Fin's Café on 2 September 2007 said that there had been "no mention at all of any allergy" made to him that evening. (T19) Constable Lienert said there were two waitresses working at Fin's Café on the night of 2 September. (T30)

FIN'S CAFÉ - ALLERGENS AND ALLERGIC CUSTOMERS

The proprietor of Fin's Café is Giovanni Di Costa. He told the inquest that he had owned Fin's Café for about 10 years. He said the café is open every day of the year and serves breakfast, lunch and dinner. Mr Di Costa has about 40 staff working in his café, who he employs both locally and from Perth. He said some staff members "stay for years" and some stay for only a short period of time. (T163)

Mr Di Costa said the sticky date pudding, which Kylie was served, was purchased from Regine's Patisserie in Perth. And the old English toffee ice cream was purchased from Peters Ice Creamery, as was the vanilla ice cream used in Matthew's sundae.

Mr Di Costa said the sticky date pudding is stored in the fridge in the café and the ice cream is kept in a display freezer. Mr Di Costa said the dessert cakes are normally stored on the second shelf of the fridge and the crushed nuts for the sundaes are normally stored on the top shelf. (T171) The nuts, which are peanuts, are stored in a sealed container. Mr Di Costa agreed that it would be better practice to store the container of nuts on a shelf in the fridge below the cakes so that there could be no risk of cross-contamination. (T180)

Mr Di Costa said that on 2 September 2007 there were three dessert cakes on the menu – a sticky date pudding, an apple pie and a chocolate cake. He said he had been serving these same products for about 10 years and was aware

of their ingredients. (T172) He said all the cakes were labelled with the warning: “All cakes may contain traces of nuts.” (T172) Mr Di Costa said that in order to determine the ingredients in the sticky date pudding, he would call the supplier, Regine’s Patisserie. He could only do this during business hours. (T164) Mr Di Costa said the ingredients in the ice cream are listed on the label on the lid of the ice cream container. However that lid is removed and discarded when the container is opened and placed in the display freezer. (T166)

Mr Di Costa said the “knife used to cut the cakes is a dedicated cake knife” - that is, it is used to cut the three cakes for service. (T166-7) He said one ice cream scoop is used to serve all the ice cream flavours. The ice cream scoop sits in water in a metal container alongside the ice cream freezer when it is not being used. The water in the container is changed a number of times throughout the day, but not after each use. Mr Di Costa said desserts are prepared in a separate area from that used for the preparation of other meals. (T170)

Mr Di Costa said that Fin’s Café “has a procedure that if a customer tells the staff they have an allergy, then the staff member is to check what allergy they have. They then check the product to see if it is okay to serve, but if they don’t know then they refer the query to the chef. If the chef doesn’t know or the ingredients are not listed (on the product), they know not to serve it to the customer.” (T168) He said that customers with allergies come into the café “almost weekly, if not daily at times”. (T168) Mr Di Costa said the same procedure continues to apply in his café.

Mr Di Costa said that because the cakes are not made locally "we cannot guarantee how they are made, so the staff are always told that desserts and ice cream can contain traces of nuts because that's the warning they come with, (and) we have a simple policy of you can't serve any of those items if a nut allergy had been described." (T168) He said that when he employs his staff, he tells them that "we can't guarantee what's in (our cakes and desserts)." (T168) He said that if a staff member is told about an allergy by a customer, they are told to write it down on the order so that the chef is also aware of it. (T169)

Mr Di Costa said Ms Weller was an experienced and competent waitress and he had seen her comply with this procedure of noting an allergy on the docket. He said he did not have written policies on allergy and rather he advised his staff orally about what they needed to do. Mr Di Costa said that he had not been asked for the docket used to take Matthew and Kylie's order. He said he would not still have it now because he does not keep dockets. (T174)

Mr Di Costa said he spoke to Ms Weller on the morning after Kylie died - that is, on 3 September 2007 - and she said that she had not been asked about an allergen by Matthew and Kylie. (T175) He said that if a person tells the cafe they are allergic to nuts and the cake ordered is covered with nuts, then no inquiry about whether nuts are an ingredient is made of the supplier by the café. (T175) On the other hand, if nuts can not be seen on the cake, then staff have to check with the supplier. Mr Di Costa said that on occasion both

he and his chefs have requested a list of ingredients or product information from a supplier for a new product for the café. (T172)

Mr Di Costa said that there is a rule in his restaurant that anything "not made on our premises" - that is, all our desserts – "come with traces of nuts. That's a known fact in my café. We've served the same desserts for 10 years." (T175-6) He said the sticky date pudding served on 2 September "was actually covered in nuts, as per normal." (T176)

Mr Di Costa said his training as regards anaphylaxis had been obtained by speaking to allergy sufferers in order "to try and get my best understanding of what they can and can't eat, and things like that." (T179) He said that he had never had any "formal training, no course or anything" on how to manage an allergen. (T182) Mr Di Costa said he had never received anything from a public health authority to assist him in his understanding and management of anaphylaxis. (T183) He said more knowledge about allergy and management of allergens would be useful.

Mr Di Costa said that no authorised officer, such as a health inspector, visited his premises after Kylie's death to investigate any problem or irregularity in relation to Kylie's death. He said a health inspector regularly visits the café. He said it would be helpful if somebody with knowledge of managing allergies and cross-contamination visited the café to provide assistance in regards to these issues. (T183)

Mr Di Costa said he would be happy to put on his menu that he could not "guarantee any allergen free dessert". (T177)

FINDINGS IN RELATION TO EVENTS AT FIN"S CAFÉ

There are differing versions of what was said to the waitress, Ms Weller, at Fin's Café, by Matthew when he and Kylie ordered their desserts on 2 September 2007. Ms Weller said the only mention of nuts was made by Matthew who, in response to her question about whether he wanted cream and nuts on his sundae, said he did not want nuts.

Clearly the night became an extremely traumatic and painful one for Matthew who remained with Kylie throughout her medical care and treatment, assisting Nurse Pedersen and otherwise comforting Kylie. In my view, and no doubt due to the tragic events of the night, Matthew is understandably not sure about and doesn't remember clearly what was said and done at the Café. And in my view, he is now confusing what he would like to have occurred with what actually happened on the night.

Matthew admitted he did not remember Kylie talking to Ms Weller about ice cream flavours and going to the ice cream display freezer to choose a flavour of ice cream on the night. And nor did he remember the flavour of ice cream that Kylie ordered with her sticky date pudding.

Matthew's recollection of details of the night has changed in significant ways over time. Matthew did not any tell of the people he spoke to on the night – being Nurse Pedersen, Sandra Lymbery, and Senior Constable

Hughes - that he told Ms Weller that he and Kylie were allergic to nuts. He did tell each of them, in slightly different terms, that he asked Ms Weller not to put nuts on his sundae. And with the exception of Sandra Lymbery, he told them he asked Ms Weller whether there were nuts on the sticky date pudding. His evidence about being "allergic to nuts" was given for the first time at the inquest, some three years after the event. It conflicts not only with the evidence of the people he spoke to on the night but also with his own statement made some 10 months after Kylie's death. Furthermore, later during his evidence to the inquest, Matthew said that Ms Weller may have been walking away, and thus out of earshot, when he made the statement about being allergic to nuts. I do not accept that Matthew said anything about being allergic to nuts to Ms Weller.

There are other aspects of Matthew's most recent evidence which conflict with that given in his statement. In his statement Matthew said he asked Ms Weller whether there were nuts in the sticky date pudding and she, in his words, said "no straight away. She didn't go and ask anyone else." So not only did Matthew say the waitress said no but also emphasised (without needing to do so) that the assertion was made immediately and without reference to anyone else. Whereas in his evidence to the inquest – some three years after the event – Matthew said that Ms Weller went to the café's kitchen and asked the chef if there were nuts in the sticky date pudding and then came back and said "no". Constable Lienert asked the chef and other staff who worked at the Café on the night if they were asked about allergy or about whether there were nuts in the sticky date pudding – and they said they weren't asked. This discussion with staff members of the Café occurred only

days after Kylie's death and while the night was still fresh in their minds. I do not accept Matthew's evidence that Ms Weller went to the kitchen to ask about nuts in the sticky date pudding – and again with the passing of time I think he has become confused about this matter.

Matthew said he asked Ms Weller if there were nuts, rather than peanuts, on the sticky date pudding, and she said "no". The sticky date pudding had been on the dessert menu for a long time at Fin's café and was garnished with pistachio nuts which were clearly visible. It simply does not make sense for Ms Weller to tell Matthew that there are no nuts on the pudding when they are clearly visible to the consumer. It also does not make sense that Kylie relied on that response or that she ate the pudding if she thought she was allergic to all nuts, and not just peanuts. In the same way that it does not make sense that Kylie was eating muesli bars containing almonds during the Coral Bay weekend if she thought she was allergic to all nuts, and not just peanuts

I do not accept Matthew's evidence that he asked the waitress whether there were any nuts in the sticky date pudding. In my view, Ms Weller asked Matthew whether the sundae should be served with nuts and cream and Matthew asked for no nuts. Otherwise there was no conversation about nuts. Matthew has forgotten about Kylie going to the ice cream cabinet to choose a flavour of ice cream and he has also forgotten the flavour of ice cream that Kylie had with her pudding. He did not notice the nut garnish on the pudding which was clear and not obscured by ice cream which was served to the side of the warmed pudding. I think that it was only subsequent to the

event that Matthew realised that nuts and allergy should have been mentioned; however I do not believe these enquiries were made to the waitress when the desserts were being ordered.

It seems to me that sadly Kylie did not receive the education that she should in relation to her allergy. She did not carry an Epipen and it was only two months prior to her death that she had "mistakenly eaten peanuts" and been hospitalised.

I will come to the issue of Kylie's education about her allergy later in my report.

SOLE OPERATOR NURSING POST

Nurse Pedersen told the inquest said that "its difficult to manage any emergency situation, resuscitation, on your own because you only have two hands; and that (was) the same in this case, Kylie's case. Yes, it was very difficult. In saying that, I believe that I did perform and do absolutely everything I could to save her life and I have no doubt that I gave her the right treatment for the symptoms that she presented with." (T53)

Nurse Pedersen said being a sole operator is difficult because there is a time delay. She said "I have to do all the observations and then relay the information to (the doctor) and then he has to give me an order and then I have to perform the tasks .." (T77) She said it is hard to convey a complete clinical picture over the phone while caring for a critically ill patient.

Nurse Pedersen said that her immediate thought when Kylie presented to the nursing post was what she needed to do to save Kylie's life, and so she established a first line of treatment before contacting the doctor. (T84) She said she first had to obtain details of Kylie's medical history and details of what had occurred. She had to establish whether Kylie had any allergies to medications. And she needed to establish oxygen therapy. She also needed among other things to check and record Kylie's vital signs, to draw up and give intramuscular medications, to prepare an oxygen mask and nebuliser mask, to check ampoules, to establish an intravenous line, to contact a doctor and to relay information to the doctor, while at the same time caring for Kylie's immediate needs. (T84) Nurse Pedersen said she administered a first adrenaline injection to Kylie within 2 minutes of seeing her. (T87) She said she did not know any nurse who had performed a cricothyroidotomy before, and that that was a procedure normally performed by a doctor. (T84)

Dr Dijkwel spoke about diagnosing and treating a patient over the phone. He said that the "main difficulty is that by communicating by phone it is very difficult to get a very clear picture of what is really going on, and so trying to form a correct picture is difficult. The other difficulty is that I'm fully aware of the stress that (the nurse) is going through and when you're not at the locality and actually helping out it is very important to give orders and reassure in a way that doesn't confuse or doesn't cause more stress than necessary. .. there's only two hands working there. So a lot of the things that you would like to have done in such a situation are just not possible because of the fact that there's only one working there with limited resources." (T128-9) Dr Dijkwel said that in Kylie's case he was working

on the most likely diagnosis being an allergic anaphylactic reaction but he could not be certain of the diagnosis. He said the most concerning symptom was Kylie's difficulty in breathing. (T129) Dr Dijkwel said that "one thing that would have helped if I had actually had a visual cue of what was going on there – something like a video-link or something would have (helped) .. (T130)

KYLIE'S MEDICAL HISTORY

Kylie had a long history of illness and medical care and attended at the emergency department of the Nickol Bay Hospital in Karratha (NBH) on numerous occasions between 1987 and 2007. She was seen by various on duty doctors and nurses, and at times by Dr John Collis. Dr Collis practiced out of the Karratha Medical Centre and was Kylie's general practitioner (GP) from 1989 until 2003. On occasions, Kylie was seen also by specialist paediatrician, Dr Paul Carman, who attended Karratha as part of the rural visiting paediatric service.

Medical records in relation to Kylie were obtained for the period 1987 to 2007 from NBH and Karratha Medical Centre. Medical records were also sought from Princess Margaret Hospital (PMH) – but they did not have any record of Kylie other than in relation to Kylie attending on paediatric specialists in Karratha as part of the rural paediatric visiting service provided by PMH. There were no records of any attendances at Princess Margaret Hospital in Perth. Kylie's attendances on the paediatric specialists in Karratha were for asthma and croup. NBH hospital records include emergency department notes, admission and progress notes, medication

charts, temperature and observation charts, pathology and x ray reports, medical discharge summaries, nursing care plans (including nutrition and hydration) and letters written by Dr Carman and Dr Collis. Notes have been entered on the hospital records by on duty doctors and nurses, and also by visiting doctors. These records provide a comprehensive history of Kylie's medical history and treatment and are supplemented by records received from the Karratha Medical Centre. I accept, however, that some records may be missing. The various quotes in this section of the report are taken out of the hospital records unless otherwise indicated.

Kylie was born on 13 April 2008 and suffered with chronic asthma from the time when she was a very young child. She also suffered with eczema.

Kylie was admitted as an inpatient to NBH on many occasions. At certain times in her short life, these admissions were happening monthly. On most occasions, the diagnosis on admission was asthma. At times, this condition was accompanied by croup and/or bronchitis. Kylie's parents spent a great deal of time in managing Kylie's medical condition and in caring for Kylie. There are numerous references in the notes to their regular attendances at NBH with Kylie.

The records before the inquest refer to two acute admissions for Kylie to NBH during the 1990s – one being on 23 March 1993 and the other in March 1996. On each occasion Kylie was admitted in acute respiratory distress with severe upper airway obstruction as well as asthma.

On the first of these acute admissions, Kylie was referred to paediatrician, Dr Paul Carman, who saw her on 30 March 1993. In a letter dated 2 April 1993 to her GP, Dr Collis, Dr Carman noted Kylie's problems as croup and asthma and said -

> "Certainly Kylie has underlying asthma and needs to be on maintenance medication. I am inclined to think that her presentation acutely was due to acute upper airway obstruction as her mother felt her problem was actually breathing in, her voice seemed abnormal and it occurred so acutely. I can't be absolutely sure of this and certainly there was an asthmatic component but it did seem to me on the history and certainly I think Mrs Lynch feels that the problem was more upper airway than a lower airway problem acutely. I think we must maintain her on maintenance therapy for her asthma in any case. However, I think it would be useful for the family to have some adrenaline at home – this could be either in the form of 1:1000 adrenaline for subcutaneous use or it could be used via a nebuliser (0.5 mls/kg/dose). Even if the episode if it occurred next time was asthmatic, it would still be a useful initial treatment prior to further bronchodilator therapy along the lines she had on this admission. Clearly the parents need to bring her in early as they have done. I would be very pleased to see her in the future if there are any further problems"

Hospital notes made during this admission reflect that Kylie "will need s/c (sub cutaneous) adrenaline at home" and that on 31 March 1993 Kylie was discharged from NBH after one of the nurses instructed her "mother and

friend (Denise)" "re s/c (subcutaneous adrenaline) injection technique. Father may present to A & E (admissions and emergency) for instruction". There is no suggestion in any of the records that the adrenaline given to the family at this time was for allergic reaction or anaphylaxis. Dr Collis said in his evidence that his interpretation of the notes was that the adrenaline "was for upper respiratory tract disruptions probably caused by a viral upper respiratory infection giving her croup, which she suffered from for several years around about that time", rather than for anaphylaxis (T95).

On 22 March 1996, Kylie was again an acute admission to NBH. She was diagnosed as "acute on chronic asthma". On that day the medication chart at NBH records that s/c adrenaline 1:1000 was prescribed for Kylie "if needed for emergency". Dr Collis saw Kylie on 25 March 1996 and she was much better. Then on 26 March 1996, Kylie suffered an episode of acute upper airways obstruction. Dr Collis wrote to Dr Carman that Kylie had had another episode of acute upper airway obstruction. He noted in his letter that Kylie's mum "had thrown out the adrenaline 2 days or so previously because it had changed colour". He sought a review of Kylie by Dr Carmen. Dr Collis also noted in NBH's notes that he rang Mrs Lynch and "Left Rx (treatment) for adrenaline". There was no mention of any allergy in the medical notes in 1996.

This admission in March 1996 was followed by numerous further asthma episodes and hospital attendances and admissions for Kylie. Dr Collis again asked Dr Carman to review Kylie in September 1998. On 11 September 1998, Dr Carman wrote to Dr Collis after seeing Kylie on 2 September with

her mother. He described Kylie's problems as chronic asthma and chronic eczema. He noted that around this time she seemed to be admitted about every 2 months with an acute episode of asthma. He further noted that as regards an action plan for Kylie that "her mother has some oral steroids at home and in fact some Adrenaline but she has not used the Adrenaline …. (rather if) her nebs do not help her (Kylie) she comes straight to hospital.." There was no mention of allergy by Dr Carman or of any adrenaline being for the purpose of dealing with an allergic attack or anaphylaxis.
Dr Carman again saw Kylie in September 1999 – this time for "chronic asthma". He noted in a letter to Dr Collis that her asthma had necessitated admissions into hospital during 1999. He recommended changes to Kylie's medication regime. This seems to have been the last time Kylie was seen by Dr Carman. Kylie was now 13 years old.

Various of the forms used by staff at NBH to record Kylie's medical history carry a specific section for information as regards a patient's allergies. Throughout the 1990s the allergies section of the numerous forms created for Kylie contained one of the following annotations: "nil known" or "nil" or "NKA" (presumably meaning no known allergy) or "none known", with the exception of a medical record in May 1990 that described 3 year old Kylie as being allergic to "Dairy Products. No bacon, pork, ham." However, there is no further mention of any food allergies during this period and in fact she is described as having no known allergies. Kylie's nursing care plans prepared during the 1990s for her many hospital admissions describe her nutrition requirements as "full diet" or "as required". There is no mention of her being allergic to peanuts, or nuts, during this period of time. It is not until

2000, when Kylie was 14 years old, that any mention is made of food allergies in her medical records, with the exception of the medical note of May 1990 that I referred to earlier.

On 8 December 2000, Kylie attended the emergency department at NBH. On that attendance, under the "Allergies" section on the Emergency Department Notes form, the nurse entered "? peanut butter". There is no further explanation in the notes for this entry and Kylie is diagnosed as having presented with asthma. On Kylie's subsequent attendances to the emergency department at NBH in 2000 and 2001, Kylie's allergies are listed again as "nil known".

At 7.35 pm on 27 October 2002, when she was 15 years old, Kylie again presented to the emergency department at NBH. On the notes for this presentation, for the first time, it is noted that she is allergic to "peanuts". The notes, written by a nurse, state: "Patient presented after having an allergic reaction to eating peanuts. Had a satay stick at lunch. Face, lips, eyes, neck & throat became swollen and was very distressed. Some puffiness still evident around eyes, some tingling still in lips. Advised to see GP and discuss options as this could be a warning for future anaphylaxis." Kylie's discharge diagnosis after this admission was "allergic reaction". It was the first such diagnosis of this type recorded in the medical records before the inquest.

On 29 October 2002, two days after her presentation to NBH, Kylie attended on Dr Collis at his surgery at the Karratha Medical Centre. Dr Collis told the

inquest that as far as he could recollect he first became aware of Kylie being at risk of an anaphylactic reaction "when she presented in October 2002 with the story of having eaten peanut sauce." He said he was not aware that Kylie had allergies before that date. (T92) He said that she may have had allergies but he was not aware of them prior to that date. He said he thought Kylie was allergic "just to peanuts at that time", and not to all nuts. (T96) Dr Collis's notes of his consultation with Kylie on 29 October 2002 are as follows:

> "Went to tom price on w/e had peanut sauce – swelling lips, then on way back developed facial swelling and some pharyngeal swelling
> Went to nbh (Nickol Bay Hospital)
> Needs to avoid peanuts
> Talk about EpiPen, antihistamine
> Recommend polaramine"

Dr Collis said he had no recollection of telling Kylie or her family to avoid all nuts at this time, or ever. (T97) He said he would have given Kylie advice about avoiding peanuts and being diligent in food choice and about reading labels. However, he couldn't recall if he gave advice to Kylie about what to do when she went out to eat. Dr Collis said he couldn't remember whether he prescribed an EpiPen for Kylie at this time. There is no record of doing so in his notes. Dr Collis said that if he did he "would have written a prescription and they (the Lynch family) would have taken it to the pharmacy, had it dispensed". (T97) Kylie's father, Peter Lynch, says he has a recollection of attending a pharmacy to purchase an EpiPen for Kylie shortly after this episode of anaphylaxis. It seems likely on all the evidence

that Dr Collis did prescribe an EpiPen for Kylie. An Epipen would have cost about $120 at that time.

Dr Collis told the inquest that Kylie should have had a follow up appointment to discuss prevention, and to renew the EpiPen if one was prescribed, but he was not aware of whether a follow up appointment occurred. Dr Collis said he did not consider referring Kylie to an immunologist or allergy expert because Kylie had told him that she was allergic to peanuts and "I didn't know that it would change the management all that much". (T98-9) He said that he did not consider sending her to an allergist to check if she was allergic to all nuts. (T98) The evidence was that such a referral would have had to have been to a specialist immunologist/allergist in Perth at the time as these specialists did not attend Karratha.

Dr Collis said that if someone presented with anaphylaxis to peanut, he was unlikely to caution them to avoid all nuts unless they had suffered a serious reaction - that is, one which required the person to be treated with adrenaline. He said that he considered that there was not "the evidence to suggest that people who are allergic to peanuts are allergic to all nuts". (T100-101) Dr Collis said he did not consider that Kylie's anaphylactic reaction in 2002 was "terribly significant" because she had not presented to the hospital until 7.35 pm after having eaten peanut at lunchtime. Kylie was not admitted on that occasion and only remained at the hospital for about an hour. He considered a serious reaction to be one where a person needed to be treated with adrenaline, and this was not the case with Kylie in 2002.

Dr Collis last saw Kylie on 13 May 2003 at the Karratha Medical Centre when she presented for an influenza vaccine. Dr Collis said that "with the passage of time, my recollection of my consultations with Ms Lynch is almost non-existent and therefore, I am unfortunately unable to add a great deal to what is recorded in the notes." He said that over the time that he treated Kylie, her asthma was a much more significant issue than her allergy. (T105)

Kylie's subsequent attendances at the emergency department at NBH on 17 August 2003, 3 January 2004, 27 June 2004, and 3 February 2005, were for treatment for asthma. Her hospital records over this time generally record Kylie's allergy to "peanuts", or on some occasions to "peanut butter". However, there is no mention in the hospital records of allergy to any other nuts. On 26 May 2006, Kylie again was admitted to NBH, this time with documented "moderately severe exacerbation on asthma and chest infection". Her allergies were described as "peanuts". For the first time her admission form and medication chart carry a red drug alert sticker, which refers to "peanuts". And for the first time, her admission form and care plan note that her dietary needs include "no peanuts".

On 10 July 2007 Kylie had another allergic episode. Hospital notes record that she presented to the Emergency Department at NBH at 4.30 pm with a "known allergy to peanuts" and saying that she had "tasted a toffee dessert 10 minutes ago" and eaten peanuts "by mistake". Kylie had apparently been at a work function. Kylie was treated by Dr Casey Parker, the District

Medical Officer (DMO) on duty, who noted that her symptoms included a rash, abdominal pain and nausea. His notes read: “There was no swelling of the upper airway, her blood pressure and capillary perfusion was normal. On examination of her chest she had a diffuse wheeze consistent with bronchospasm. Pulse oximetry revealed lower than normal levels of oxygenation (93%) on arrival.” Dr Parker told the inquest that in his opinion Kylie was “moderately unwell, not severe in the spectrum which anaphylaxis can present with.” (T240) Kylie was diagnosed with “anaphylaxis to peanuts”.

Kylie was treated with oxygen by mask to increase her oxygen levels and intravenous saline, hydrocortisone (100 mg), promethazine (25 mg) and metoclopramide (10 mg). She was also given nebulised salbutamol. Dr Parker said he gave the hydrocortisone steroid to decrease the severity of the anaphylactic reaction, the promethazine as an anti-emetic and anti-histamine, the metoclopramide as an anti-emetic and the salbutamol as a bronchodilator. He told the inquest that he did not give Kylie adrenaline because, although adrenaline would have been a reasonable treatment, he did not think she was unwell enough and her condition didn’t justify the risks involved with giving adrenaline. (T241) He said he would have “really just been putting her at risk with the side-effects of adrenaline without really much gain”. (T253) Dr Parker said that as Kylie was in an emergency department and being monitored closely, then if she became more unwell, she could be given adrenaline very quickly. In his opinion, there was enough time to see if the other drugs he had given her would work. Dr Parker said Kylie responded well to the treatment and did not require any further intervention.

Dr Parker said that in July 2007 there were not any guidelines for the management of anaphylaxis displayed at NBH. (T249) He said he thought best practice would have been to discharge Kylie from NBH "with a specific management plan for subsequent anaphylactic reaction" and she "most probably should have been educated on the use of an Epipen and given a prescription or referred to an immunologist." He said, however: "It's difficult to provide a prescription in this case because as was noted, she didn't have adrenaline and so I doubt if a prescription of an Epipen was suggested. .. She needed to be consulted by a consultant in order to meet the authority (the Pharmaceutical Benefits Scheme) criteria for an Epipen. … we don't really have access to physicians and immunologists in the short term (in Karratha) .. That would normally be done by the patient's general practitioner and so I think the best practice at the time would have been for her to be referred back to a general practitioner to get that followed through…a general practitioner in the north west would usually telephone, do a telephonic consultation with an immunologist to get the authority for an Epipen." (T247)

Dr Parker said that "without an approval from an immunologist, … it would have been a private prescription, not under the authority of the PBS system" and in any event "a prescription for an Epipen is not particularly useful without significant patient education and it should be used in the context of an … anaphylaxis action plan. So it clearly takes .. a minimum of 20 or 30 minutes to go through that with the patient and demonstrate how to use an Epipen and that's not something that can be done quickly in an emergency

department. That's why we would generally refer them on to their general practitioner to get that action plan generated. It's not something that can be done within a few minutes." (T254)

Dr Parker finished his shift at about 6.00 pm and Dr Adrian Defrancesco took over as the on duty medical officer (DMO). Kylie was kept in the emergency department for observation and was discharged from NBH at 9:10 pm on 10 July 2007. The notes made by the nurse at the time of Kylie's discharge state "OBS STABLE REVIEWED BY DMO LEFT DPT WITH FATHER". There were no notes made by a doctor on Kylie's medical notes after 5 pm that day. The discharge notes indicate that Kylie was referred to a GP but there is no record of any letter written to a GP either on the hard copy system or on the computer system. Kylie's father, Peter Lynch, said he had "a very brief conversation with the duty nurse, who I understand had been instructed by the duty doctor, where the nurse suggested that Kylie seek a follow up with her general practitioner regarding her allergic reaction, and the management of her medical condition following this allergic reaction."

Dr Defrancesco has no recollection of having had anything to do with Kylie on the night of 10 July 2007. He said that "whilst it is possible that I was the DMO on duty and involved in the discharge of Ms Lynch, given the ever-changing roster system and the general chaotic nature of NBH at the time, it is also possible that I was not involved in Ms Lynch's discharge. If I was not available at that time, either because I had been called as the on-call anaesthetist or if I was involved in the care of another patient, then the

second on-call (doctor) would have been responsible for Ms Lynch's discharge". (T224)

Dr Defrancesco said: "If I were to treat a patient for an allergy to nut ingestion, my usual practice would be to refer the patient back to her GP for referral to an immunologist. In respect of Epipen prescriptions, under the emergency protocols, if a patient is treated with adrenaline in hospital, then a prescription for an Epipen can be provided. However if a patient has had a mild reaction and has not received adrenaline and has been aware of the allergy for some time, then I would refer the patient to their GP for discussion and management and prescription of an Epipen." (T225)

It seems likely on all the evidence that Kylie was not seen by a doctor before she was discharged on 10 July 2007. The nurse told Kylie to go and see a GP but no referral was written to inform a GP what had happened that night. It seems likely that there was no detailed history taken in relation to her allergy and past anaphylaxis and minimal, if any, advice given in relation to her future risk of anaphylaxis, the need to carry an EpiPen, the use of an EpiPen, and the need to avoid allergens. There was no referral to an allergy specialist.

The evidence from Drs Defrancesco and Parker was that there were difficult working conditions in NBH in 2007. Dr Defrancesco said that doctors were working long hours and had poor administrative support. He said there was not enough staff at NBH for any supervision. "Even when I was a registrar there was no supervision". There were no consultants in the hospital and no

medical specialists in the town. (T234) He said that although it was not good practice, patients were discharged by a nurse who had spoken to a DMO over the phone "quite often" because of the workload. (T225) He said he didn't like doing this because "it compromised patient safety." (T226)

Kylie is not recorded as having visited the Karratha Medical Centre after 10 July 2007. The Karratha Medical Centre was the place where she usually went for her GP care. Matthew remembered that she said she had to visit her GP, but did not know if she did attend a GP. He said, however, that shortly afterwards Kylie showed him an Epipen and said "Look what the doctor's got for me now." (T157) Kylie's family are unaware of whether she went to a GP or got a new Epipen.

On 15 August 2007, Kylie was admitted to NBH with "exacerbation of asthma". Her hospital notes state that Kylie is allergic to "peanuts".

Members of the Lynch family recall Kylie being diagnosed with a nut allergy in the 1990s and being trained to use an EpiPen at that time (with Dr Collis demonstrating its use on an orange). There is mention in the medical records over this time of Kylie and her family being given adrenaline for emergency use in relation to Kylie's upper airway problems. However, there is no mention of a nut allergy in any of the medical records until 2000. Furthermore, Dr Collis says that before October 2002 he wasn't aware of any allergy for Kylie. He said it was possible that Kylie had allergies diagnosed that he wasn't aware of, but given his long term care of Kylie - who spent a

significant amount of time under medical care – I don't consider it likely that Dr Collis would not have known about Kylie's allergy. (T92)

Kylie's family say that Kylie considered she had a general nut allergy and was avoiding all nuts. Dr Collis said he was only aware of a peanut allergy and did not advise Kylie to avoid other nuts. The hospital records make reference to an allergy to peanuts only. There is also evidence that Kylie ate muesli bars with almonds as a listed ingredient on the weekend before she died, which is inconsistent with avoiding all nuts. It is also the case that the sticky date pudding that Kylie ate at Fin's Café was covered in pistachio nuts. In my view it is likely that it was only to peanut that Kylie considered herself allergic.

EPIPEN – ADRENALINE AUTO INJECTOR

I consider that the references to the provision of adrenaline to Kylie in 1993 and 1996 in the medical notes were in the context of an upper airway constriction and asthma. Dr Collis, the family GP, could not remember allergy before 2002 and the medical notes at the hospital make no reference to allergy before 2000. I think it is not likely that Dr Collis would forget the details of a patient whom he attended on so often. Dr Carmen also makes references to adrenaline several times but never in the context of allergy. I think the epipen and adrenaline that the family refer to in the 1990s was provided for emergency use due to Kylie suffering upper airway obstructions at times along with her ongoing and chronic asthma. I do not think that Kylie was diagnosed with allergy in the 1990s. Rather Kylie and her family

were constantly dealing with her chronic asthma and at times her croup and bronchitis.

Kylie was in a relationship with her boyfriend, Matthew Garratt, for about 4 months before she died. (T132) Matthew referred in his evidence to Kylie's allergic reaction – which he described as an "attack" - on 10 July 2007 in Karratha. He said that at the time, he knew Kylie was asthmatic but not that she was allergic to nuts. (T133) He said Kylie contacted him about two days after this "attack" and "told me everything that happened, told me … how allergic to the nuts she was and that it could kill her." (T133) He said Kylie said she had to go and see a GP, but he didn't know if she went or not. (T157)

Matthew said it was not until after her allergic reaction in July 2007 that Kylie told him she had an Epipen. He said that shortly after her July 2007 hospital admission, Kylie came to see him and she had an EpiPen in her handbag**.** He said Kylie "showed me and that was all we spoke of it." (T133) He later said in reference to the Epipen that Kylie said: "Look what the doctor's got for me now." (T157) Matthew said he only saw Kylie with an Epipen "once". When asked if Kylie often left her Epipen home when they went out to eat, Matthew said, "She always did, yeah … I only saw it once." (T156)

It seems likely that Kylie obtained an EpiPen after her July 2007 allergic reaction. EpiPens can be purchased from a pharmacist with no script, and it may be that she purchased one for herself, or she may have visited a GP in a

medical practice other than the Karratha Medical Centre and obtained a prescription for one.

Matthew said he told Nurse Pedersen and Sandra Lymbery that Kylie said she didn't carry her Epipen because it took up too much room in her handbag. However, he said, he could not recall Kylie saying that to him although it was possible she did. (T135) When examined by counsel for Nurse Pedersen, Matthew said "at one stage (Kylie) said that it was too big for her bag and because we were in Karratha she said if anything happens she can always go straight to her doctor but coming to Coral Bay I was certain that she would have taken it with her because we were in the middle of nowhere. As it turned out she didn't at all." (T155)

Nurse Pedersen said she asked Matthew whether Kylie had an epipen while she was writing her nursing notes as she wanted to know whether Kylie had received adrenaline before attending the nursing post. Her note reads: "Pt's (patient's) boyfriend Matt Garrett was present during the entire resuscitation and states the pt had an allergic reaction about 1 month ago. He also stated she has been given an Epipen by her GP but that she refuses to carry it."

FORENSIC ANALYSIS

Three samples were taken for forensic analysis. Those samples were firstly the contents of Kylie's stomach; secondly the sticky date pudding; and thirdly a mix of caramel sauce and vanilla ice cream. The three samples were sent to Food and Biological Chemistry laboratory of the Chemistry

Centre in Western Australia for testing for peanut allergen on 18 October 2007.

Dr Kevin Ho is a biochemist and he tested the samples. He said he allowed each sample to thaw and then he mixed each "before I took a sub-sample to test." (T188) Dr Ho said the mixing procedure was intended to "mix the sample really, really well so that when you take a small sample from there you have made sure that the sample you have taken is a representative sample." (T189) He said he then tested the samples to determine whether there was any peanut in any of them.

Dr Ho said that his "conclusion for all three samples was that the level of peanuts in them was non-detectible." (T189) He said that that result meant that if "there was a presence of peanut it would be very difficult to detect at that very low level with any competence." He said that the kit used to test the samples is a sensitive one which, according to the kit, "can pick up down to 1.5 parts per million." (T189) The limit of detection is defined – in scientific terms – as "the lowest quantity of any substance that can be distinguished from the absence of a substance." (T190)

Dr Ho said he was not requested to do a test for pistachio nut or any nut other than peanut. He said he was not aware of a test kit for pistachio nut at the time of carrying out the testing. He said that despite the test results it was possible that there was a trace of peanut. However, "it would be a very small amount and would be hard to quantify." (T190)

Dr Ho said it was most likely that there was no peanut in either the food samples or the stomach contents when he tested them. He said the fact that the sample of stomach contents was not taken until four days after death meant that the sample was likely to have been compromised, and not reflect the stomach contents at the time of death. (T190, 194) In other words, any peanut protein in the stomach may have been degraded by stomach contents such as gastric juices. Dr Ho's results of the peanut testing were recorded in a report dated 3 February 2008.

Dr Ho said the samples were kept for two years before they were disposed of. He said he had not received any request to retain the samples.

Bianca Stevens from the Chemistry Centre told the inquest that on 20 September 2007, Dr Clive Cooke, the forensic pathologist who performed the post mortem examination of Kylie, requested that the sample of her stomach contents be retained indefinitely. However that direction was not passed on to Dr Ho, and as no further requests for analysis were received, Dr Ho discarded these samples after two years when the Chemistry Centre relocated. Samples are legally required to be kept for three months. A new procedure now has been put into place to ensure that all samples which are to be retained indefinitely are individually marked so as to try to ensure this mistake cannot occur again. (Exhibit 51)

POST MORTEM EXAMINATION

Dr Clive Cooke, forensic pathologist, gave evidence. He is the Chief Forensic Pathologist in Western Australia and has been in this position since 1991.

Dr Cooke told that inquest that anaphylaxis as a cause of death is unusual in Western Australia. There have been 9 deaths in Western Australia where anaphylaxis was the cause of death in the last five years. Three of those deaths were related to bee sting reactions; three deaths were thought to be a reaction to medication; one death was a reaction to an infective organism (a hyatid cyst); one death was thought to be an allergic reaction but the allergen was unknown; and the ninth death is that of Kylie. Dr Cooke said that Kylie's death is the "only presumptive food allergy anaphylaxis." (T267)

After conducting a post mortem examination of Kylie together with further tests and analysis, Dr Cooke concluded in his report to the Coroner dated 8 November 2007 that the cause of Kylie's death was anaphylaxis. His report states that tests for "possible allergic reaction were raised, with a high level of mast cell tryptase (43.3u – usually less that 14u), and moderately raised levels of antibodies (IgE) to nut mix, staple food mix, (includes peanuts) and peanuts." Otherwise Dr Cooke found "there were no obvious structural causes" of death. (T268)

Dr Cooke said that he formed the opinion that the cause of death was anaphylaxis for a number of reasons. Those reasons were firstly "consideration of the apparent circumstances that I was told", secondly "the absence of any obvious structural explanation for Kylie's death .. (such as)

heart disease", and thirdly "the finding of the raised basal tryptate level on immunological testing." (T271) Dr Cooke said there also "were some changes of asthma" …. "and I wouldn't be surprised if part of Kylie's reaction was bronchospasm and asthma changes." (T271-2) He said: "She's having some asthma as part of the anaphylaxis .. but not to the degree we would normally see with someone dying purely of that." (T273)

Bianca Stevens, a senior chemist and research officer from the Forensic Science Laboratory of the Chemistry Centre, performed the toxicology analysis for Dr Cooke. She found some of the drugs that Nurse Pedersen had administered and nothing else of interest or concern.

EXPERT EVIDENCE – EMERGENCY MEDICINE SPECIALIST

Dr Thomas Hitchcock is an emergency medicine specialist. He gave expert evidence to the inquest. Prior to giving his evidence, Dr Hitchcock was supplied with Nurse Pedersen's statement and her medical notes in relation to the treatment of Kylie at the Coral Bay Nursing Post on 2 September 2007. He was also given a copy of Dr Dijkwel's statement.

Dr Hitchcock said that, in his opinion, from the time Kylie arrived at the nursing post – with a stridor and oxygen saturations of 80% - she had a severe airway problem, and "with regard to the most likely outcome from a person in that condition, right from the beginning, this is an acute and severe emergency with a possibility of death." (T346) He said Dr Dijkwel and Nurse Pedersen had to deal with a resuscitative process, a diagnostic process and a treatment process.

Dr Hitchcock said that Nurse Pedersen "achieved an enormous amount in a very short period of time when Ms Lynch first arrived." (T346) He said that the initial management provided by Nurse Pedersen "was timely and appropriate, and certainly consistent with the standard described in the guidelines." (T348) By way of a benchmark guideline, Dr Hitchcock referred to the Emergency Treatment of Anaphylactic Reactions guideline published by the Resuscitation Council in the UK in 2008.

Dr Hitchcock noted that Nurse Pedersen's notes "indicate that by 2100 (Kylie) appeared to have responded to the therapies provided. Her oxygen saturation was at 96%, she was breathing and was maintaining her vital signs for approximately 10 to 15 minutes. At 2125 there is a rapid deterioration associated with absent respiratory noises and a rapid fall in oxygen saturation, and the pulse rate falls to 40, then 32." (T349) He said that Kylie appeared to have a cardiorespiratory arrest at about 2125.

Dr Hitchcock said he considered there were three possible causes of Kylie's cardiorespiratory arrest. The first possible cause was the pathological process of anaphylaxis and the arrest was just due to the process of anaphylaxis. The second possible cause was that at this time Kylie received intravenous adrenaline which can sometimes cause cardiac arrhythmia with a resultant cardiorespiratory arrest. However, in Kylie's case, she became bradycardic (meaning a slow pulse rate) and not tachycardic (meaning a fast pulse rate), and Dr Hitchcock said he would expect if adrenaline had caused this arrest that it would set off severe tachycardia as opposed to severe

bradycardia, which Kylie suffered. The third possible cause was an airway obstruction. Dr Hitchcock said that "when a patient's airway becomes completely obstructed they become progressively hypoxic, oxygen saturations fall quite rapidly over a period of a minute or so, 30 seconds to a minute, and they become bradycardic and they have respiratory effort but no breath sounds. On balance given Ms Pedersen's description of a patient having respiratory effort but no air movement associated with bradycardia and rapidly falling oxygen saturation, I thought her arrest was most likely due to an airway obstruction rather than the underlying process of anaphylaxis or a severe tachyarrhymia precipitated by intravenous adrenaline." (T350)

Dr Hitchcock said that in his opinion Dr Dijkwel's decision to attempt a cricothryoidotomy on Kylie was "understandable and reasonable" because he had "established that the cardiorespiratory arrest was due to complete upper airway obstruction in the setting of anaphylaxis. In this setting, oedema obstructs the flow of air at the level of the larynx and it is unlikely that any intervention apart from a surgical airway, such as a cricothyroidotomy, would have been effective." (T351)

Dr Hitchcock concluded "that the emergency treatment provided to Ms Lynch on the evening of 2 September 2007 was appropriate, timely and consistent with internationally recognised guidelines for anaphylaxis and advanced life support. I certainly believe the standard of care provided was commendable and delivered to Ms Lynch the best possible chance of survival." (T352)

Dr Hitchcock said that being a single operator in the situation Nurse Pedersen was in is "extremely challenging." (T352) He said that because there is only one pair of hands, a single operator has to prioritise the work to be done, such as resuscitation, diagnosis and treatment, whereas with more than one operator there is the "opportunity to do some of the things simultaneously, for instance trying to manage the airway and establish intravenous circulation; being able to provide some sort of communication to the patient's family or carers who were there; being able to communicate with … the person who was providing phone consultation at the same time as providing care." These things would normally be carried out by multiple operators or a team. Dr Hitchcock said that his "experience of doing cricothyroidotomies is that you need to have an assistant to help." (T353-4) Dr Hitchcock said it "very useful" to actually observe a patient in order to clinically manage a patient and that it was far more difficult to gauge the degree of reported improvement or decline in a patient if the patient was not present." (T378)

Dr Hitchcock said that if Kylie had been treated at a tertiary hospital then there would have been "a team approach to the simultaneous management of resuscitation, diagnosis and treatment." (T360) He said that he could not confidently say that Kylie would have survived if she had presented to a tertiary hospital "and had an extensive team approach to the whole resuscitation." He said dealing with "a patient with stridor and oxygen saturations of 80 per cent .. is a challenge to manage even with a team." (T361)

Dr Hitchcock said that Nurse Pedersen's initial decision to treat Kylie for both asthma and anaphylaxis was "very reasonable." He said that "the broncho constriction and airway problems you get in anaphylaxis can certainly mimic acute asthma." (T356) He said that in the setting of a severe airway compromise – such as in Kylie's case – that he would have put the adrenaline neb on and then given the intramuscular adrenaline. He said however that "both of these is a priority and it's a good demonstration of I guess the potential conflicting priorities between the medical history, examination, diagnosis, treatment process versus the resuscitation process and the pressures upon say, a single operator to try and do everything at the same time." (T359)

Dr Hitchcock said that if after giving a dose of intramuscular adrenaline, there was no initial response to that dose, then ideally Kylie should have received a further dose approximately 5 minutes after the first dose. He said that in his view Dr Dijkwel should have ordered a second dose of adrenaline when Nurse Pedersen called him at 8.40 pm. He said that inhaled adrenaline was not a replacement for intramuscular adrenaline, and that both inhaled and intramuscular adrenaline should have been given then. (T358)

Dr Hitchcock said there can be life threatening risks associated with giving intravenous adrenaline such as "cardiac arrhytmias and intracerebral haemorrhages". (T355) He said that the appropriate dose in this setting would depend on whether the adrenaline was being used as therapy for anaphylaxis or for resuscitation and a cardiorespiratory arrest. He said that

Dr Dijkwel provided the correct dose of intravenous adrenaline for a resuscitation process. However if the dose was for therapy or anaphylaxis then it was "approximately 10 times too high dose". (T356-7) He said by 2125, on the basis of Nurse Pedersen's nursing notes and her description of Kylie, that Kylie had either suffered "an arrest or an arrest was imminent. … due to acute airway obstruction. Without an airway, the patient is in respiratory arrest. The pulse of 40, it's unclear how that was detected, whether or not it was a pulse, to feel a pulse, or a pulse of 40 on the oxygen saturation meter, but without a palpable pulse and no respiration, it's a cardiorespiratory arrest." (T356) Dr Hitchcock said that if giving the adrenaline was a resuscitative attempt, then the intravenous dose given was a reasonable dose and a reasonable thing to do at that stage. (T357)

Dr Hitchcock said that patients presenting to an emergency department with anaphylaxis "need education about their condition. If they present with anaphylaxis that is potentially life threatening they need to … (have an) anaphylaxis plan for management of an acute event. … So in effect when a patient presents with anaphylaxis there is not only the acute management and treatment that needs to be provided in the emergency department, there is then – you start to develop the plan – the anaphylaxis plan. Does a patient need to have access to an Epipen? Do they need an Epipen on prescription from the emergency department, what education can you provide in that emergency department and what follow-up does that patient need? Does this patient need to be followed up by their general practitioner for a reinforcement of that initial education or do they also need to see a specialist, not only to reinforce that education and develop – and reinforce that

anaphylaxis management plan but also to consider whether or not skin testing may be useful in order to help identify allergens." He said "I think (Kylie on 10 July 2007) should certainly have left the (emergency) department (of NBH) with a plan. … there should have been a really good, cogent plan … most importantly a process of education, but also … the development of an anaphylaxis management plan." (T364)

Dr Hitchcock said that his experience is that "there is a lot of variability in the treatment of anaphylaxis and my experience in tertiary emergency departments is that often, particularly junior staff, are a little bit scared of using adrenaline." (T365) He said that these concerns about adrenaline are unfounded where it is used in the way set out in the guidelines." (T366) He said he would be supportive of a recommendation arising out of this inquest that GPs and emergency department physicians be educated about anaphylaxis protocols and the importance and the safety of using intramuscular adrenaline as a front line treatment. He said he would also be "supportive of initiatives like having Epipens available at emergency (departments) – stocked in emergency departments, in order to give patients associated with it the appropriate education." (T266)

Dr Hitchcock referred to the guideline of the Resuscitation Council UK (dated 2008) entitled "Emergency Treatment of Anaphylactic Reactions". Under the Executive Summary on page 4, it reads: "Despite previous guidelines there is still confusion about the indications, dose and route of adrenaline." Dr Hitchcock said that would have been the situation at the time of Kylie's death. (T369) He commented that as regards evidence for

doses of adrenaline "we often have to rely on consensus documents as opposed to primary results of research in order to develop guidelines like this. ….a good example is .. comparing this document with .. the Australian Resuscitation Council guideline .. the Australian document which was published in 2009 indicates that the initial dose of adrenaline is .3 milligrams, whereas the UK document, which I regard as an international benchmark, indicates the initial dose is .5 milligrams. There are other references – you can find variability in the dosage of adrenaline in different consensus documents from different countries and different publishers and different groups. So yes, there is variability certainly in the dose of adrenaline. Most of the guidelines – all of the guidelines I have seen have indicated that the initial dose should be intramuscular." (T370)

With regard to treatment in an emergency department of a hospital in the regions such as Karratha, Dr Hitchcock said "when a patient comes along, for instance, with anaphylaxis, there is an opportunity …. to identify with the patient that in fact they do need to have a plan with regard to anaphylaxis and identify with them where they can get information, possibly provide some information and possibly provide some medication. If the patient presents with life-threatening anaphylaxis, it's probably appropriate to ensure that they have access to timely adrenaline when they leave and the most useful access to timely adrenaline is probably the provision of an Epipen, associated with an explanation with that."(T374) "But its not just that. There is a whole lot of education patients need about their conditions, about their allergens, about where to identify those allergens, and also what to do particularly say, if you are travelling or going away from an area where they can have … less access to medical care." (T375)

Dr Hitchcock said he knew it has been the case for emergency departments to have some difficulty being able to prescribe adrenaline without authority. (T375) In July 2007, PBS would not allow a prescription for an Epipen because adrenaline was not used during the admission.

EXPERT EVIDENCE - IMMUNOLOGIST

Clinical Associate Professor Richard Loh is a practising physician in allergy and clinical immunology. He prepared a report for the Coroner and appeared at the inquest.

Professor Loh told the inquest that anaphylaxis "is a severe allergic reaction that is rapid in onset and may cause death. It has been estimated to be fatal in 0.7 to 2 per cent of cases." (T385) He said that in "only half a generation, food allergy has become a major public health issue (in Australia) for children and those who care for them. Professor Loh provided some background on this issue. He said -

- the rate of peanut allergy has doubled in the past 10 years in Australia;
- a recent Australian study predicted that up to 8% of babies (approximately 24,000) are likely to develop potentially deadly food allergies by age one;
- anaphylaxis now occurs more frequently in community settings rather than in health care settings;
- rates of emergency department visits and hospital admissions for food-induced anaphylaxis have doubled in Australia over the past 12 years;

- the prevalence of fatal anaphylaxis in Australia is unknown, but is thought to be rare. While fatal anaphylaxis is rare, it often afflicts otherwise healthy people in the prime of life and 90% of these deaths are preventable; and
- there is no treatment or cure for food allergies. Avoidance is the only way to prevent an anaphylactic reaction.

In Professor Loh's opinion, anaphylaxis was the most likely cause of Kylie's death. He said his reasons for this conclusion were that -

- Kylie's signs and symptoms were consistent with anaphylaxis including respiratory (upper and lower airway obstruction), cardiovascular (low blood pressure and collapse), gastrointestinal (abdominal pain) and skin (flushing);
- Kylie had risk factors that are associated with fatal food-induced anaphylaxis including co-existent asthma, previous anaphylaxis to peanuts, delayed administration of adrenaline and was a young adult;
- Kylie had raised post-mortem tryptase which is consistent with anaphylaxis; and
- there were non-specific autopsy findings which is consistent with death from anaphylaxis. (T386)

Professor Loh said the timing of the onset of Kylie's symptoms – being within 30 minutes if exposure to the allergen occurred at Fin's Café - was consistent with food induced anaphylaxis which typically develops rapidly after exposure to the allergen. He said one study of "fatal and near fatal cases of anaphylaxis caused by food (showed) all had symptoms within the

first 30 minutes after exposure, (and) most within the first five minutes." (T386-7) He said, however, that absorption of the allergen can be delayed by some types of food – for example, greasy food such as chips can delay absorption - and that the time between ingestion of food and the onset of symptoms can extend up to six hours. Professor Loh said that the "more likely location" for Kylie's exposure to the allergen was Fin's Café. (T387) But it was possible that Kylie was exposed to the allergen before she arrived at Fin's Café.

Professor Loh talked about Kylie's tryptase level of 42 which, he said, was "really quite high." (T390) He said the most likely reason for her raised tryptase was anaphylaxis. He said that tryptase "is a chemical released by cells in the body, in particular a cell called mast cells. Mast cells exist in the skin … in the lungs … in the heart … in the gut. When you have an allergic reaction you have allergy antibodies. These allergy antibodies bind on the surface of these cells. When you have an allergen such as peanut, it cross links this allergy antibody and makes these mast cells degranulate. These mast cells release lots of chemicals. One of the chemicals that is released is histamine and another is tryptase. … the histamine and the tryptase cause lots of the symptoms of allergic reactions such as itch and swelling but also can cause much more severe reactions such as a drop in blood pressure as well as swelling in the throat, in the lungs, in the gut." (T389)

Professor Loh said that he thought it unlikely that asthma caused Kylie's death. (T391) However a "history of asthma and fatal anaphylaxis is related. Asthma has been …. identified as a significant cause of morbidity for severe

and fatal anaphylaxis and has been associated with a requirement for multiple doses of adrenaline." He said "data suggests that if a broncho spasm is exacerbated during an allergic reaction, reversing the episode would be more difficult in asthmatics." (T392) Professor Loh described a broncho spasm as "the airway spasm constricting down. So it's the wheeze that you get in the lower airway. It happens in asthma and it happens in anaphylaxis as well." (T392) He said anaphylaxis could exacerbate asthma.

Professor Loh said that he was uncertain what allergen caused Kylie's death. He went on: "There was no history of known ingestion of peanut, no peanuts detected in the foods that were tested, and no peanut was detected in Kylie's stomach contents. However, I believe that peanut can still be the allergen for the following reasons. (Firstly) peanut could (have been) in the food ingested by Kylie because of cross-contamination, such as using the same knife to cut different cakes - this may not have been detected in the samples (tested) .. (And secondly) the uncertainty about the findings from the assay used to (test the) post-mortem stomach contents – gastric acid may have broken down the peanut allergen (in the stomach contents)." (T394)

Professor Loh said that "nuts are the cause of most fatal cases of anaphylaxis to food with peanuts accounting for 50 to 62 per cent of fatalities and tree nuts accounting for 15 to 30 per cent of fatalities in several (of the research) studies." He said that if the allergen was peanut or tree nuts, then it would have to be ingested.

Professor Loh said that after considering the evidence in relation to Kylie he considered the relative likelihood of the relevant allergens as "50 per cent chance peanut, 30 per cent chance tree nuts (which include pistachio), (and) 20 per cent chance something else." (T400) He admitted that his estimate of a 50% likelihood that the allergen was peanut was a "guesstimate", as were his other percentage likelihoods. (T427) He said he gave that percentage to peanut because "Kylie has had previous anaphylaxis to peanuts. She also had specific IgE antibodies, (that is) allergy proteins to peanut that can cause allergic reactions, in (her) post-mortem blood sample." (T396) He said even "trace amounts of peanut can cause anaphylaxis in susceptible people."

Professor Loh said that if peanut was not the allergen that caused Kylie's reaction then it may have been a tree nut. Tree nuts also can cause fatal anaphylactic reactions. Pistachio is a tree nut and there was pistachio on Kylie's sticky date pudding. He said there was "a high rate of co-allergy to peanut and some tree nuts." (T398) Professor Loh explained that although Kylie did not have IgE antibodies to pistachio or other tree nuts as measured in the post-mortem blood sample, allergic reactions have occurred in patients who are allergic to peanuts and tree nuts and whose measurement of IgE antibodies to peanuts and tree nuts (including pistachio) is less than 0.35kU/L, being the cut off for a positive result in the post mortem tests. He said pistachio nut "contains several protein allergens that can be found in cashew nut." He said some studies have reported cashew nut allergy "to cause more severe reactions than peanuts." (T298) Professor Loh said that since writing his report he had had been advised that Kylie's mother said Kylie had reacted to a cashew nut in the past.

Professor Loh said “not all tree nuts are the same. You can eat one tree nut and not react (whereas you will react) to another tree nut. Certain tree nuts have similar allergens and cashew nut and pistachio belong closer to that group.” (T398) This may explain why Kylie did not react to the almonds in the muesli bars that she ate, and yet may have reacted to pistachio nut.

Professor Loh said that because you can have some patients with very low IgE and still have severe allergic reactions, it becomes very difficult to rule out any allergen, such as for example bee venom, and accordingly he uses the term “unlikely” rather than “not possible” when describing a possible allergen. (T399) He said “other food allergens can cause fatal anaphylaxis. It is possible that Kylie (was) allergic to another allergen in the food but it is rare for patients to have severe life-threatening allergies to multiple, unrelated food allergens.” (T400)

Professor Loh said there was always the risk of a hidden food allergen – that is, a substance which is unrecognised or not fully declared – for anaphylaxis sufferers. He went on: “Accidental exposure to hidden food allergens, especially in commercially prepared food, (is) common and accounts for most anaphylaxis fatalities due to peanut and tree nut. There are many ways for allergens to be hidden in food. For example, through misleading labels or unintentional contamination in the manufacture, handling, cooking or storing process. Examples include the use of common equipment or the same cooking oil being used for different foods and meals.” (T396) Professor Loh noted that Fin’s Café used the same knife to cut each of the

dessert cakes; and the same ice-cream scoop was used for all flavours of ice cream. He also noted that although the head chef at the Ningaloo Reef Resort stated that there were no nuts in the roast dinner, there were nuts on the buffet according to Matthew who said "we were going to order ice-cream at the pub but we didn't have any because they had nuts." Similarly there were nuts at Fin's Café for use in the making of ice cream sundaes. Professor Loh said these "are all examples of roots for possible cross-contamination." (T396)

Professor Loh said that the earlier someone received adrenaline for an anaphylactic reaction, the better it was for them. He said "early recognition of anaphylaxis is critical." (T403) Professor Loh said Kylie did not have an adrenaline autoinjector (an Epipen) with her at Coral Bay; however "I believe that if Kylie had an adrenaline autoinjector, recognised the symptoms as possible anaphylaxis, and had injected herself at the first sign of symptoms, it would be conceivable that she would be alive today". (T401) However he also said that, although she would have had "a much better chance" of surviving, "even if adrenaline has been given, there are still doubts, which is the whole idea of prevention." (T403) Professor Loh said that "despite the early administration of adrenaline, death from anaphylaxis can still occur." (T403)

Professor Loh said adrenaline is most effective if given in the first 30 minutes of an anaphylactic reaction – and thus the need to carry an Epipen. He said the "median time to respiratory or cardiac arrest in individuals with anaphylaxis from (exposure to a food allergen) is 30 minutes." (T403)

Professor Loh said that intramuscular adrenaline must always be the first line of treatment. He said intramuscular adrenaline is safe and there "are no absolute contra-indications to adrenaline (being) used in anaphylaxis." (T403) He said the after the initial dose of intramuscular adrenaline, a second dose of intramuscular adrenaline should be given within 5 to 10 minutes. Professor Loh said that on 2 September 2007 there was delay in giving Kylie her first dose of intra muscular adrenaline – because she did not have an Epipen. He considered Kylie should have received a second dose of intramuscular adrenaline when Dr Dijkwel came on to the phone at 2040.

Kylie' medical history was one of chronic asthma and previous anaphylactic reactions to peanut. Professor Loh said that in his opinion Kylie should have been prescribed an adrenaline autoinjector when she was treated for anaphylaxis in 2002 and again in 2007. He said that she also should have been referred to a clinical immunologist/allergist for risk assessment and the ongoing management of her anaphylaxis. He said that although Kylie was aware that she should carry an adrenaline autoinjector, she may not have realised that she had many of the risk factors for fatal food-induced anaphylaxis, or that she had a higher risk of having allergic reactions to tree nuts due to her peanut allergy. He said a clinical immunologist/allergist would have explained the risks, optimised control of her asthma, prescribed an adrenaline autoinjector, instructed Kylie in how to use the adrenaline autoinjector, provided her with a management plan for anaphylaxis and given her instructions on prevention strategies.

Professor Loh referred to Kylie's allergic episodes in October 2002 and July 2007. He said that on "both occasions adrenaline was not administered despite evidence of upper airway obstruction in 2002 and respiratory symptoms (and) decrease in oxygen saturation … in 2007." (T408) He said that "all patients who have either experienced anaphylaxis or have significant increased risk of anaphylaxis should be sent home with an adrenaline autoinjector (such as an Epipen), an anaphylaxis plan and information about anaphylaxis and its management including avoidance strategies." He said that on "review of (Kylie's) medical care from 2001-2007 by her general practitioners or in Nickol Bay Hospital, I did not see any evidence that any of the above occurred. However, I note that there was a "discussion" about an Epipen in 2002, but no evidence that an Epipen was prescribed." (T409)

Professor Loh said that if a patient suffering from anaphylaxis is not given adrenaline while in hospital, then they cannot be prescribed with an adrenaline autoinjector (such as an Epipen). However an adrenaline autoinjector can be prescribed by an immunologist or in consultation with an immunologist or other prescribed specialist. He said that on average an adrenaline autoinjector lasts for 12 months. He said it is designed for non-trained personnel, for non-medically trained people, although "you do need to show them how to use it." He said an adrenaline autoinjector became available through the PBS in 2007.

Professor Loh said health professionals need to be educated about the acute and long term management of patients with anaphylaxis. He said knowledge

of allergy/immunology guidelines by many health professionals is lacking, and treatment is often inconsistent. He said "the current anaphylaxis epidemic is a relatively recent phenomena. It should therefore not be assumed that all health care professionals are aware that anaphylaxis occurs commonly in the community, or that they have up-to-date knowledge and skills with regard to teaching patients to recognise and treat it in this setting. Recent studies have found that emergency medicine physicians see a large percentage of children presenting with allergic reaction anaphylaxis, but their knowledge of allergy immunology guidelines is lacking and treatment rendered is inconsistent." (T408) Professor Loh said that research shows that the "majority of GPs receive no training in management of allergic disorders." (T436)

Dr Loh said that patients "with suspected anaphylaxis such as Kylie must be referred to a specialist such as an immunologist/allergist with experience in anaphylaxis risk assessment and long-term risk reduction for:

- Confirmation of the diagnosis of anaphylaxis.
- Verification of the specific trigger(s) for anaphylaxis. Defining the patient's food allergies with certainty allows for the effective avoidance without undue dietary restrictions, improved patient compliance with avoidance recommendations and reduction of patient/caregiver anxiety associated with unidentified trigger. Where appropriate patients need to be assessed for allergens that cross-react. For example, peanut allergic patients often are allergic to tree-nuts.

- Assessment of patient-related risk factors, including co-triggers (exercise, medications) and contributing factors, co-morbidities (asthma), and need for concurrent medications.
- Reduction of the risk of recurrent anaphylaxis by instructing the patient and caregivers in how to avoid the trigger.
- Provision of relevant immunotherapy or allergen desensitization (bee venom).
- Preparing the patient and (for children) the family/caregivers by providing ongoing education and resources about recognition of future anaphylaxis episodes, acute management including the provision of adrenaline autoinjectors and prevention strategies. All patients should have a personalised plan.

Professor Loh said there are many inconsistencies in the various guidelines as regards the treatment of an anaphylactic reaction. He said he "would like patients to receive basic standards wherever they are, and they are obviously not." (T433) Professor Loh would like to see a West Australian model of care for anaphylaxis developed. (T424) "This model of care should incorporate service provision for immunology specialists, other specialists, general practitioners, pharmacists, other health professionals, and provide care on evidence based information in a timely manner. Minimum standards of care and service provision should be defined and the project must be adequately funded." He said a project officer was needed to develop a model of care. He said a model of care would involve a number of stages including translating evidence based research and expert opinion into best practice, consulting with stakeholders, and endorsement by a "network

executive advisory group and health network." (T444) He said the model of care process is under consideration currently and he has been told that a project officer has been appointed. A model of care would set out best practice for treatment of anaphylactic reaction and the management of allergy. (445-6)

Professor Loh commended Nurse Pedersen for her heroic attempts to resuscitate Kylie.

FOOD AUDITOR

Mr Christopher Richardson is a food safety auditor who currently lectures at Curtin University in Health Safety Environment, and who also acts as a consultant to the food industry. He trains Environmental Health Officers in food safety which includes training on allergens and cross-contamination. He gave evidence to the inquest.

A food safety auditor audits food and its service against legislative requirements. Legal requirements as regards the service of food in Western Australia are now dealt with in the *Food Act (WA)* 2008 together with the *Food Regulations (WA)* 2009 and the Food Standards Code which is adopted by section 144(7) of the *Food Act*. At the time of Kylie's death, any legislative requirements as regards food service came under the *Health Act* 1911 and associated regulations and rules.

Fin's Café was not in breach of any legislative requirement on 2 September 2007. Food Standard 3.1.1 at page 4 deals with the meaning of "safe and suitable food". It states that –

> "(1) For the purposes of the Food Safety Standards, food is not safe if it would be likely to cause physical harm to a person who might later consume it, assuming it was –
>
> (a) after that time and before being consumed by the person, properly subjected to all processes (if any) that are relevant to its reasonable intended use; and
>
> (b) consumed by the person according to its reasonable intended use.
>
> (2) However, food is not unsafe merely because its inherent nutritional or chemical properties cause, or its inherent nature causes, adverse reactions only in persons with allergies or sensitivities that are not common to the majority of persons."

Accordingly allergens are not considered to be a hazard for the purposes of the *Food Act.* In terms of current legislation, restaurants – including Fin's Café – are dealt with under rules described for catering purposes. Labelling of food for catering purposes is not as stringent as that required for food for retail sale

Mr Richardson commented on Fin's Café and its practices as regards allergens. In doing so, he had not visited the restaurant. Mr Richardson said that practices at Fin's Café – both their procedures for customers and their food handling practices - were generally representative of what is happening

at other cafes. He said there were cafes with "better and worse out there." (T323)

Mr Richardson said he considered that the food industry as a whole could improve its practices in relation to customers with allergies. He said there were three issues in food service – food handling practices, training and labelling. (324) As regards improving practices at Fin's Café in relation to customers with allergies, he said that –

Labelling

- the ingredient list for all products, including the sticky date pudding, should be available at the restaurant;
- the ingredient for the ice cream should be kept after the ice cream container is opened;

Food Handling

- the nuts should not be stored in the fridge above the cakes and other products;
- the container of nuts should be labelled;

Procedures for customers with allergies

- have special allergen free desserts available for allergic customers. These desserts should be kept away from others and handled and served with separate and clean equipment.

Mr Richardson noted that the crushed nuts (peanuts) were kept in a lidded, unlabelled container on the top shelf of the fridge in the kitchen of Fin's Cafe. On the second shelf of the fridge were the three cakes that Fin's Café served on their dessert menu. Mr Richardson said that there was potential

for the nuts to spill on to the cakes and this method of storage was not a desirable practice. (T319) Mr Richardson said a fresh container of ice cream and a clean ice cream scoop should be used if someone says they are allergic. Similarly a different knife could be used to cut the product for someone with allergy.

Mr Richardson said that there was currently a review being conducted of food labelling requirements – both law and policy. (T324) He considered that regulation around food labelling for allergens needed to be tightened.

He suggested that environmental health workers could be trained so that allergens became a part of their role when inspecting premises. They could also provide some training. (T326)

Mr Richardson said that allergens are barely considered in the basic food handlers education programs and there needed to be improved training of staff. (T325) He did not think this should be mandatory. He said it is something that the food industry needed to want to do. He felt that the industry was heading in this direction in relation to customers with allergies because of media coverage of cases such as this one.

Mr Richardson said that the training package for food handlers produced by Anaphylaxis Australia was a good benchmark for the type of training that should occur. (T326) He said training for those working in the food industry could be done by ‘e training’, by notices in the media, and/or by the environmental health worker.

Mr Richardson said "the most effective change would be to eliminate the hazard altogether." He said, however, that you can do as much training as you like but you can never eliminate human error. "This may be especially so with the itinerant staff you get in places such as Coral Bay but applies everywhere." (T341)

ANAPHYLAXIS AUSTRALIA INC

Maria Said, the national president of Anaphylaxis Australia Inc, gave evidence to the inquest. She said she had prepared a statement for the inquest because anaphylaxis "is a manageable condition if people are educated, but there is a real lack of education and awareness throughout the community." (T276) In part, her statement reads:

> "Areas of concern as highlighted by the death of Kylie Lynch: Management plan for dealing with the risk of anaphylaxis. It is not possible to totally remove food allergens from any environment. Those who have severe allergies need to effectively learn how to manage their lives, knowing they cannot totally eliminate risk. Avoidance of the allergen is the first and best line of defence to anaphylaxis, not least because …. even early and appropriate treatment for an allergic reaction cannot always prevent death.
>
> The initial diagnosis and creation of an ongoing management plan, including an action plan in case of an emergency, is critical to the effective management of an allergy. An appropriate management plan, if properly implemented, would significantly reduce an allergic person's exposure to allergens and the risk of anaphylaxis. …..

Anaphylaxis Australia views the education of all health professionals as critical. We must approach allergy management in a consistent manner, to avoid confusion and improve understanding of all those involved in the care of individuals at risk. Increased knowledge and awareness allows individuals and their carers to manage the risks more effectively and therefore have fewer severe reactions requiring emergency treatment and emergency department admission.

Anaphylaxis Australia supports the need for two auto injectors to be prescribed on the pharmaceutical benefit scheme for those 17 years and over. This is our high risk group who eat out more often, travel away from home more often and who are learning to independently manage their potentially life-threatening allergy. Research studies indicate a significant number need a second dose of Adrenaline in an emergency yet our highest risk group is only allowed one device on the PBS (Pharmaceutical Benefits Scheme).

These problems are all highlighted by the apparent absence of a proper diagnosis or implementation of a management plan for Kylie Lynch. For example, an appropriate plan for Kylie Lynch could have included the following: education of Kylie and her family as to the extent, nature and risks associated with Kylie' allergies, a comprehensive diagnosis, an ongoing management plan that would include how to best handle the risk associated with the allergies, and an action plan in the event that the patient did experience an allergic reaction, the

provision of an appropriate Adrenaline auto injector and education on use, storage, expiry dates, need to renew prescriptions and appropriate dose, a regular review (annual or as advised by a specialist) of the diagnosis, daily management strategies, action plan for anaphylaxis and the prescribed Adrenaline auto injector.

This would have allowed age-appropriate education at a time when more was known about severe allergy and its management and specialist's review of her asthma and other allergic conditions. Information on where to access support for further information if required when a specialist or GP were unable to assist. …

Education of the allergic community: this is a major focus and goal of Anaphylaxis Australia. Food eaten away from the usual safe haven of home had been widely and repeatedly documented in the international literature to pose the greatest risk of life-threatening and fatal food allergic reactions. …..

Whilst the issue of the allergic consumer eating away from home involves obligations of other parties it is nevertheless critical that we educate allergic consumers on how to best communicate with food service providers so that they are able to understand the real risks.

… patients need to be educated to inquire in detail about the ingredients in foods they ingest. ….. it is crucial that the allergic individual recognise the importance of forward planning and to

disclose their allergy to food service providers so that they can choose wisely and ask the right questions. For example, requesting no nuts on a sundae does not communicate, “I don’t want peanuts on my sundae because my girlfriend is allergic to nuts or has a life-threatening allergy to nuts.”

Education on a range of simple strategies and approaches to eating out can significantly reduce the risk of allergic reactions when they eat away from home, such as the following: call the restaurant and ask questions to gauge how allergy aware they are; consider looking up the menu online; choosing something you think is probably low risk and then call the facility to ask about ingredients; disclose your food allergy on arrival at the venue; ask to speak to the person in charge or the chef, that is not with the wait staff who are typically less informed about the food allergy and the food contents; make staff aware it is a life threatening allergy as this should prompt them to further investigate your queries and to take them seriously; ask for food ingredient content in a meal; food providers should … be able to provide you with this either verbally or in writing. If they are unable to provide you with the information on ingredients, do not eat that food. ..

Desserts are particularly high risk for those with peanut or tree nut allergy. Always ask about ingredient content, visually inspect the food before eating, and consider doing a taste test ….. Chocolate and ice cream are also high risk foods for individuals with peanut and

tree nut allergy because so much chocolate and ice cream contains these allergens. The risk of cross-contamination in the production line is high. **Adopt a strict policy of no Epipen, no eat.** (my emphasis) It is critical to always have the action plan for anaphylaxis, the emergency procedure, and the Adrenaline auto injector with you everywhere you go. …..

Anaphylaxis Australia recognises that it is not practical or reasonable for the food service provider to be obliged to guarantee customers that a meal is safe, however, although frequently not possible to say a food is totally safe, it is always possible to clearly communicate uncertainty to customers and to markedly reduce the risk of severe reactions even in restaurants. …

Anaphylaxis Australia appreciates the unique difficulties associated with educating food service staff, for example, the high turnover of young staff, limited resources available and many workers from non-English speaking background. However, given the increasing prevalence and severity of allergic reactions in circumstances similar to Kylie's, education and training of staff on food allergens should be considered a mandatory part of food safety and hygiene training." (T 276-285)

Ms Said that the Association's purpose in providing a statement to this inquest was to focus on systemic and public policy issues surrounding the death of Kylie rather than pointing the finger at individuals or individual

concerns. (T299) It is clear that many of the comments made by Ms Said in her statement on behalf of ASCIA apply and are appropriate in terms of the evidence and findings in this inquest. ASCIA have developed an action plan to better enable allergy sufferers to manage their condition - this was something that Kylie needed but never received. Kylie needed such a tool in order to better manage her allergy.

CONCLUSIONS

After considering all the evidence as set out earlier in this report, I find that the cause of death was food induced anaphylaxis and that Kylie died of natural causes on 2 September 2007. Her asthma contributed to her symptoms and reaction but was not responsible for her death.

Her death, in my view, was not caused or contributed to by a large dose of intravenous adrenaline given during her treatment. The dose was consistent with a "resuscitation dose" and was appropriate at the time given her critical condition.

In the circumstances I consider the most likely allergen ingested by Kylie was peanut. Kylie was known to be allergic to peanut and there were specific IgE antibodies to peanuts detected in her post mortem blood sample. These are allergy proteins to peanut that can cause allergic reactions. Her tryptase level was positive for peanuts but not for other nuts such as pistachio nuts. There were possibilities for cross contamination at Fin's Café. For example, a crushed peanut used for making sundaes may have fallen on top of the sticky date pudding. The peanut being amongst the

pistachio nuts on the pudding would not necessarily be discernable. If this had happened, it would account for the lack of peanut in the sample of pudding tested. On the basis of Professor Loh's evidence that the time between exposure to an allergen and symptoms is often within 30 minutes, I consider it most likely that the peanut was in food eaten at Fin's Café.

Kylie's care and treatment on 2 September 2007 at the Coral Bay Nursing Post was carried out by a sole operator – being Nurse Pedersen who treated Kylie under instructions from Dr Dijkwel who was on the phone. It was clear that caring for a critically ill person, which Kylie was, without any other professional person being present was extremely difficult. Nurse Pedersen only had one pair of hands to carry out this enormous task including the carrying out of a surgical procedure - a cricthyroidotomy - normally carried out by a doctor. In the circumstances Nurse Pedersen did a heroic and remarkable job and provided competent and appropriate care. Nurse Pedersen's prompt arrival at the nursing post and quick diagnosis and treatment of Kylie meant Kylie received adrenaline within a few minutes of the initial call for help from Matthew. I have no criticism of Nurse Pedersen. I do recommend however that conditions at the Coral Bay Nursing Post and other similar treatment facilities be improved so as to provide better communication by way of video link and a hands free telephone system for those having to provide care and treatment in such circumstances.

It was also a very difficult treatment situation for Dr Dijkwel who was on the phone and trying to resuscitate, diagnose and treat Kylie without being able to see her. He was aware of the need to support and reassure Nurse Pedersen

who was carrying much of the burden. Dr Dijkwel did not have previous experience of a patient with a severe allergic reaction, as was this case, and nor did he have any guideline to assist him in his care of Kylie. Dr Dijkwel said he would have been assisted if he could at least see Kylie on a videolink. It is clear that Dr Dijkwel's knowledge was limited as regards the treatment situation he found himself in. While I have no criticism of Dr Dijkwel, I do recommend that there be better education of the medical profession, together with provision of clear and consistent guidelines, as regards the treatment of anaphylaxis.

There was evidence from experts, Dr Hitchcock and Professor Loh, that in retrospect some things could have been done differently to improve Kylie's chance of survival. The evidence is not that Nurse Pedersen or Dr Dijkwel did not behave competently and reasonably. Rather it highlights general and widespread failings in the emergency treatment of anaphylaxis and demonstrates a need for improvement in training and guidelines. Professor Loh said that if Kylie had received further doses of intra muscular adrenaline sooner than she did, it may have improved her chances of survival. He couldn't say, however, that she would have survived. He said that ideally Dr Dijkwel should have ordered a second dose of intra muscular adrenaline at 2040 when he came on the phone.

The various guidelines before the inquest in relation to the treatment of anaphylaxis all recommend intra muscular (IM) adrenaline as the first line of treatment for other than mild anaphylaxis. However there are marked inconsistencies as regards the timing of these injections and the treatment of

anaphylaxis otherwise. There is a need for attention to these guidelines so that they reflect consistent and up date information and best practice.

In July 2007, Kylie did not receive adrenaline at NBH for her anaphylactic reaction. Professor Loh says that her symptoms were clinically concerning and she should have been given adrenaline. Dr Parker said there was no guideline at NBH as regards treatment for anaphylaxis and he considered that there were risks in giving adrenaline. Dr Parker's concerns about giving adrenaline in this situation are concerning. However Professor Loh says they are in line with evidence of a widespread lack of knowledge of appropriate emergency treatment of anaphylaxis. He says there is considerable evidence that doctors and particularly junior doctors are reluctant to use adrenaline. He says concerns about the use of adrenaline for anaphylaxis are unfounded. Professor Loh says the medical profession needs to be educated about anaphylaxis protocols and the importance of using adrenaline as a front line treatment. It is clear on the evidence that there is a reluctance to use intra muscular adrenaline and an accompanying perception that it is less safe than it is. There is also a lack of knowledge about its importance as a first line drug of treatment in anaphylaxis.

Kylie had known anaphylaxis to peanut, as reflected in her medical notes and documented reactions. However her education as regards her allergy and its management was minimal. Kylie was at particularly high risk of a fatal anaphylactic reaction. She had had two attacks already, she had asthma as well as anaphylaxis which increases the risk, she was allergic to peanuts which increases the risk, and she was in the young adult group where most

fatalities occur. In addition she lived remotely. It was thus important that she should receive appropriate education on preventative care in relation to her peanut allergy and the risk of anaphylaxis.

Kylie should have been referred to a clinical immunologist/ allergist for risk assessment and ongoing management. To quote Professor Loh, "although she was aware she should carry an adrenaline autoinjector, she may not have realised that she had many of the risk factors for fatal food induced anaphylaxis or that she had a higher risk of having allergic reactions to tree nuts. A clinical immunologist/ allergist would have explained her risks to her, optimised the control of her asthma, prescribed an adrenaline auto injector, instructed Kylie on how to use the adrenaline auto injector, provided an action plan for anaphylaxis and given instructions on prevention strategies."

Had Kylie received proper preventative care before her death it is possible that her death could have been avoided as she would likely have had more knowledge of the importance of carrying an Epipen, and may have had one with her and used it at the first sign of anaphylaxis. And she may have been more careful in relation to avoiding allergens at the café, including making her allergy clearly known to the staff. The individual must bear responsibility for their own health. However, Kylie had not received the preventative education about her health that she should have.

RECOMMENDATIONS

1. Those at risk of life-threatening anaphylaxis should carry an Epipen with them at all times, and particularly when eating out and when travelling to remote places.
2. The Department of Health should develop a Western Australian 'model of care' for anaphylaxis. This should incorporate service provision by immunology/ allergy specialists, other specialists, general practitioners, pharmacists and other health professionals to provide care and evidence based information in a timely manner. Adequate resources including a project officer should be provided. Minimum standards of care and service provision should be defined and must be adequately funded.
3. The Department of Health should improve the education of health professionals about –

   a. acute management of anaphylaxis; and

   b. appropriate followup of the patient at risk of future anaphylaxis.

   As part of this there needs to be the development of best practice guidelines in the diagnosis and management of anaphylaxis which are regularly updated. There should be easy access to the ASCIA action plans for anaphylaxis, access to adrenaline autoinjector trainers and patient education resources, and access to adrenaline autoinjectors at the point of primary care after the initial episode of anaphylaxis.
4. Education of the food industry as regards allergens and allergic customers needs to be improved. This should include training staff about allergens, allergic customers, accurate labelling, full and

complete disclosure of food ingredients and possible routes of cross-contamination with allergens. This could be done by Environmental Health Officers who would need further training for this purpose.

5. Path West Laboratory Medicine WA should retain blood samples, stomach contents and food samples in all cases of suspected anaphylaxis until after the Coroner has made findings.
6. The Department of Health should provide video link facilities and hands free phone facilities (preferably with a head set) for remote nursing posts, such as Coral Bay, where a doctor is not resident and medical support in an emergency had to be provided by electronic means.
7. Medicare Australia, or other relevant body, revise the PBS prescription criteria for the prescription of Epipens (or other adrenaline autoinjectors) to allow for
    a. prescription of more than one Epipen (or other adrenaline autoinjector) at a time, and
    b. for prescription of an Epipen (or other adrenaline autoinjector) following any anaphylactic reaction (and not only, as now, where adrenaline has been administered for that reaction or with the approval of an allergy specialist).