



*Western*

*Australia*

## **RECORD OF INVESTIGATION INTO DEATH**

*Ref No: 19/17*

*I, Evelyn Felicia Vicker, Deputy State Coroner, having investigated the death of **Nicole Emily BICKNELL**, with an Inquest held at Perth Coroners Court, Court 58, Central Law Courts, 501 Hay Street, Perth, on 23-25 May 2017 find the identity of the deceased was **Nicole Emily BICKNELL** and that death occurred on 2 November 2014 at Armadale Kelmscott Hospital, as the result of Acute Alcohol Toxicity with Early Pneumonia and Aspiration in the following circumstances:-*

### **Counsel Appearing:**

Ms A Sukoski assisted the Deputy State Coroner

### **Table of Contents**

INTRODUCTION .....	2
BACKGROUND .....	3
<b>The Deceased</b> .....	<b>3</b>
<b>Birthday Party</b> .....	<b>5</b>
<b>Consumption of Polmos Spirytus Rektyfikowany (Polmos)</b> .....	<b>10</b>
THE DECEASED'S COLLAPSE .....	13
<b>Location of the Deceased</b> .....	<b>16</b>
<b>Arrival of the paramedics</b> .....	<b>17</b>
<b>Armadale Kelmscott Hospital (AKH)</b> .....	<b>18</b>
POST MORTEM EXAMINATION.....	20
HOW MUCH ALCOHOL HAD THE DECEASED CONSUMED .....	23
<b>Dr Joyce's evidence</b> .....	<b>23</b>
<b>How much alcohol did the deceased have</b> .....	<b>23</b>
<b>What does alcohol do</b> .....	<b>26</b>
<b>What does the post mortem evidence show</b> .....	<b>28</b>
<b>What happens if breathing stops</b> .....	<b>29</b>
<b>Risk taking behaviour and intent</b> .....	<b>30</b>
<b>Does alcohol affect development</b> .....	<b>32</b>
CONCLUSION AS TO THE DEATH OF THE DECEASED .....	33
MANNER AND CAUSE OF DEATH .....	38
WHAT CAN WE LEARN FROM THE DEATH OF THE DECEASED .....	39
<b>Recommendation</b> .....	<b>46</b>

## INTRODUCTION

On 1 November 2014 Nicole Emily Bicknell (the deceased) celebrated her 18<sup>th</sup> birthday with a party for family and friends at her home address. During the course of the evening she consumed 18 drinks, likely all alcoholic to various degrees. She then participated in, at least, one drinking game with full strength Midori liquor, and was then observed to voluntarily consume an unknown amount of Polmos Spirytus Rektyfikowany (Polmos). Shortly thereafter she appeared to become very drowsy, uncoordinated and incoherent, before becoming unconscious. She was put to bed in the recovery position and initially monitored.

Two to three hours later she was noted to have stopped breathing, be very cold and unresponsive. St John Ambulance Service (SJA) was called while cardio pulmonary resuscitation (CPR) was conducted. On arrival SJA paramedics attempted to resuscitate the deceased. She was stabilised and transferred to hospital. Despite continued resuscitation she could not be revived and was certified deceased during the morning of 2 November 2014.

This matter comes to the Coroners Court as a discretionary inquest pursuant to section 22 (2) of the *Coroners Act 1996* (WA) where a coroner has decided an inquest is desirable. It was held to increase public awareness of the dangers of young adults consuming large quantities of alcohol. I was

personally surprised at the lack of understanding of the effects of alcohol on bodily function displayed by witnesses attending the inquest, or the fact none seemed to understand alcohol was toxic and could kill in and of itself.<sup>1</sup>

## **BACKGROUND**

### ***The Deceased***

The deceased was born on 29 October 1996 in Kalgoorlie, Western Australia. She had an older brother and sister and resided with her mother at the time of her death. Her parents had separated when she was young.

The deceased had recently finished year 12 at Sevenoaks Senior High School and worked as a shop assistant. She was considered by everybody to be an intelligent, responsible and reasonable person who had recently bought herself a car. She had many friends and socialised easily. Her mother described her as a healthy child with few medical conditions apart from asthma and she had more recently had her appendix removed.

It was the deceased's intention to apply to the West Australian Police Service to become a police officer. She had recently commenced a relationship with a new boyfriend, although she had known him for a time and was mixing with his circle of friends, mostly known to her through

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<sup>1</sup> t 23.05.17, p26, 60

school. She was positive and happy and had few regrets concerning her life to date.

Following her birthday on Wednesday 29 October 2014 the deceased went out on Friday 31 October 2014 to a night club with a group of friends. That group of friends mostly met at the deceased's home in Thornlie prior to attending the night club. The group consumed pre-drinks before going out and the young people were transported to and from the train station by parents.

The deceased's close friend, who had been present at the night club, advised the court the group as a whole had not concentrated on drinking when going out to the night club and the emphasis had not been on what she termed "strong drinking". To the deceased's close friend strong drinking included drinking shots of spirits or extreme amounts of mixers.<sup>2</sup>

It would appear at around the time of celebrating her birthday the deceased had two groups of friends which overlapped. Those involving her long term girlfriends and a different group, more associated with her boyfriend, although she had known them for a long time.<sup>3</sup>

I am satisfied the deceased was a naive drinker at the time of her 18<sup>th</sup> birthday party on Saturday 1 November 2014.

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<sup>2</sup> t 23.05.17, p29-30

<sup>3</sup> t 23.05.17, p34

She had started consuming alcoholic drinks in the months before her birthday while mixing with a different group of friends, through her boyfriend.<sup>4</sup> Some alcohol consumption leading up to her 18<sup>th</sup> birthday does not alter the fact the deceased was overall a naïve drinker with low tolerance to alcohol.

### **Birthday Party**

The deceased's birthday party was held on Saturday 1 November 2014 at the deceased's home in Thornlie and was predominantly for family and friends. The invitations were issued via Facebook, however, were restricted and under 50 people were expected to attend. Alcohol was not provided and guests who wished to drink were expected to provide their own drinks. The intention was for a barbeque to ensure those attending ate during the evening.

The deceased's boyfriend had stayed the previous night, following their night club excursion, at the deceased's home in preparation for the party the following day. The deceased's boyfriend stated he and the deceased spent most of the day together and he was certain she had both breakfast and lunch that day and had not consumed any alcohol prior to the party.

They spent the day blowing balloons, visiting people, procuring ice and food. At approximately 4.30 pm they

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<sup>4</sup> t 23.05.17, p15

started getting ready specifically for the party with those of her family who were present at her mother's address. That was her mother, her mother's partner, her brother and his girlfriend and their baby.

The deceased's boyfriend stated he had some cider prior to guests arriving although the deceased did not.<sup>5</sup> He advised the deceased had bought herself a pack of vodka and pineapple cruisers to drink at her party. The deceased also received alcoholic drinks for her birthday presents, including at least one bottle of Midori liquor.

At some point the deceased decided she would consume 18 drinks, one for each year of her life. Is not entirely clear she considered this prior to the party, but certainly in the early part of the evening it seems she formed the intent to achieve that number.<sup>6</sup>

The deceased's close friend left the party early because she could see the emphasis appeared to be on drinking and she felt uncomfortable with that concept.<sup>7</sup> She did not believe the deceased was uncomfortable with the idea of drinking at her party, but the deceased had not discussed with her an intention to reach 18 drinks. The deceased's friend left the party early, at about 9.30 pm, because she did not want drinking to be the purpose of her night. Originally she had

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<sup>5</sup> t 23.05.17, p7

<sup>6</sup> t 23.05.17, p53

<sup>7</sup> t 23.05.17, p30

intended to stay overnight, but when she understood the atmosphere at the party, and was satisfied the deceased had people around her who would look after her, she left. She texted the deceased once she arrived home.<sup>8</sup>

Without dwelling on the detail it is clear the deceased did achieve 18 drinks for the 18 years of her life.<sup>9</sup> Her drinking appeared to consist of mixers, which due to the soft drink additions, would have been relatively weak in alcoholic strength and drunk in combination with carbonated fluids. The deceased at some point during the night had a discussion with her sister about the 18 drinks, and although her sister believed the deceased was pretending to consume alcoholic drinks, it is clear there was some discussion about 18 drinks for 18 years.<sup>10</sup>

From the evidence of the guests generally it is apparent there were two groups at the party, the deceased's family in one area and her friends in another area. The deceased moved among groups although her close friend, who left early, said the deceased was mainly spending time with her friends. She had not seen the deceased very much prior to her leaving, although she believed the deceased was perfectly happy.

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<sup>8</sup> t 23.05.17, p32

<sup>9</sup> t 23.05.17, p39

<sup>10</sup> t 23.05.17, p97

The deceased's boyfriend refrained from drinking an excessive amount because he wished to remain "*responsible*" for the deceased. He understood she intended to consume a considerable amount of alcohol that night and was not an experienced drinker. He clearly saw himself as being in a position to assist her.<sup>11</sup>

At some stage during the evening a birthday cake was cut and distributed, although there are varying memories of that occurring. Among her drinks, other than the vodka pineapple cruisers, the deceased also consumed shots of vodka and mango<sup>12</sup> while she was eating and drinking. There was cheering when the deceased consumed her 18<sup>th</sup> drink.<sup>13</sup>

Later in the evening the deceased and some of her friends participated in a drinking game which apparently goes by many names, but for the purposes of this finding I will call it "*waterfall*". During this game it is the practice for the primary drinker (the deceased) to form a circle with a group of drinkers and pour a shot glass from a bottle of spirits for each person in the circle. The primary drinker then starts drinking from the bottle of spirits, while the others move around the circle, drinking their shot glasses. On completion of the circle the primary drinker stops drinking from the bottle, and again pours drinks into the shot

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<sup>11</sup> † 23.05.17, p15

<sup>12</sup> Ex 1, tab 15

<sup>13</sup> Ex 1, tab 12

glasses. The game continues until the bottle is empty. There are varying accounts of the times this game was played, but it is certain the deceased participated in one game and in the process used a bottle of Midori which had been given to her as a birthday present.<sup>14</sup> This was after she had consumed the 18 drinks comprising one for each year of her life.<sup>15</sup>

At the time the deceased's mother went to bed she did not consider any of the young people, bar one, had been behaving inappropriately at her daughter's birthday party. She was not concerned at leaving the group to go to bed. The deceased's mother recalled this as happening at approximately 12.30 – 12.45 am on 2 November 2014. By that time she described her daughter as sitting in her boyfriend's lap in a circle with very few of her friends remaining. The deceased's mother certainly did not consider her daughter to be excessively intoxicated and was not concerned anybody was excessively intoxicated. She reminded them to be mindful of the neighbours in the vicinity. Her daughter was in high spirits and orientated and coherent.<sup>16</sup>

Following her mother going to bed it seems the deceased and her friends had consumed most of the available alcohol. Someone remembered one of the deceased's old school

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<sup>14</sup> † 23.05.17, p87

<sup>15</sup> † 23.05.17, p41

<sup>16</sup> Ex 1, tab 8

friends, and also a friend of her boyfriend, had brought a bottle of Polmos to the gathering.

**Consumption of Polmos Spirytus Rektyfikowany (Polmos)**

There is no dispute that one of the young men attending the party, who had also attended events the evening before, had in his possession a bottle of Polmos. It is also clear everybody understood Polmos was extremely strong liquor. It appeared to be general knowledge it was 95% alcohol. The evidence is clear the Polmos provider was known to drink Polmos and did so by mixing it with, usually, Coke.<sup>17</sup>

The deceased's close friend had seen the Polmos provider produce the bottle of Polmos, 95% alcohol, very early in the evening shortly after she had arrived at approximately 6pm. She described how he had pulled the bottle out of his backpack and shown the group of young people they were sitting with that he had it with him. He then put it back into his backpack, zipped it up, and the backpack was put away.<sup>18</sup>

The Polmos provider advised the inquest that he had the bottle for a while and it was his drink of preference because of its strength. He had never had a bad experience with it because he drank it cautiously, understanding its strength, and he always drank it with a mixer. He said the bottle on

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<sup>17</sup> † 23.05.17, p74

<sup>18</sup> † 23.05.17, p33

that evening had been in his possession for a few days at least, and it was very marginally over half full at the beginning of the evening.

The Polmos provider stated he had been present when the deceased had her 18<sup>th</sup> drink and that the drinking game with the Midori occurred after her 18<sup>th</sup> drink. He estimated she may have drunk up to half the bottle of Midori in the drinking game prior to the production of the Polmos. He agreed the deceased's boyfriend was not drinking, but was present looking after the deceased.

The Polmos provider had brought a full bottle of Canadian Club to the party as well as the half bottle of Polmos. At the conclusion of the drinking game there had been no alcohol left and the deceased was asking for more alcohol. He reminded her he had a bottle of Canadian Club in his bag. The deceased then went to his bag and, rather than taking the bottle of Canadian Club, took the bottle of Polmos. He stated the bottle was on the top because he had been drinking from it.

The witnesses agreed the bottle of Polmos was only half full at the time the deceased obtained it from the provider's backpack.<sup>19</sup> She asked about the drink and he told her she could have some if she wanted, but told her that it was

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<sup>19</sup> † 23.05.17, p42, 54

strong.<sup>20</sup> At that point the deceased appeared to only take one swig of the liquor and it was her sister's evidence she pulled a face implying she did not like it and said no.<sup>21</sup>

The deceased's boyfriend was clear the deceased was aware of the strength of alcohol she was consuming when she drank the Polmos. He also observed her to eat after she had consumed the Polmos.<sup>22</sup>

The deceased's brother's girlfriend had observed the deceased obtain the bottle of Polmos from the Polmos provider's bag and take a drink. She observed the deceased say it was too strong and put the bottle back in the bag. At that stage the deceased's brother's girlfriend noted the bottle was not full. She did not see the bottle of Polmos again until after the deceased had collapsed and the paramedics arrived. At that stage she saw the empty bottle of Polmos on the kitchen bench and she moved it closer to the oven.<sup>23</sup>

The Polmos provider agreed the deceased only had one or two swigs before the group moved position because the deceased's brother's girlfriend asked them to move away from her window because of the noise they were making.<sup>24</sup> Following the group moving the Polmos provider indicated

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<sup>20</sup> † 23.05.17, p79, 84

<sup>21</sup> † 23.05.17, p95

<sup>22</sup> † 23.05.17, p19

<sup>23</sup> Ex 1, tab 11

<sup>24</sup> † 25.03.17, p56

the bottle of Polmos was then passed around, although not everybody drank it, and it was at that stage he believed the deceased drank more. The Polmos provider did not see whether the bottle of Polmos was completely consumed, all he could say was when he saw it later that morning on the kitchen bench it was empty.<sup>25</sup> He did not know if it had been empty when it went out to the kitchen or at which stage it had become empty.<sup>26</sup>

### **THE DECEASED'S COLLAPSE**

Approximately half an hour after the group had relocated from outside to the veranda, the deceased appeared to become less coherent.

The deceased's boyfriend stated that sometime after the deceased had consumed the Polmos and had something to eat he noticed she was becoming sleepy. He then understood she had drunk too much. He described her as mumbling, falling asleep or passing out, and then appearing to be incoherent.<sup>27</sup>

The deceased asked for water and it is common ground someone went to the kitchen and provided her with what appeared to be a glass of water. This dribbled out of the deceased's mouth when they tried to give it to her.<sup>28</sup>

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<sup>25</sup> Ex 1, tab 11

<sup>26</sup> t 23.05.17, p43, 80

<sup>27</sup> t 23.05.17, p19

<sup>28</sup> Ex 1, tab 15

It was her brother's evidence she had stated "*that's not water*" but he is the only person who gave that evidence.<sup>29</sup> It is his belief the liquid with which she was provided was not water. There appeared to be an implication someone, not the Polmos provider, had attempted to give her more Polmos.

Regardless, the evidence is the deceased did not drink the water and instead her boyfriend and her brother carried her to her bedroom.<sup>30</sup> The deceased's boyfriend stated he would sit with her to make sure she was safe. It is common ground the deceased was put to bed on her bed, in the recovery position, with her face tilted towards the edge of the bed with a bucket placed underneath it in the event she should vomit.<sup>31</sup> It was sometime after 2.30 am.

The deceased's boyfriend's evidence on questioning was that it was not unexpected for people in the position of the deceased to become intoxicated to the state they "*fell asleep*". It was his view that if someone had drunk so much that they had met their limit they fell asleep.<sup>32</sup> From his perspective the responsible thing was for the intoxicated person to be put to bed. Being aware of the dangers of vomiting when intoxicated, he believed it was necessary someone ensure that, if an intoxicated person vomited in their sleep, their airway would not become blocked. He

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<sup>29</sup> † 23.05.17, p43

<sup>30</sup> † 23.05.17, p44, 20

<sup>31</sup> † 23.05.17, p20

<sup>32</sup> † 23.05.17, p25

believed that if the person who was asleep was in the recovery position then the vomit would not be able to suffocate that person, but would “*run out*”. He understood that a person’s airway could become blocked by vomit which could result in suffocation, but he did not know the term ‘aspiration’.<sup>33</sup>

It was clear the deceased’s boyfriend, and most of the young people in the group, did not understand that an excessive amount of alcohol could kill because it interfered with a person’s ability to breathe in any way other than a mechanical blockage of the airways. None of the deceased’s friends or family present understood that becoming unconscious while drunk was a medical emergency.<sup>34</sup> All believed a person would “*sleep off*” the intoxication, provided precautions were taken that their airway did not become blocked, either with vomit or due to the position they were in.

The deceased’s boyfriend sat beside the deceased while she “*slept*” in the recovery position and he checked her breathing and pulse regularly. After about an hour he described the deceased as beginning to drool so he rolled her head closer to the bucket and she vomited a little into the bucket. He thought she mumbled something, but was not coherent. Her brother came and checked on her, and her boyfriend continued to monitor her and check her

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<sup>33</sup> † 23.05.17, p25

<sup>34</sup> † 25.05.17, p176

breathing and her pulse. He then, understandably, fell asleep.<sup>35</sup>

### **Location of the Deceased**

The deceased's boyfriend woke up some while later and realised the deceased appeared to be very cold and have a blue colour to her lips. He pulled the blanket, which had become dislodged, over her shoulders and realised she had vomited some more into the bucket. He attempted to clean up the vomit around her face, and then realised she no longer had a pulse. He checked for breathing, but could not establish she was breathing.

The deceased's boyfriend went to get her brother, who was suffering the effects of drinking himself, and it was his girlfriend who went to check on the deceased. The deceased's brother's girlfriend realised the deceased was in serious trouble.

The deceased's brother asked that his mother be woken and the deceased's mother organised for SJA to be called while her partner and the deceased's brother commenced CPR on the deceased. They followed the instructions of the operator in attempting to revive the deceased once she had been placed on the floor.

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<sup>35</sup> Ex 1, tab 15

### *Arrival of the paramedics*

The call was received by the SJA communication centre at 5.49 am on 2 November 2014. The first ambulance arrived at the Thornlie address at 5.56 am.<sup>36</sup>

On arrival they gathered their equipment and walked into the house where they were guided to the deceased's bedroom and there saw CPR in progress via the instructions of the communication centre. The CPR at this stage was observed as being ineffective.<sup>37</sup> This is not a criticism of people doing their very best to assist the deceased but, as the paramedic described in evidence, a normal response of people not used to dealing with an emergency on the arrival of an ambulance crew.

Many people believe the arrival of paramedics means they can stop effective CPR because they expect the paramedics to take over. That is unrealistic because the equipment has to be put in place and it is essential for those conducting CPR to continue to provide CPR in accordance with the beats as counted out by the operator.<sup>38</sup>

At the time the paramedics first observed the deceased she was cyanosed, had no lividity or rigor present, but had no respiratory output. They were told she had last been seen alive at approximately 3.00 am following consuming alcohol,

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<sup>36</sup> Ex 1, tab 16

<sup>37</sup> † 24.05.17, p113-114

<sup>38</sup> † 24.05.17, p122

including the 95% Polmos. The deceased was in asystole (no electrical activity on cardiac monitor). Another ambulance crew arrived and a clinical support paramedic.<sup>39</sup>

The deceased was eventually provided with a laryngeal mask airway and ventilation commenced. A Lucas machine was used following the arrival of the clinical support paramedic at 6.14 am. A Lucas machine provides chest compressions. The deceased's history of asthma was provided to the paramedics and the clinical support paramedic acted appropriately to ensure the deceased had not suffered a tension pneumothorax.

Once the paramedics were satisfied the deceased had been stabilised she was transported priority 1 to Armadale Kelmscott Hospital (AKH). They left the Thornlie address at 6.28 am. The deceased developed spontaneous wide complex ventricular bradycardia at approximately 6.35 am. Her pulse was lost approximately 1 minute later, shortly before they arrived at AKH, and CPR was reinstated.

### **Armadale Kelmscott Hospital (AKH)**

The deceased's general observations on arrival at AKH emergency department commenced at 6.38 am. She is recorded as being in asystole at that time.

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<sup>39</sup> † 24.05.17, p125

The history provided to the emergency department was she had been located at 5.30 am, having last been seen alive at 3.30 am. She had no output when seen at 5.30 am and appeared cyanosed with vomit around her mouth. She had been given adrenaline by SJA and intubated with manual ventilation. She had received 40 minutes of CPR by the ambulance service prior to arrival at hospital with only a brief return of circulation. Once at hospital cardiac compressions had continued and she was given calcium gluconate and more adrenaline.<sup>40</sup>

The deceased was noted to have abnormal electrolytes with a very high potassium level. This can have a deleterious effect on cardiac electrical conduction necessary for proper heart muscle function and lead to cardiac arrest.<sup>41</sup>

At 6.55 am the deceased was still in asystole and the doctor directing resuscitation advised resuscitation was to be ceased.

The SJA clinical support paramedic, who attended hospital with the deceased, discussed with the resuscitation team that the deceased had experienced a brief return of circulation on route to AKH and that efforts should continue once the deceased's potassium levels had been stabilised. However, review of the deceased's vital observations and the prolonged down time indicated that, had the deceased been

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<sup>40</sup> Ex 1, tab 28

<sup>41</sup> † 24.05.17, p126

continued on life support, she would not be in a position to live independently, and it is doubtful whether she would have been sentient.<sup>42</sup>

## **POST MORTEM EXAMINATION**

The post mortem examination of the deceased occurred on 4 November 2014 and was undertaken by Dr J White and Dr V Kueppers, both Forensic Pathologists at PathWest.

That examination confirmed evidence of medical intervention in the form of a fractured sternum between ribs three and four in keeping with CPR attempts. There was no evidence of significant natural disease. The lungs were heavy congested and fluid laden which is a non-specific finding in cases of cardiac failure. At that time a cause of death could not be provided until other investigations were completed. Those further investigations included histology for the microscopic examination of tissues, microbiology for organisms causing infection and toxicology for drugs and alcohol.<sup>43</sup>

On 17 February 2015 Dr J White reported histology showed evidence of an evolving early pneumonia with aspiration.

Toxicology showed a blood alcohol level in the hospital ante mortem blood of 0.319% which was within the range

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<sup>42</sup> Ex 1, tab 28 & Ex 1, tab 19

<sup>43</sup> Ex 1, tab 20

recorded for acute alcohol poisoning causing death. Other common drugs were not identified.<sup>44</sup>

In evidence Dr White pointed out that;

*“In studies that have been done in – predominantly in novice drinkers, so people who don’t have much experience with alcohol – in females, the range in which 90% of these deaths occur fall between 0.25 to 0.51%, so it lies within the range which is well known, or the alcohol level lies within the range which is well known to cause death”.*<sup>45</sup>

Dr White went on to explain that alcohol levels in the blood between those percentages could cause death from alcohol toxicity in and of themselves without the additional difficulty of vomiting and/or aspirating gastric fluid into the lungs preventing oxygen exchange. This happens because at those levels naïve drinkers could suffer respiratory depression to the extent alcohol, as *“a potent depressant of your central nervous system, and your breathing will slow, you will go into a coma, and your breathing will stop”.*<sup>46</sup>

Dr White explained that alcohol, in toxic amounts, and toxicity would depend on various factors individual to the person intoxicated, can cause death;

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<sup>44</sup> Ex 1, tab 21

<sup>45</sup> † 24.05.17, p107

<sup>46</sup> † 24.05.17, p108

- by causing respiratory depression to the extent the person no longer breathes; but
- also as the result of vomit blocking the airways; or
- aspiration, where the lung linings are damaged by gastric fluids to the extent oxygen exchange cannot occur; and
- a restriction of a person's gag reflex.

These reactions can all act individually, or in combination, to cause the death of someone experiencing alcohol toxicity.

There is no doubt the deceased experienced alcohol toxicity.

Dr White went on to explain the lungs were the organs through which the body exchanged oxygen and carbon dioxide, and that the only way oxygen could get into the blood was via the lungs. Similarly the only way carbon dioxide could be excreted was through the lungs. The effect of accumulating carbon dioxide in the blood was sedation. As a person breathes more shallowly as a result of respiratory depression, so also the lack of available lung lining, if there has been aspiration, for the exchange of oxygen and carbon dioxide prevents the exchange of oxygen and carbon dioxide and the air sacs collapse. This further reduces a person's ability to breathe.

The loss of a gag reflex, which helps people to automatically remove obstacles in their airway, is also depressed and

prevents a person's natural automatic response to a blockage of their airway.<sup>47</sup>

## **HOW MUCH ALCOHOL HAD THE DECEASED CONSUMED**

### **Dr Joyce's evidence**

The Office of the State Coroner sought a report from Dr David Joyce, Physician, Clinical Pharmacology and Toxicology, for the purposes of the inquest. Dr Joyce is a doctor at the Sir Charles Gairdner Hospital and a Professor of Pharmacology and Medicine at the University of Western Australia. He is involved in both the clinical and academic studies relating to the effects of various drugs and poisons.

Dr Joyce was provided with the post mortem report, the toxicology, and various witness statements to assist him in reviewing the death of the deceased and providing some input into both how alcohol can become toxic and kill people, and some guidelines as to how to calculate the amounts of alcohol the deceased consumed in the scenario related to her death.

### **How much alcohol did the deceased have**

Dr Joyce was able to indicate the deceased would have consumed approximately 195-215 grams of alcohol between 7.00 pm and the time of her death for her to have a blood alcohol level of 0.319% at the time of her death. This took

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<sup>47</sup> † 24.05.17, p106

into account the fact she would have lost an average of 10 grams of alcohol per hour over that time frame. This was equivalent to about 115 grams of alcohol remaining in her body at the time of death.

Dr Joyce stated a “*standard drink*” is calculated to be equivalent to 10 grams of alcohol. This meant the deceased would have had to have consumed between 19-21 standard drinks to have that level of alcohol in her body at death, taking into account the amount she had also excreted.<sup>48</sup>

Dr Joyce pointed out that different types of drinks have different alcohol concentrations and therefore different volumes of different drinks comprise the 10 grams equivalent to a standard drink. As an example, a bottle of a vodka mixer at approximately 330mls will contain 1.4 standard drinks of alcohol, while 250mls of Polmos, or half a bottle, would provide approximately 19 standard drinks.

There is no reliable information as to the amount of Polmos the deceased drank, but there was evidence she had a number of other alcoholic drinks that evening. Dr Joyce was not of the view that the Polmos alone was responsible for the deceased’s death, despite the fact consumption of a cup full of Polmos could produce the amount of alcohol seen in the deceased’s blood at the time of her death. As Dr Joyce said;

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<sup>48</sup> Ex 1, tab 31, t 25.05.17, p166-167

*“we don’t have a really good idea of how much was actually taken out of the bottle. Now, if we say that – say 100mls was taken out of the bottle, so there’s 150 there, then that would probably not be a lethal dose for anyone. That’s just a bit too small. In the situation we’re dealing with now, the contribution of that drink, those last drinks to death, that can only have been described as a contributor. The cause of death is a sum of all the alcohol that was taken during the night. There may have been a disproportionate contribution from that final drink, but death can’t be laid at the feet of just that final drink. It was the sum of all the alcohol taken.”<sup>49</sup>*

The blood alcohol level at the time of death as 0.319% tells us that overall the deceased had consumed the equivalent of 19-21 standard alcoholic drinks, that is drinks containing approximately 10 grams of alcohol, in whatever volume it took for that amount of alcohol to be consumed.

Dr Joyce considered the fact alcohol was consumed with carbonated mixers is largely irrelevant in the facts of this case, although carbonated drinks are absorbed more quickly into the blood stream than noncarbonated drinks. He stated it was a marginal effect, and one that should not be brought quantitatively into an assessment of alcohol. It did explain the fact alcohol consumed as part of a carbonated drink may be seen to have a more rapid effect

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<sup>49</sup> † 25.05.17, p168

on the person consuming it, than if it was without a carbonated mixer.<sup>50</sup>

Similarly Dr Joyce discussed the fact a heavy drinker may have some tolerance, or protection, from high levels of alcohol, and therefore be less susceptible to the poisoning effects of alcohol at lower levels. The levels of alcohol seen in the toxicology for the deceased are toxic to varying degrees to any person.

### **What does alcohol do**

Dr Joyce discussed the different reasons which cause people to drink, often social, to elevate their mood and make them sociable and good company. The stage following good company is the fact of loosening emotions and inhibitions, which may draw one into foolish decisions, one of which may be to drink more. Once one has passed the sociability stage and continued down the intoxication path, the potential is for the intoxication to start affecting a person's physical wellbeing and physical safety. This can be because of an enhanced accident risk, due to poor judgement and poor coordination, but also risk taking. Dr Joyce identified that beyond a blood alcohol level of;

*“0.2% the true physical risks begin to emerge, and they are the risks that the person will lose consciousness in circumstances where they can't protect themselves, or*

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<sup>50</sup> † 25.05.17, p169

*that, having lost consciousness, they will begin to lose the drive to breathe, because high blood alcohols do that. Alcohols above about 0.25% will be impairing the ability to breathe. And then unconsciousness and with impaired ability to breathe, their final risk that faces them is that the stomach full of alcohol may vomit, because that reflex is still there, and if they vomit while they are unconscious and effectively comatose from the alcohol, then they are not going to be able to protect their airway and what they vomit will go down the airway and obstruct the delivery of the air into the lungs, and also causing inflammation in the tissue of the lungs so the lungs work less well to transmit air.”<sup>51</sup>*

Dr Joyce then listed the three things preventing the person drinking above a blood alcohol level of 0.2% from getting enough oxygen into their blood and those are;

- they no longer know how to breathe properly;
- their airways may be physically obstructed;
- there may be inflammation, pneumonia, which stops the lungs working as effectively.

When all those things are operating then death becomes likely.

While death is usually a combination of those things acting together, it is possible for death to occur simply because the

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<sup>51</sup> † 25.05.17, p170

part of the brain responsible for driving breathing can be shut down with too much alcohol, and the person just stops breathing.<sup>52</sup>

### **What does the post mortem evidence show**

Dr Joyce pointed out the post mortem evidence indicated that not only did the deceased have a lethal quantity of alcohol present in her blood for a naive drinker, there was also evidence of aspiration.

There was evidence of vomiting, both from the witnesses and the fact there was inflammation or early pneumonia in the deceased's lungs. This is indicative of the fact gastric fluids had been inhaled into the lungs and caused inflammation of the lung linings. This prevents effective gas exchange, which in conjunction with the depressed respiratory rate, leads to death.

Dr Joyce pointed out that even if someone has vomited, and their airway has been cleared, and they have been revived to the extent they start breathing again, there is still the problem of adequate oxygen and carbon dioxide exchange through the lungs.

*“if they're going to survive, they're looking better at about six hours and then they will be back into safety at about a day”<sup>53</sup>*

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<sup>52</sup> † 25.05.17, p171

Or they may not recover, and there may be reduced functioning of their lungs. Or, if there has been brain damage as a result of a long term of hypoxia (lack of oxygen), then there may be permanent disability.<sup>54</sup>

In the case of the deceased the evidence indicated she had a lethal amount of alcohol in her system for a naïve drinker, she had vomited and she had aspirated with inflammation in her lungs.

### **What happens if breathing stops**

Dr Joyce explained that if breathing stops entirely, which is a situation which is encountered in emergency resuscitation, then the unconscious person may survive for a couple of minutes with no harm occurring. But beyond about two minutes there is damage to the brain and heart because both those organs are very oxygen dependent, but it is reversible. Beyond three, four, five minutes;

*“then irreversible changes occur. If breathing is not reinstated within that time, then the respiratory centre itself becomes damaged to the point it will not spontaneously restart breathing and, again, the pathway to death is ordained.”<sup>55</sup>*

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<sup>53</sup> † 25.05.17, p172

<sup>54</sup> † 25.05.17, p173

<sup>55</sup> † 25.05.17, p171

Depending on the amount of damage that has been done before adequate oxygenation is achieved, there may be different outcomes as to the damage that is permanent, once rebreathing has been instituted.

*“So people who do survive hypoxic brain injury will be in a situation where they are still breathing. They are back to breathing safely and they are able to oxygenate themselves safely, but they can suffer any degree of brain damage beyond that, which at its worse, would be a permanent and unrecoverable coma, basically a vegetative state, where somebody is able to breathe but not able to do anything else for themselves. People who are less badly affected may shade all the way up to almost being back to normal.”<sup>56</sup>*

### **Risk taking behaviour and intent**

When considering the issue of whether an intoxicated person is responsible for their actions while intoxicated, taking into account the initial effects of alcohol allow people to release some inhibitions, Dr Joyce stated that intoxication does not prevent a person from forming an intent.

Dr Joyce had this to say about an intoxicated person and their intent.

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<sup>56</sup> † 25.05.107, p173

*“The person’s actions always remain within their control, or their intended actions always remain within their control. So if they have an intent to stop drinking, then that’s what they will do”...“there’s nothing automatic imposed on them by the intoxication which makes them continue to drink”...“So their ability to carry out actions is obviously quite compromised, so they may intend to do things and be incapable of carrying them out, but things like staying at the party, driving home, taking another drink, not taking another drink – they’re all still consciously made decisions with intent.”<sup>57</sup>*

Dr Joyce stated that;

*“While they retain the physical ability to carry out an action, those physical actions are the product of intent.”<sup>58</sup>*

From Dr Joyce’s perspective, while vomiting and aspiration added to the dangers of a toxic amount of alcohol in the blood, it was his view that once someone was intoxicated enough to become unconscious and unrousable with alcohol, they were at risk of losing their life. That is a medical emergency and needs urgent medical attention.

Dr Joyce stated that if an intoxicated person is still breathing when they arrive at hospital, then they will survive. The hospital’s role is to protect the airway while

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<sup>57</sup> † 25.05.17, p173

<sup>58</sup> † 25.05.17, p174

the person metabolises the alcohol. In some cases leaving a person to sleep it off in the coma position with careful monitoring (mechanical) may be sufficient, but at the other end of the spectrum some people will actually need to be intubated and put onto a ventilator until they have metabolised the lethal amounts of alcohol. That is, machines need to breathe for them to allow them to metabolise the alcohol and for their breathing to return to the control of their respiratory centre in the brain.<sup>59</sup>

### **Does alcohol affect development**

Dr Joyce was also asked about the effects of alcohol on the developing brain and the relevance of that to the legal age for the consumption of alcohol. Dr Joyce explained the reasons people are advised to avoid alcohol when young are related to the effects of alcohol on brain development. Aside from alcohol affecting the immediate functioning of the brain, brains which are still developing are also susceptible to the effects of alcohol. Young brains are susceptible to alcohol and exposure to alcohol during childhood and adolescence will produce an adult who is less intelligent than they would be without exposure to alcohol. That person will not reach their full potential as the result of exposure to alcohol while developing, so there are strong basic biological reasons for not exposing young people to alcohol.

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<sup>59</sup> † 25.05.17, p176

The effect of alcohol on the development of a young brain extends beyond adolescence and into early adulthood so a young brain is more affected by alcohol than an adult brain irrespective of that person's exposure to alcohol. It is an extension of the susceptibility which is intrinsic to development.

Consequently, not only should children have no access to alcohol, so should young adults have limited exposure to alcohol. This is one of the reasons for the road laws, however, it is important to remember that the ages of 18 or 21 are arbitrary measures, put there for convenience and relate to our society's views about when independence and responsibility fall upon the individual rather than parents.

The fact a person has turned 18 does not give them a sudden biological protection from the effects of alcohol on a developing brain.<sup>60</sup>

## **CONCLUSION AS TO THE DEATH OF THE DECEASED**

I am satisfied the deceased was an 18 year old girl, well loved by her family and friends. She was bright, sociable, responsible, a valued sister, daughter, friend. She was also a young person with a good future ahead of her.

Towards her 18<sup>th</sup> birthday the deceased had been socialising in a different way with a group of people she had known for

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<sup>60</sup> † 25.05.17, p177-178

a long time, mostly from school. This was the result of forming a relationship with her boyfriend, and being more exposed to his circle of friends, which I have no doubt were more attuned to socialising with alcohol than some of the deceased's other female friends.

The deceased had her 18<sup>th</sup> birthday on 29 October 2014, but left celebrating until the following weekend.

On Friday 31 October the deceased had gone out to a night club with a group of friends who had all gathered at her house beforehand. It is unclear how much the deceased had to drink on that occasion, however, her closest friend indicated the intention that evening was to have a good time and not drink excessively. She conceded that in that social situation it was not always possible for people to take note of their drinks. The evidence is the young people were ferried to and from the train station by parents, so removing a concern with their drinking and driving.

It was on the back drop of the Friday night's activities, the deceased, her family and boyfriend approached her birthday party on Saturday 1 November 2014.

I am satisfied precautions were taken by the deceased and her family to try and limit the alcohol available to those attending. Food was provided, however, alcoholic drinks were not, and the intention was for people to supply their

own alcohol. This would appear to be prudent in that the expectation is people would consume drinks with which they had some familiarity.

I am satisfied there was a perception the deceased would be consuming more alcohol than she was accustomed to. I take this from the fact her boyfriend refrained from drinking excessively with the understanding he appreciated the deceased may have more to drink than was usual and would need someone to be “*responsible for her*”. That indicated an expectation she would be drinking to a level where she may need assistance. Every person has a different capacity for alcohol consumption and the extent of that is best judged by the individual, but I accept that comes with some experience.

The initial part of the evening seems to have gone relatively well, but I am satisfied the deceased formed an intention to drink 18 alcohol based drinks, one for each year of her life. Whether she expected those to be 18 “*weak*” or “*normal*” alcoholic drinks is irrelevant when considering that volume of alcoholic drinks. There was a clear concept by some of the witnesses that because the vodka cruisers were “*weak*” they would not be as detrimental as other drinks. While that may be correct, there is the added difficulty people tend to drink more and, so do not account for the extra volume of a mixer equating to the same amount of alcohol as a “*standard*” drink.

The evidence was a little confused as to whether the 18 drinks was achieved before or after her mother went to bed. That is only relevant to give us some concept of time because the deceased's mother believed she went to bed at approximately 12.45 am on the morning of 2 November 2014.

I am satisfied that after the deceased's mother went to bed and the deceased consumed her 18 drinks, she took part in a drinking game involving full strength Midori. She also consumed at least a mouth full or two of Polmos.

Again, the evidence with respect to the Polmos is contradictory. I find the Polmos provider usually drank Polmos, that was well known to the group, and he had shown a half full bottle of Polmos to the group earlier in the evening. I am satisfied he did not leave the Polmos in full view and it was only added to the general drinking when other drinks had been consumed and the deceased was looking for extra alcohol.

I find the deceased voluntarily drank the Polmos, whether she disliked the taste and stopped or not. I also find the deceased understood it was "*strong*" alcohol which may well be the reason she appeared to dislike the taste.

Shortly after consuming the Polmos the deceased began to show signs of serious alcohol intoxication. It would have taken very little extra alcohol to “*top up*” the deceased’s alcohol levels which had been gradually increasing since she started drinking at 7pm. I am satisfied that by the time she became uncoordinated and slurring her speech, she had consumed a toxic amount of alcohol.

I am satisfied those with the deceased believed they were acting in her best interest when they put her to bed in the recovery position. Unfortunately the state the deceased was in by that stage, apparently barely conscious, was one of serious alcohol toxicity. When she became uncoordinated and unrousable the appropriate course of action would have been to call an ambulance.

I understand those caring for the deceased at that point did not fully understand the danger she was in. I appreciate the group took precautions for the deceased’s welfare they believed would ensure her safety. Unfortunately they did not.

I find the deceased became unrousable and in that state vomited, with some of the gastric contents being inhaled into her lungs. While she was provided with a bucket and vomit was cleared from around her mouth, that was not enough to prevent aspiration of gastric fluids into her lungs and the beginnings of pneumonia.

The fact the deceased survived for a time after aspiration of the gastric contents is shown by the fact there was time for the inflammation of her lung linings to occur and so exacerbate the situation for the deceased's low oxygen and carbon dioxide exchange.

I am satisfied sometime after the deceased's boyfriend positioned her closer to the bucket so she could vomit into the bucket, she suffered hypoxic insult and went into cardio respiratory arrest.

At approximately 5.45 am the deceased's boyfriend woke and realised she was cyanosed and no longer breathing.

An ambulance was called and resuscitation continued for a considerable length of time before there was a transient return of spontaneous circulation, just before the deceased reached hospital. That, however, was short lived and in view of the prolonged down time it is unlikely the deceased would have been recoverable as the deceased, even had resuscitation been successful.

### **MANNER AND CAUSE OF DEATH**

I am satisfied the deceased died as a direct result of her voluntary alcohol consumption and the toxic effects of alcohol upon her ability to breathe effectively.

This was both as a result of respiratory depression, and decreased oxygen and carbon dioxide exchange.

There is no evidence the deceased intended to take her life. The evidence indicated the deceased and her friends believed they had created a situation which would protect her from accidental death as a result of alcohol consumption. Unfortunately they were wrong.

I find death occurred by way of Misadventure.

### **WHAT CAN WE LEARN FROM THE DEATH OF THE DECEASED**

The Inquest heard evidence from Dr Paul Bailey, Clinical Services Director of SJA and the Emergency Department Director at St John of God Hospital Murdoch. Dr Bailey spends three days of his week as the Clinical Director at SJA where he heads the clinical governance team whose role is to set clinical standards across SJA.

Dr Bailey was able to provide the inquest with some basic statistics as to the numbers of deaths seen in WA from alcohol consumption over a number of years. However, as Dr Bailey pointed out those figures are proportionally less than the true figures due to the way incidents related to alcohol consumption may be categorised. When an ambulance crew is called to a scene where alcohol may have been a contributing factor, it is more usual for the diagnosis

to be coded than the trigger, which may have been alcohol. For example, if a person has fallen due to intoxication and suffered a head injury, then the SJA coding will indicate head injury, not alcohol intoxication.

Dr Bailey stated that since 2010 the number of cases identified as being purely alcohol intoxication related for people 18 years or younger, has consistently been between 252 cases per year (2011) and 307 per year (2013). In the year of the deceased's death the SJA recorded 294 cases as being directly alcohol related. Bearing in mind that is alcohol alone, and no other factor, it is an extraordinary number for something which is seen as socially acceptable despite the legislation designed to protect these young brains.

Dr Bailey was also able to expand upon the fact the deceased had been noted to have hyperkalemia when she arrived at AKH. Dr Bailey pointed out that high levels of potassium can very quickly induce abnormal cardiac rhythms because it is toxic to the heart.

*“In unconscious patients who have consumed alcohol, in my experience, high levels of potassium are most commonly associated with prolonged periods of immobility, where they've lain on a muscle for a period*

*of time, damaged that muscle and the potassium leaks into the blood system.”<sup>61</sup>*

Dr Bailey commented he did not feel anyone could feel safe with one of their friends unconscious from alcohol ingestion. Ambulances are usually called after a person has suffered a trauma as a result of intoxication or has been unconscious for a period of time. He reiterated people should be taken to hospital once they reach the unconscious stage.

Dr Bailey confirmed that when a person has had a cardio respiratory arrest, the timeline for survival is very short without aggressive medical intervention. He pointed out it is generally accepted there is some form of brain damage within the first ten minutes, certainly, and probably closer to the 5-6 minute mark. In a monitored emergency department environment with a cardiac monitor and pulse oximeter the fact of a cardiac arrest is usually detected very quickly and CPR initiated. All efforts are made to minimise down time (time without blood circulating to transport oxygen to the brain). In a non-hospital environment the ability to detect a cardio respiratory arrest and then provide adequate life support is extremely restricted, and the timeline as seen above very tight.<sup>62</sup> Any CPR is better than nothing.

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<sup>61</sup> † 24.05.17, p141

<sup>62</sup> † 24.05.17, p143

The inquest also heard evidence from Dr Rodney Brown, a clinician at the Next Step Drug and Alcohol Treatment Service. Dr Brown had been at Next Step for about 15 years and he provided the inquest with information relating to the treatment of people with significant drug and alcohol related problems. Dr Brown indicated Next Step catered for treating people with high end addictions and not really a one off incident or casual drinking incident, which was better treated in a hospital emergency department. In his view calling an ambulance or presenting at an emergency department was the best way to deal with someone heavily intoxicated, potentially at risk of their lives.

Dr Brown gave some evidence about the surveys carried out in Western Australian schools talking about the incidents of alcohol consumption in school children. In view of Dr Joyce's evidence about the effect of alcohol on the developing brain some of those statistics are worth repeating.

The most recent survey at the time of the inquest was that conducted in 2014, the year of the death of the deceased. That survey indicated;

For male students aged between 12-17 years;

- 33.4% had never drunk alcohol;
- 45.1% had drunk alcohol in the last year;
- 23.6% in the last month; and

- 13.8% in the past week.

For all female students aged between 12-17 years;

- 29.5% had never drunk alcohol;
- 43.5% had drunk alcohol in the past year;
- 24.2% in the past month; and
- 13.9% in the past week.

Of those students who had drunk in the past week, boys drank more standard drinks on average, that is 7.5, while girls averaged 4.8.

Dr Brown indicated he believed the figures relating to the weekly figures and the number of standard drinks consumed was surprisingly high. The numbers of males and females were equal, but the quantity appeared to be higher with the males. Dr Brown found the figures alarming;

*“when people are drinking on a regular basis, when they are young, they are far more likely to develop problematic alcohol use as they become older.”<sup>63</sup>*

Dr Brown pointed out that alcohol is a neurotoxin and a class A carcinogen so may be responsible for the formation of cancers and is particularly of concern to the developmental phases of the brain. He confirmed that through the teens and into the early 20's, the brain is very

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<sup>63</sup> † 24.05.17, p147

sensitive to the toxic effects of alcohol which can kill brain cells, significantly when it is an occasional high exposure (binging). Those exposures he considered to be extremely damaging in the young brain.

Similarly the National Coronial Information System (NCIS) produces periodic reports related to coronial data. Those are deaths reported to an Australian State or Territory Coroner. Between 1 July 2000 and 31 December 2015 there were 30 deaths identified as being reported where the deceased died as a result of acute alcohol toxicity aged 18 years or younger.<sup>64</sup>

I was pleased to note a recent article by Professor Nicole Lee (National Drug Research Institute, Curtin University, WA), indicating a decline in the figures for young people drinking alcohol. In that survey (date nor area specified), Professor Lee's research found that nearly 94% of 12-15 year olds and 58% of 16-17 year olds did not drink alcohol at all.<sup>65</sup>

The evidence from the young people in this case showed an acceptance of drinking excessive amounts of alcohol, and only some appreciation death could occur as the result of vomiting. There was a lack of understanding of exactly how excessive amounts of alcohol can kill, the interaction of lowered respiratory rate, vomiting and aspiration, unconsciousness, a delayed effect which can lead to death,

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<sup>64</sup> Ex 1, tab 22; Alcohol Toxicity – Related Fatalities among younger persons in Australia 2000-2015

<sup>65</sup> Health and Medicine pg12. The West Australian, Wednesday 7 June 2017

and a lack of appreciation about the damage to brain development.

The evidence surrounding the death of the deceased teaches us;

- Developing brains are damaged by alcohol intoxication, especially excessive binge drinking.
- Death can result from alcohol intoxication alone.
- A young person who is unconscious as a result of alcohol intoxication should be taken to hospital, preferably by ambulance.
- If a person stops breathing CPR is essential and should be performed immediately. Any resuscitation to circulate oxygenated blood to the brain is better than nothing and gives the person a chance at survival.
- If any person, whether young or not, consistently suffers alcohol intoxication, there are treatment facilities available.

As a result I am of the view there is only one reasonable recommendation available and that is for there to be education around the physiology of alcohol toxicity.

I do not consider recommending a restriction on the sale of high alcohol strength drinks to be effective while there is such ignorance amongst those most vulnerable to drinking as to the effects of alcohol.

## RECOMMENDATION

I RECOMMEND COMPREHENSIVE EDUCATION AS TO THE EFFECT OF ALCOHOL, SPECIFICALLY ON DEVELOPING BRAINS AND RESPIRATORY FUNCTION, BE PROVIDED TO ALL STUDENTS RECEIVING SECONDARY EDUCATION WHETHER THEY BE INVOLVED IN APPLIED SCIENCE COURSES OR NOT.

SUCH EDUCATION TO EXPLAIN THE NEED FOR HOSPITALISATION FOR PEOPLE UNCONSCIOUS DUE TO THE EFFECTS OF INTOXICATION AND THE NEED FOR CPR TO BE COMMENCED AND CONTINUED UNTIL ADVISED OTHERWISE BY ATTENDING PARAMEDICS IF THE INTOXICATED PERSON CEASES TO BREATHE FOR THEMSELVES.

In addition to the usual method of publication I propose to send a copy of this finding to the following;

- Director General of the Western Australian Department of Education.
- Chair of the Board of the Association of Independent Schools of Western Australia.
- Executive Director of the Catholic Education Commission of Western Australia.

E F Vicker  
**Deputy State Coroner**  
18 August 2017