

SHERIFFDOM OF TAYSIDE CENTRAL AND FIFE AT PERTH

DETERMINATION

of

SHERIFF FIONA TAIT

**Under the Fatal Accidents and Sudden Deaths
Inquiry (Scotland) Act 1976**

in respect of

the Fatal Accident Inquiry into the death of

**CLAIRE LESLEY FAIRBAIRN (born 17 May
1990)**

Perth, January 2015

The Sheriff, having considered the cause, determines:

1. In terms of section 6(1)(a), Fatal Accidents and Sudden Deaths Inquiry (Scotland) Act 1976 that Claire Lesley Fairbairn, born 17 May 1990, was pronounced dead at 0908 hours on 18 November 2011 within an ambulance on the A923 Blairgowrie to Coupar Angus Road, Perthshire.

2. In terms of section 6(1)(b) of the said 1976 Act that the cause of death was 1(a) diabetic ketoacidosis and 1(b) type 1 diabetes mellitus.

3. In terms of section 6(1)(e) of the said 1976 Act that other facts which are relevant to the circumstances of Claire Lesley Fairbairn's death are as follows:

- (i) the desirability of a paramedic forming part of an emergency ambulance crew and
- (ii) the keeping of accurate patient records by ambulance crew.

Note

The Evidence

Evidence in the inquiry was led on 25, 26, 27 and 28 August and on 13 October 2014. Mrs. Nicola Ross, Senior Procurator Fiscal Depute represented the Crown. Mr. Richard Pugh Advocate represented the Scottish Ambulance Service and Mrs. Linda Fairbairn, the mother of Claire Lesley Fairbairn (hereinafter referred to as 'Claire Fairbairn' or 'Miss. Fairbairn'), appeared on her own behalf.

The Crown led evidence from Linda Fairbairn, Craig Fairbairn, Claudia Hunter, Kirsty Hosie, Steven Dryden, Philip McKiddie, Derek Lumsden, Kenny Freeburn, Dr. Graham Whyte, Mr. Rudy Crawford, P.C. Fraser Mitchell, Derek Louttit and Lewis Campbell.

As referred to above Linda Fairbairn is the mother of Claire Fairbairn and Craig Fairbairn is Miss. Fairbairn's brother. Claudia Hunter is Craig Fairbairn's girlfriend.

Kirsty Hosie, Steven Dryden, Philip McKiddie, Derek Lumsden, Kenny Freeburn, Derek Louttit and Lewis Campbell are employed by the Scottish Ambulance Service in various roles and were at the date of Miss. Fairbairn's death. Kirsty Hosie and Steven Dryden are ambulance technicians. Philip McKiddie is an ambulance paramedic. Derek Lumsden is a paramedic and clinical training officer. Lewis Campbell is the Scottish Ambulance Service's General Manager for East Central Division which encompasses the health board areas of Fife, Forth Valley and Tayside.

Kenny Freeburn is the National Head of Community Resilience. In his role as Head of Ambulance Services, East Central Division he produced a report and divisional briefing dated 27 March 2012 which is Crown production number 10.

Derek Louttit is the Scottish Ambulance Service's National Clinical Risk Manager. At the time of Miss. Fairbairn's death he was Divisional Clinical Governance Manager for West Central Division, based in Motherwell. He prepared a report into the circumstances of Miss. Fairbairn's death which is Crown production number 9 and dated 21 March 2012.

Dr. Graham Whyte is a forensic pathologist, based at the police mortuary in Dundee. He undertook the *post mortem* examination of Miss. Fairbairn on the instruction of the Procurator Fiscal, Perth. The examination took place on 22 November 2011. The *post mortem* report dated 28 December 2011 is Crown production number 7. Its terms are agreed in paragraph 4 of the Joint Minute of Admissions.

Mr. Rudy Crawford is a consultant in accident and emergency medicine and surgery at Glasgow Royal Infirmary. He was instructed by the Crown to examine the records, correspondence and documents related to Miss. Fairbairn's death and to provide a report on the appropriateness of her care by the Scottish Ambulance Service. He was also asked to address, where possible, the concerns expressed by Miss. Fairbairn's family. His report is Crown production number 19 and his *curriculum vitae* is Crown production number 18.

A Joint Minute of Admissions was entered into on behalf of the parties. In terms thereof, the *post mortem* report, Crown production number 7, was agreed and certain records and correspondence were admitted in evidence without the necessity for proof.

The police statement of Alan Marshall was admitted in evidence in terms of section 2(1)(b), Civil Evidence (Scotland) Act 1988.

No evidence was led on behalf of the Scottish Ambulance Service or Mrs. Fairbairn.

A discretionary inquiry was sought in terms of section 1(1)(b) of the 1976 Act in respect that it appeared to the Lord Advocate to be expedient in the public interest. The objectives of the inquiry were set out in the Application as:

To examine publicly, in the public interest, all of the circumstances surrounding the sudden death of a young woman in circumstances which could cause serious public concern and to allay those concerns.

To adduce evidence regarding:

1. the qualifications and skill set of the Scottish Ambulance Service staff within each ambulance crew;
2. record keeping by the Scottish Ambulance Service and
3. the treatment of the deceased by the Scottish Ambulance Service staff including:
 - a) taking blood for testing
 - b) execution of cardio-pulmonary resuscitation and
 - c) administration of Glucagon.

The Submissions

In submissions, all parties were agreed on the findings in terms of section 6(1)(a) and (b). In relation to section 6(1)(a), Mr. Pugh on behalf of the Scottish Ambulance Service, observed that the evidence demonstrated that Miss. Fairbairn was in asystolic cardiac arrest by the

time that the ambulance crew arrived although life saving techniques were applied thereafter and life was not declared extinct until 0908 hours.

I was not invited by the Crown or Scottish Ambulance Service to make any findings in terms of section 6(1)(c),(d) or (e). On behalf of the Scottish Ambulance Service, Mr. Pugh adopted the submissions of the Crown in respect of section 6(1)(c),(d) and (e).

Crown Submission

The Crown submission in terms of section 6(1)(c) referred to Sheriff Kearney's Determination in *James McAlpine* wherein he opined on the aims and objectives of a Fatal Accident Inquiry under subsection (c) as follows:

“In relation to making a finding as to the reasonable precautions, if any, whereby the death and any accident resulting in the death might have been avoided (s.6(1)(c)) it is clearly not necessary for the court to be satisfied that the proposed precaution would in fact have avoided the accident or the death, only that it might have done, but the court must, as well as being satisfied that the precaution might have prevented the accident or death, by satisfied that the precaution was a reasonable one...The phrase ‘might have been avoided’ is a wide one which has not, so far as I am aware, been made the subject of judicial interpretation. It means less that ‘would, on the probabilities have been avoided’ and rather directs one’s mind in the direction of lively possibilities”.

Thereafter the Crown identified two potential reasonable precautions which had arisen from the evidence. Firstly, Mrs. Fairbairn's evidence was that she thought a reasonable precaution whereby Miss. Fairbairn's death might have been avoided was for paramedics to be allowed to administer fluids and insulin. The Crown made no submission to that effect as it considered that the evidence led did not support such a submission. It was the evidence of Mr. Rudy Crawford that the treatment for DKA must take place slowly and be carefully monitored, that it can be dangerous to fix the abnormalities too rapidly, that it takes 24 hours or more to manage the situation, albeit the first four hours are the acute period, and that hospitalisation for proper management is essential.

Secondly, the other reasonable precaution raised during the Inquiry was proper control of the diabetes by Miss. Fairbairn herself. Mrs. Fairbairn spoke to her daughter's control being "sometimes good, sometimes not so good". Miss. Fairbairn did not keep a record book and had been hospitalised for hyperglycaemia in 2000, 2009 and 2011.

Mr. Crawford gave evidence that in June 2011, Miss. Fairbairn's blood had been tested and the results showed that the control of her diabetes over the previous 3-4 months had been poor. However, he gave evidence that poor control does not necessarily imply voluntary bad management. The medical notes from June 2011, Crown Production number 1, recorded that Miss. Fairbairn "usually takes her insulin but does not monitor her blood sugars regularly."

Dr. Whyte spoke to Crown Production Number 7 which is the *post mortem* examination report. He gave evidence that Miss. Fairbairn's liver was markedly enlarged and fatty, even for that of a diabetic. He attributed such a finding to poor genetics or to poor compliance with diabetic control.

Therefore, the Crown acknowledged that it may be suggested that a reasonable precaution whereby Miss. Fairbairn's death might have been avoided would have been for tighter control of her condition and more regular monitoring of her blood sugar. However, the Crown did not make any such submission in terms of section 6(1)(c) on the basis that such a precaution is clear to all medical professionals and diabetics. Further, there was no specific evidence that Miss. Fairbairn deliberately failed to control her diabetes. Accordingly, it was submitted that there would be no public interest in such a finding, especially when it might be seen as a criticism of Miss. Fairbairn.

The Crown submission in terms of section 6(1)(d) again referred to Sheriff Kearney's Determination in *James McAlpine* in relation to the aims and objectives of an FAI:

"In deciding whether to make any determination...the court must, as a precondition to making any such recommendation, be satisfied that the defect in question did in fact cause or contribute to the death. The standard of proof and the rules of evidence (apart from the

consideration that evidence did not require to be corroborated) is that applicable in civil business (1976 Act, s.4(7)) and accordingly the standard of proof is that of the balance of probabilities.”

The Crown submission recorded that Mrs. Fairbairn’s evidence identified the following potential defects in the system of work:

1. there was no paramedic on the emergency ambulance sent from Blairgowrie station,
2. paramedics did not carry insulin nor were they trained to administer it and
3. the Scottish Ambulance Service record keeping was inaccurate in places.

The Crown made no submission for any finding under section 6(1)(d).

If the evidence of Mr. Rudy Crawford were to be accepted, Miss. Fairbairn was dying as Craig Fairbairn made the emergency call and had died by the time the ambulance technicians arrived. Therefore, no submission could be made with regards to any system of work causing or contributing to her death. Miss. Fairbairn, it was submitted, had already died before she became the subject of any system of work.

It was noted by the Crown that Linda Fairbairn refutes the suggestion that Miss. Fairbairn had died before the ambulance staff arrived. Her evidence was that she heard one of the technicians say, “She’s gone into arrest.” which suggested to her that Miss. Fairbairn had been alive but had gone into cardiac arrest. She also relied upon the evidence of Craig Fairburn that Miss. Fairbairn was breathing at the time of the emergency call. However, it was the evidence of Kirsty Hosie and Steven Dryden that when they arrived, the initial cardiac rhythm was “asystole” which indicated that Miss. Fairbairn had no pulse and that her heart had stopped. With hindsight, they expressed the view that Miss. Fairbairn had died prior to their arrival.

The evidence of the Scottish Ambulance Service witnesses and of Mr. Crawford was that the presence of a paramedic would not have made a difference in the present case. Mr.

Crawford stated that it would be inappropriate for a paramedic to commence treatment for hyperglycaemia as the condition required to be managed in a hospital setting.

While the record keeping discrepancies had been noted in the course of the Inquiry, the Crown submitted that those did not affect the care received by Miss. Fairbairn nor did they cause or contribute to her death.

The Crown did not propose any finding in terms of section 6(1)(e).

Rather, the Crown submitted that issues relating to skill mix are being addressed by the Scottish Ambulance Service. A paramedic's skills are only utilised in a tiny proportion of cases attended by the Service. There was no evidence led at the Inquiry that the presence of a paramedic increases the chance of survival in a cardiac arrest situation. The evidence from Mr. Crawford was that in one study conducted in his department, the presence of two technicians meant a slightly better outcome for patients. The chance of survival following a cardiac arrest in the community with an asystole rhythm, it was submitted, is extremely low. Mr. Crawford assessed the chance of survival in such circumstances as less than 1% or one in several thousand.

On Mr. Crawford's evidence the chance of survival is improved by good basic life support with chest compressions and defibrillation and an airway that is not impaired from an early stage. These functions can be performed by technicians. Advanced life support makes very little difference in a cardiac arrest situation.

The Crown's submission noted that record keeping by the Scottish Ambulance Service was raised during the Inquiry. However, it submitted that evidence was given to explain the anomalies. Any failures in the record keeping did not affect the care of Miss. Fairbairn.

Accordingly, in the Crown's submission there is no public interest in making any finding in relation to these matters under section 6(1)(e).

Scottish Ambulance Service Submission

On behalf of the Scottish Ambulance Service, Mr. Pugh accepted the *dicta* of Sheriff Kearney as indicating the proper approach for the Court to adopt in assessing the evidence and in reaching a determination under the 1976 Act. Of particular importance in the present context were the expressed tests of causation, that is to what degree it is necessary to look at what might have happened had different steps been taken.

In that regard and in relation to any findings under section 6(1)(c), (d) and (e), it was submitted that when the ambulance technicians found Miss. Fairbairn in asystolic cardiac arrest caused by acute diabetic ketoacidosis, there was no prospect of survival. That was the unanimous view of the medical practitioners who gave evidence. In particular and most starkly, it was the expert evidence of Mr. Crawford. He considered that Miss. Fairbairn was dying as Craig Fairbairn telephoned the emergency services and that she had died by the time the ambulance technicians arrived. Mr. Crawford's evidence was uncontradicted by any medical professional. The only contradiction came from Mrs. Fairbairn who accepted in evidence that it really came to a disagreement between her and the medical professionals.

As noted above and on behalf of Scottish Ambulance Service, Mr. Pugh acknowledged and adopted the Crown's submissions in terms of section 6(1)(c), (d) and (e). He made further limited submissions in respect of each subsection as follows.

Under section 6(1)(c), it was submitted that it would not have been reasonable for emergency practitioners, whether paramedics or technicians, to commence the kind of treatment which is the preserve of the hospital setting, that is the administration of fluids and insulin. Such a step is not advised in the detailed JRCALC (Joint Royal Colleges Ambulance Liaison Committee) Resuscitation Supplement guidelines, Crown production number 11, and could not properly be determined reasonable without clear and explicit expert evidence to that effect. In any event, there was no "lively possibility" of Miss. Fairbairn's death being avoided by the time ambulance personnel arrived.

On behalf of the Scottish Ambulance Service, Mr. Pugh made no comment in respect of Miss. Fairbairn's management of her diabetes.

Under section 6(1)(d), it was submitted that there was clear evidence that Miss. Fairbairn had died before any system of work was commenced which was in itself sufficient to justify no finding. In response to the suggested defects identified by Mrs Fairbairn, it was submitted variously that:

1. a paramedic would have made no difference to the outcome for Miss. Fairbairn;
2. any inaccuracies in the medical records had no impact on the outcome. They did not in any way affect the treatment of Miss. Fairbairn. In any event, the suggested inaccuracies had been satisfactorily explained having regard to the format of the records and the needs of those using them and
3. the suggestion that paramedics should carry insulin, could not be subject of a finding without clear and explicit medical evidence.

Under section 6(1)(e), it was submitted with regard to skill mix, albeit of no consequence in the present case, that skill mix is monitored by the Scottish Ambulance Service and is the subject of detailed goals, having regard to resources.

Linda Fairbairn's Submissions

In respect that Mrs. Fairbairn did not have the benefit of legal representation, it was understandably difficult for her to frame her submissions in terms of findings under section 6 of the 1976 Act. Rather, she invited me to consider the following issues arising from the Inquiry.

Mrs. Fairbairn submitted that Claire Fairbairn would have had a better chance of survival had a paramedic attended at the outset in response to the emergency call. She considered that the ambulance technicians panicked. She supported her submission under reference to

inconsistencies in the evidence of the ambulance crew and their overstated claims of knowing the family.

Had a paramedic attended initially, Mrs. Fairbairn submitted that he would have pronounced Miss. Fairbairn dead within her home which would have lessened the trauma of the situation and obviated the need for Miss. Fairbairn to be removed. Further, Mrs. Fairbairn was not allowed to travel in the ambulance which was indicative of a lack of professionalism and resulted in Mrs. Fairbairn being told of her daughter's death at the roadside.

Mrs. Fairbairn described the treatment of her daughter by the technicians as cruel and disrespectful as she was lying on a trolley outside in her pyjamas, uncovered by a blanket with no oxygen and no ongoing CPR, that is cardiopulmonary resuscitation.

The numerous errors in record keeping continued to cause Mrs. Fairbairn concern and she described the response of the Scottish Ambulance Service to the errors as blasé.

In conclusion and under reference to the Crown's position that there was no public interest in making certain findings, Mrs. Fairbairn submitted that the actions of the attending crew lacked professionalism and were an added cause of stress. She questioned why Miss. Fairbairn was removed from her home if already dead. In all of the circumstances, Mrs. Fairbairn submitted that these were matters to be considered in the public interest.

Determination

The present Inquiry proceeds in terms of an application under section 1(1)(b) of the 1976 Act: it appearing to the Lord Advocate to be expedient in the public interest that an inquiry should be held into the circumstances of Miss. Fairbairn's death.

The evidence led established that Miss. Fairbairn was a student at Abertay University, in her final year studying forensic psychobiology. On 16 November 2011, Miss. Fairbairn met her

mother and complained of a sore back. She returned to stay at the family home overnight on 16 November 2011 as she was working in Blairgowrie the following morning. On 17 November 2011, she went to work but returned home during the morning with a sore back and went to bed. She joined her mother in the afternoon on a visit to her grandmother, before returning to the family home and going to bed. She confirmed to her mother that she had checked her blood sugar levels. She remained in bed, other than answering the door to her brother and being heard to go to the toilet on a number of occasions. In the course of the evening, she answered a text from her mother, stating that she was fine but still tired. She later spoke to Claudia Hunter, her brother's girlfriend, to say she was fine. Around midnight, Miss. Fairbairn responded to her brother's enquiry of how she was feeling that she was fine.

On the morning of 18 November 2011 at around 0825 hours, Craig Fairbairn, Miss. Fairbairn's brother, found Miss. Fairbairn in the bathroom, seated on the floor with her head leaning on the toilet. She did not respond to attempts to waken her. Her eyes were closed and there was dried foam around her mouth. Mr. Fairbairn telephoned his mother and an ambulance.

It was agreed in terms of the Joint Minute of Admissions that Miss. Fairbairn was a diabetic. Miss. Fairbairn had been diabetic from age four, suffering from type 1 diabetes mellitus. Miss. Fairbairn's medical records from Ninewells Hospital, Crown production number 1, disclosed that she had experienced episodes of severe diabetic ketoacidosis with a hospital admission to the high dependency unit on 2 June 2011. Her last glycated haemoglobin of 10.4% in March 2011 was indicative of longstanding poor diabetic control.

Treatment of Miss. Fairbairn by Scottish Ambulance Service Crew

The Scottish Ambulance Service received an emergency call on 18 November 2011 at 0840 hours. The call was passed to ambulance crew call sign CS2620 which was mobilised at 0841 hours, arriving at the locus in Blairgowrie at 0844 hours. The Scottish Ambulance Service patient report, Crown production number 2, records the use of coding for an unconscious

diabetic, that is 13D01. The ambulance was crewed by two technicians, namely Kirsty Hosie and Steven Dryden.

The patient report recorded the following observations by the ambulance crew:

“Claire was found at family home by her brother lying on the bathroom floor. No signs of injury or falling. Not breathing and no pulse detected. CPR commenced immediately. Froth had dried around her mouth. Had aspirated. Suction used but could not get passed clenched jaw to clear properly. OP airway tried but came out. Asystolic straight away. Known diabetic. 1mg glucagon administered to try reverse cause. CPR ongoing. Paramedic en route from Dundee to assist. Met up en route to hospital. Continued CPR whilst paramedic tried to access airway. No airway obtained, jaws clenched shut. 25 minutes of CPR and still asystolic. CPR ceased after A/E consultant contacted and agreed. Control notified, police notified. Claire is to be taken to Bell Street police station.”

The patient report recorded vital signs at 0845 hours as asystolic with fixed dilated pupils and a Glasgow Coma Scale of 3.

An ambulance paramedic, call sign CS3096, was dispatched at 0846 hours and met the ambulance crew at 0904 hours at the side of the A923 Blairgowrie to Coupar Angus road. The Scottish Ambulance Service patient report relating to the paramedic’s attendance is Crown production number 3.

The patient report recorded the following observation by the paramedic:

“O/A rendezvoused (*sic*) with Blair 3265 (KH, SD) at side of road. CPR being performed on 23 year old female who was found in cardiac arrest. Crew arrived with pt @ 0844. Pt had aspirated prior to crew arrival. Pt not been seen by family members since last evening. No vital signs, pupils fixed and dilated. Due to these facts, I decided that resuscitation should cease. I called Ninewells accident (*sic*) and emergency and relayed the details to consultant W. Morrison who agreed with my decision to cease resuscitation. Pt pronounced deceased @ 0908.”

Post mortem examination was carried out on 22 November 2011 by Dr. Graham Whyte. Dr. Whyte recorded the medical cause of death as 1(a) diabetic ketoacidosis and (b) type 1 diabetes mellitus. Internal examination at autopsy revealed that Miss Fairbairn’s liver was markedly enlarged and fatty. That was confirmed by histopathological examination of the

retained tissues. Toxicological and biochemical analyses of blood, urine and vitreous showed greatly increased glucose levels and the presence of ketones in the blood and urine.

Miss Fairbairn's death is attributed to diabetic ketoacidosis due to type 1 diabetes mellitus. Dr. Whyte spoke to death occurring due to extreme dehydration with acute renal failure and also due to other extreme derangement of the biochemistry of the blood and other fluids. He described death from this mechanism as a well recognised phenomenon, leaving no physical evidence at the time of the autopsy. The presence of an enlarged, fatty liver is considered to be a contributory factor to death, that being in direct relation to Miss. Fairbairn's diabetes.

Dr. Whyte was made aware of queries raised by Miss. Fairbairn's family about her care by the attending ambulance crew. In response, he was unable to detect physical evidence, that is either puncture marks on or bruising to the finger, of blood sugar monitoring by the crew but opined that the needles or lances used do not leave obvious puncture marks and that a moribund state would preclude the formation of bruising. Further, had a reading been taken it may have been unrecordable by the monitoring device as the glucose level was very high and may have read as 'high' or 'unrecordable'.

In relation to the use of Glucagon by the ambulance crew, he described the use to be standard protocol in first aid scenarios involving diabetics. In the case of a diabetic who has collapsed, alleviating hypoglycaemia by prompt treatment (that is the administration of Glucagon) is done as a matter of course as hypoglycaemia is far more common than ketoacidosis or hyperglycaemia, more easily reversible and kills more quickly than ketoacidosis. He considered that in Miss. Fairbairn's case the onset of ketoacidosis would have developed over a prolonged period of time and administration of Glucagon would not have altered significantly her blood sugar and neither worsened nor improved her prognosis or final outcome. In evidence, Dr. Whyte quantified a prolonged period of time to be hours to days.

Further, Dr. Whyte spoke to the onset of *rigor mortis*. It is first seen in the small muscles of the face and hands where it will occur within one to two hours of death. Its onset can be

hastened by conditions in which muscle glycogen is depleted and diabetic ketoacidosis causes depletion of glycogen.

As noted above, Mr. Rudy Crawford, consultant in accident and emergency medicine and surgery, was instructed by the Crown. His report is Crown production number 19. He is an Honorary Clinical Senior Lecturer at the University of Glasgow and has taught and examined paramedics and examined for the Royal College of Surgeons. Mr. Crawford's clinical practice is based in a busy university teaching hospital accident and emergency department.

Mr. Crawford was instructed to examine the records, correspondence and documents relating to Miss. Fairbairn's death and to provide a report on the appropriateness of her care by the Scottish Ambulance Service. He was also asked to address, where possible, the concerns expressed by Miss. Fairbairn's family.

Mr. Crawford spoke in evidence to his report. He examined Dr. Whyte's *post mortem* report, Scottish Ambulance Service records and reports, including the clinical overview, divisional briefing and JRCALC Resuscitation Supplement (2010) which last is Crown production number 11. In addition he examined Miss. Fairbairn's Ninewells Hospital records and reviewed all witness statements.

Mr. Crawford explained that diabetic ketoacidosis is an acute, major, life-threatening complication of diabetes. It is a state of absolute or relative insulin deficiency aggravated by ensuing hyperglycaemia, dehydration and acidosis producing derangements in intermediary metabolism. Its most common causes are underlying infection, disruption of insulin treatment and new onset of diabetes.

The treatment of acute diabetic ketoacidosis involves the administration of intravenous fluids, insulin and correction of the electrolyte and metabolic abnormalities over approximately 24 hours. Treatment is best performed in an intensive or critical care or high dependency unit environment.

Mr. Crawford confirmed his opinion in the following terms:

- “1. In my opinion, the deceased died on 18 November 2011 as a result of acute diabetic ketoacidosis.
2. In my opinion, her illness probably began on the evening of Wednesday 16 November 2011 when she complained of back pain.
3. In my opinion she developed acute diabetic ketoacidosis over a period of 24 hours or more.
4. In my view, when she was discovered by her brother in the bathroom on 18 November 2011 she was already in cardiac arrest and the breathing observed was characteristic of agonal gasps or respirations.
5. In my opinion, the deceased was in asystolic cardiac arrest when the ambulance arrived and she probably had the early signs of *rigor mortis* developing in the jaw muscles.
6. In my opinion, the ambulance technicians performed appropriate basic life support procedures including CPR and the administration of Glucagon was reasonable and would not have been detrimental to the casualty in any way.
7. Overall, in my opinion, I could find no cause for concern regarding the care and treatment administered by the Scottish Ambulance Service staff who attended the deceased.”

He then sought to address Mrs. Fairbairn’s concerns:

“ 1. The deceased’s mother thought that the ambulance technicians did not take her daughter’s blood glucose levels initially and she believed that this should have been done.

It appeared from the documents provided that they did attempt to check the blood glucose but were unable to get sufficient blood to obtain a reading. This is not unusual in cardiac arrest where there is no perfusion of the peripheral tissues and the casualty does not bleed when pricked.

2. She did not accept that the administration of Glucagon was a correct thing to do in the circumstances.

The initial priority in this case would be to resuscitate the casualty by performing CPR. Since she was known to be diabetic and was initially thought to be hypoglycaemic then it is reasonable to empirically administer Glucagon until a blood glucose reading can be obtained. If the casualty does not have hypoglycaemia then this does no harm and makes little difference in the presence of hyperglycaemia or DKA where the endogenous glucagon levels will already be high.

3. She did not accept that her daughter was in cardiac arrest when the ambulance technicians arrived and she said that her son had noticed the deceased's laboured breathing before calling an ambulance and she did not believe it was possible that rigor mortis would have developed in that time.

There are common misconceptions in relation to agonal breathing and rigor mortis. Agonal breathing or gasps are often mistaken for breathing but in this situation indicated that the casualty is already in cardiac arrest. The duration of agonal breathing is usually short and may be for only a few gasps lasting for a number of seconds prior to death. In other circumstances such as terminal illness, agonal respirations may persist for longer. The onset of rigor mortis is variable and depends on a number of factors. It can begin within minutes of death but more typically becomes evident within one to three hours. The small muscles of the face or jaw are the first sites in which rigor mortis occurs.

4. She further believed that if the ambulance technicians were unable to secure an airway then they should have gone through the deceased's throat.

This is unrealistic, is technically difficult, dangerous and requires surgical skill and training. It is not a procedure in which ambulance crews are trained or equipped. The deceased did not die from an obstructed airway but died from cardiac arrest due to acute DKA. There is nothing to suggest that advanced airway procedures would have altered the outcome in this case.

5. She did not accept that it was acceptable to have two technicians on duty without a paramedic and she was of the view that her daughter would have received better care if a paramedic had been present.

The presence of a paramedic would have made no difference in this case. The range of skills and procedures offered by paramedics is limited and the treatment of DKA or the administration of insulin is outwith the scope of their practice. A paramedic is not trained or authorised to administer insulin. The treatment of DKA is a specialist medical practice that requires hospital care and is undertaken over many hours in a high dependency or critical care environment. In cardiac arrest, the only interventions that are scientifically proven to affect outcome (i.e. improve survival) are performed both by technicians and paramedics. Some studies have suggested a slightly better chance of survival when treated by technicians compared to paramedics. In large studies of cardiac arrest, insertion of a tube into the airway has been shown to be associated with a very poor prognosis.

6. Mrs Fairbairn had previously expressed the view that if Glucagon had been administered on the assumption that they were dealing with hypoglycaemia that it should have had a positive effect within 30-45 seconds and she was of the view that in the absence of such a positive effect that the personnel should have moved on to consider hyperglycaemia and perhaps administer insulin.

This is incorrect. The half-life of Glucagon is 8-18 minutes and it may take ten to fifteen minutes to work in hypoglycaemia, depending on the route of administration. The recommendation is that if the casualty has not woken up within fifteen minutes, intravenous

glucose should be administered. As previously stated, neither technicians nor paramedics are authorised to administer insulin. In acute DKA insulin and intravenous fluids must be administered cautiously over a period of hours according to a strict regimen to treat the patient. The rapid administration of such treatments can be dangerous.

7. Mrs Fairbairn was also concerned that ambulance technicians would not be qualified to take the necessary steps to insert lines which would have been required to administer insulin.

This is not relevant and has been covered in previous answers.”

Allied to point 3 above, Mr. Crawford characterised the description by Craig Fairburn of his sister’s breathing as “she was breathing funny with very long gaps between breaths and it was laboured” as an excellent lay description of agonal respirations that occur in cardiac arrest just prior to death.

In her evidence as the first witness, Mrs. Fairbairn indicated that she did not accept certain of the findings of Dr. Whyte and Mr. Crawford in their respective reports, specifically in relation to the administration of Glucagon, the point at which her daughter was in cardiac arrest and the breathing observed by her son, Craig Fairbairn. However, having heard their evidence in examination in chief and having considered her position, Mrs. Fairbairn restricted her cross-examination and sought clarification from Mr. Crawford as to why the technicians would have administered Glucagon if Miss. Fairbairn was already in cardiac arrest. Mr. Crawford differentiated between the appropriate approach in non-emergency and emergency situations. In emergency situations, it was necessary and appropriate to treat and assess at the same time. In the particular situation it was appropriate to commence CPR immediately while assessing the situation and only later to come to a decision whether that should continue or be stopped. He considered that the administration of Glucagon was similarly reasonable and that it was appropriate to treat Miss. Fairbairn and to give her the benefit of the doubt rather than to conclude at the outset that she was in cardiac arrest or had died.

No doubt Mrs. Fairbairn was assisted and reassured to an extent by the careful and sensitive consideration of the circumstances and explanation provided by Mr. Crawford. The

evidence of Dr. Whyte and of Mr. Crawford was not contradicted by any contrary medical opinion. I found both witnesses to be impressive, considered and qualified to provide the opinion evidence which they did. I accept their evidence and it enables me to conclude that when the ambulance technicians arrived at Mrs. Fairbairn's home to attend to Claire Fairbairn that Miss. Fairbairn was already in asystolic cardiac arrest, probably had the early signs of *rigor mortis* developing in the jaw muscles and that the breathing which Craig Fairbairn had observed was characteristic of agonal gasps or respirations. Further, I am satisfied on the evidence that the ambulance technicians performed appropriate basic life support procedures in the form of CPR and that the administration of Glucagon was reasonable in the particular circumstances. I accept Mr. Crawford's conclusion that he could find no cause for concern regarding the care and treatment administered by the Scottish Ambulance Service staff who attended Miss. Fairbairn, including the decision to cease CPR.

Mr. Crawford's conclusion is consistent with the ambulance staff, both technicians and paramedic, following the JRCALC guidelines, Crown production number 11, and with the internal Scottish Ambulance Service review undertaken by Derek Louttit, Crown production number 9. Derek Lumsden, as clinical training officer, also spoke to the staff acting in accordance with the JRCALC guidelines.

Philip McKiddie gave evidence that by the time he saw Miss. Fairbairn at 0904 hours, there were signs of *rigor mortis* in the face, her pupils were fixed and dilated and her heart rhythm was asystole. He accepted that he had failed to record the presence of *rigor mortis* in his observations on the patient report form, Crown production number 3. He spoke to Crown production number 21 which contains the "Recognition of Life Extinct by Ambulance Clinicians Algorithm". Following the algorithm, *rigor mortis* is a condition unequivocally associated with death. However, if resuscitation is commenced, the algorithm sets out that the full resuscitation protocol should be continued. If the patient is asystole despite 20 minutes of advanced life support, except in cases of drowning and hypothermia, resuscitation should cease.

Mr. McKiddie noted that the algorithm dictated that crews without advanced life support capability, that is double technician crews, should “Load and Go” at the earliest opportunity. He understood this to mean that the patient should be loaded onto the ambulance as quickly as possible to head towards an advanced life support capability, that is hospital or a paramedic.

Kirsty Hosie gave evidence that it was decided, in discussion with ambulance control, to transfer Miss. Fairbairn by ambulance to meet Philip McKiddie as a paramedic with advanced life support capability. The aim was to transfer Miss. Fairbairn with minimal delay. While she considered that the presence of a paramedic would have made no difference, it was part of a technician’s role to take a patient in cardiac arrest to an advanced life support capability.

I return below to the desirability of an ambulance crew comprising a paramedic and a technician in addressing qualification and skill set. However, the decision to transfer Miss. Fairbairn by ambulance from her home to meet with a paramedic requires to be understood in the context of following the algorithm.

It is appropriate here to assess the evidence of Linda Fairbairn and Craig Fairbairn on the one hand and of the ambulance staff, Kirsty Hosie, Steven Dryden and Philip McKiddie, on the other. The tension between what the family observed and heard on the morning of Miss. Fairbairn’s death and the ambulance staff’s account (in addition to the Scottish Ambulance Service records) has given rise to ongoing concern, mistrust and the call for the present Inquiry.

I stress that I do not think that any of the ambulance staff sought to mislead the court or was doing anything other than his or her best to tell the truth. Where there were discrepancies between the family witnesses and the ambulance staff, I consider that Linda and Craig Fairbairn were more reliable historians. I accept Mrs. Fairbairn’s evidence about the circumstances of removing Claire Fairbairn from the house, about her not being able to travel in the ambulance with her daughter and the way in which she was told of her death at

the roadside. From the family's perspective, the ambulance staff could have dealt more sensitively with these issues. Equally, I am bound to acknowledge that the ambulance crew were responding to a challenging emergency situation.

I accept that there were discrepancies in the evidence of the three attending ambulance staff, principally in relation to the decision by paramedic Philip McKiddie about when to stop CPR and whether that was before or after a telephone discussion with a consultant at Ninewells Hospital. Steven Dryden's recollection was, I consider, inaccurate that the decision was taken after the telephone discussion. I accept Philip McKiddie's evidence that he spoke to the consultant after he had decided to stop CPR although it was not entirely clear why he telephoned the consultant after the decision had been acted upon. Any concerns about the reliability of these witnesses' evidence has to be understood in the context of giving evidence almost three years after Miss. Fairbairn's death and in the context of extremely busy professional practice. They were not particularly assisted by the patient report forms, to which I return below.

The chapter of evidence in relation to whether the ambulance technicians successfully took blood from Miss. Fairbairn was inconclusive. The statement of Alan Marshall, admitted under section 2(1)(b) of the Civil Evidence (Scotland) Act 1988, noted that he cleaned the bathroom after Miss. Fairbairn had been transferred by ambulance. There was clear liquid like water containing a "small puddle of blood about the size of a 50p piece" on the bathroom floor. He also saw three finger pricking devices lying on the floor which he thought had been used. Mrs. Fairbairn spoke to one of the finger prick tests showing blood. PC Fraser Mitchell gave evidence that there appeared to him to be blood on the test paper recovered.

Police had ascertained that the finger pricking devices were issued by the Scottish Ambulance Service. Steven Dryden and Kirsty Hosie gave evidence that Ms. Hosie had tried to obtain blood but had been unsuccessful.

Mr. Crawford gave evidence that when experiencing DKA, peripheral circulation will shut off and therefore it might not be possible to obtain blood in sufficient quantity for testing. However, regardless of whether blood was actually taken or not, he opined that Miss. Fairbairn had already died and no treatment would have revived her. Dr Whyte gave consistent evidence in respect of Miss. Fairbairn being peripherally shut down and it therefore being difficult to obtain blood.

Qualifications and Skill Set of Ambulance Crews

The emergency call from Craig Fairbairn was responded to by an ambulance crew comprising two technicians from the Blairgowrie Ambulance Station, mobilised at 0841 hours, arriving at 0844 hours at Mrs. Fairbairn's home. An ambulance paramedic was dispatched at 0846 hours from Dundee station and met the ambulance crew at 0904 hours at the side of the A923 Blairgowrie to Coupar Angus road.

Evidence led at the Inquiry from Mr. Rudy Campbell, Kirsty Hosie, Lewis Campbell and Philip McKiddie established that ambulance technicians are limited in their treatment options compared to paramedics. Paramedics have been trained to a higher degree than technicians. They are able to undertake additional functions such as management of airways, intubation of patients and administration of some intravenous drugs. However, as noted above under reference to Mr. Crawford's evidence, paramedics cannot administer insulin.

Kenny Freeburn is now the National Head of Community Resilience. In his role as Head of Ambulance Services, East Central Division he produced a report and divisional briefing dated 27 March 2012 which is Crown production number 10. His analysis of the roster structure at Blairgowrie identified that there was the potential for rostered technician staff to work together on four individual twelve hour shifts during a nine week cycle. Double technician crews may have arisen additionally from what he termed 'extractions' such as annual leave.

During the week of Miss. Fairbairn's death, two rostered paramedics from the Blairgowrie station were on annual leave. Their absence was covered by relief technicians from the same station.

Kenny Freeburn gave evidence that on the day of Miss. Fairbairn's death the ambulance control centre should have ensured that the double technician crew at Blairgowrie and a double paramedic crew at Perth were reallocated at the earliest opportunity to provide two crews each with a paramedic. He qualified his evidence by noting that there may not have been an opportunity on the day to facilitate the reallocation prior to Miss. Fairbairn's death. After probing Mr. Freeburn, I remain unclear why the crews were not divided in advance of the day of Miss. Fairbairn's death given that two paramedics from Blairgowrie were on annual leave. The fact of their annual leave was not an unexpected event such as sickness absence.

Following upon Miss. Fairbairn's death and the review by Mr. Freeburn, rosters were to be prepared to ensure, where possible, the attendance of a paramedic at every emergency call. That goal was spoken to by Mr. Freeburn and by Lewis Campbell. The Blairgowrie station roster was altered so that there were no rostered occasions when two technicians would work together. However, it was conceded that there would still be occasions when it had not been possible to roster a paramedic onto the crew due to a number of factors including the ratio of technicians to paramedics, sickness absence and annual leave. Mr. Freeburn's evidence was that his report's recommendation that it may be necessary to include skill mix as a consideration in the allocation of annual leave was felt to be unachievable.

Further, at national level, the Scottish Ambulance Service had changed its system of work for the rostering of staff to a workforce planning model. Centralised dedicated work force planning departments had been established to ensure the correct skill mix for emergency ambulance crews, where possible. Lewis Campbell spoke to a centralised electronic system for rostering staff. Nonetheless, Mr. Campbell's evidence was that for every 30 shifts within Tayside on emergency ambulances, three or four will have a double technician crew. He described this ratio as typical of the position across Scotland and that it is due to a number

of factors, including the retiral of paramedics and recruitment of new staff initially at technician level.

Philip McKiddie gave evidence that it is his experience that there are still occasions when two technicians will work together. While it arose often due to late communication of sickness absence, it also occurred on rostered shifts. The incidence of double technician crews was much greater before Miss. Fairbairn's death. Kirsty Hosie's evidence was to the same effect. Surprisingly, Steven Dryden's evidence was that he had not worked on a double technician crew since Miss. Fairbairn's death.

I have set out above the additional skills of a paramedic. Mrs. Fairbairn's position at the Inquiry was that the technicians had trouble trying to secure an airway and that a paramedic might have been able to assist and to insert lines and give fluids.

In contrast, it was the evidence of Kirsty Hosie, Derek Louttit and Mr. Crawford that the attendance of a paramedic on this particular occasion would not have made a difference to the outcome. As set out above I have no hesitation in accepting Mr. Crawford's evidence that the treatment of DKA or the administration of insulin is outwith the scope of paramedic practice. Further, the treatment of DKA is a specialist medical practice which requires hospital care and is undertaken in a high dependency or critical care environment. In cardiac arrest, the only effective interventions can be performed both by technicians and paramedics.

On the basis of the foregoing, I am content that there were no reasonable precautions whereby Miss. Fairbairn's death might have been avoided nor any defect in any system of working which contributed to her death. As such, I make no findings in terms of section 6(1)(c) or (d) of the 1976 Act. There is no causal link between Miss. Fairbairn's death and her treatment by the Scottish Ambulance Service crew nor between her death and the attendance of a double technician crew. Neither contributed to nor could have prevented the death, such as to fall within the ambit of section 6(1)(c) or (d) of the 1976 Act.

However, I do find in terms of section 6(1)(e) that a fact which is relevant to the circumstances of Miss. Fairbairn's death is the attendance of a double technician crew and the arrangements by Scottish Ambulance Service to staff emergency ambulances with a paramedic.

Section 6(1)(e) permits comment upon and, where appropriate recommendations in relation to, any matter which has been legitimately examined in the course of the Inquiry as to a circumstance surrounding the death if it appears to be in the public interest to make such comment or recommendation. I rely upon the observations of Sheriff Kearney in his Determination in *James McAlpine* , referred to above:

“Finally, the provisions of section 6(1)(e) are very widely stated and, in my view, entitle and indeed oblige the Court to comment upon and, where appropriate make recommendations in relation to, any matter which has been legitimately examined in the course of the inquiry as to a circumstance surrounding the death if it appears to be in the public interest to make such comment or recommendation.’

Further in his Determination in *Thomas Strain* (Kilmarnock, 28 September 2010) Sheriff Hammond observed:

‘Causation is relevant in determining what findings can be made under section 6(1)(c) or (d) but section 6(1)(e) permits consideration of any other facts which are relevant to the circumstances of the death, even though a causal link has not been established.”

In making a finding under section 6(1)(e), I fully acknowledge that the Scottish Ambulance Service has taken steps both locally and nationally to ensure mixed skill ambulance crews, whenever possible. It is implicit in those steps and it was explicitly accepted in evidence that the ideal skill mix is for a paramedic to form part of an emergency ambulance crew. That is the goal of the Service, currently limited by human resources but which should be more easily attainable in terms of ongoing recruitment and training. I do not consider that I am precluded from making a finding under section 6(1)(e) simply because steps have been or are being taken to address the issue.

Similarly, I consider that a fact which is relevant to the circumstances of Miss. Fairbairn's death is record keeping by the Scottish Ambulance Service. Again there is no causal link to the death. I now address the record keeping.

Scottish Ambulance Service Record Keeping

It was not disputed that the patient records for Miss. Fairbairn kept by the Scottish Ambulance Service contained a number of anomalies. These irregularities are summarised in the Crown's written submission which I reproduce for ease of reference.

"1. Crown Production Number 4 is the Scottish Ambulance Service Patient Report Form completed by the Blairgowrie crew. On page 7/13 "Gcs Motor Response Time" is noted as 09:40:20 and the "Gcs Total Time" is noted as 09:40:20.

It was established in evidence from Kirsty Hosie, Steven Dryden and Philip McKiddie that resuscitation attempts ceased and the deceased's life was pronounced extinct at 0908 hours. Evidence was heard from these witnesses and Derek Louttit that the "wrong" time can be inputted into this section of the form if the crew member completing it electronically "double taps" the screen. "Double tapping" the screen in this way results in the current time being entered into these boxes. Evidence was led from Kirsty Hosie and Steven Dryden that it is likely that the form was being filled in at 09:40:20 and that is why this time appears in this space.

2. Crown Production Number 5 is the Scottish Ambulance Service Patient Report Form completed by the Dundee paramedic. On page 1/13 the patient's age is incorrectly noted as being 23. The deceased was in fact 21. Philip McKiddie gave evidence during cross-examination by Mr Pugh that information as to age is collated by ambulance control and they update the electronic patient report form. The age can come from the SAS database system or it can come from the crew in attendance.

3. On page 5/13 of Crown Production Number 5 (the Scottish Ambulance Service Patient Report Form completed by the Dundee paramedic), "Initial Cardiac Rhythm Time" is given as 09:57 hours.

During the Inquiry, evidence was given by Kirsty Hosie and Steven Dryden that the initial cardiac rhythm was taken at 0845 hours. In support of this they referred to p2/6 of Crown Production Number 2 which notes that "ECG Choice" is recorded as "Asyst" which is an abbreviation of "Asystole" and the time inputted for checking this is 08:45:00.

Evidence was also given by Philip McKiddie that the time he touched the "Asystole" option under the "Initial Cardiac Rhythm Time" would have been 0957 hours and it may be that this is why that time is recorded. Derek Louttit also gave evidence in this regard.

4. On page 5/13 of Crown Production Number 5 (the Scottish Ambulance Service Patient Report Form completed by the Dundee paramedic), "Final Cardiac Rhythm Time" is given as 09:56 hours. However, evidence was given by Kirsty Hosie, Steven Dryden and Philip McKiddie that the final cardiac rhythm was noted at 0908 hours. Again, evidence was given that the wrong time can be inputted into this section of the form if the crew member completing it electronically "double taps" the screen. "Double tapping" the screen in this way results in the current time being entered into these boxes. Evidence was given by Philip McKiddie that it is likely that the form was being filled in at 09:56 and hence that is why this time appears in this box.

5. On page 5/13 of Crown Production Number 5 (the Scottish Ambulance Service Patient Report Form completed by the Dundee paramedic), "Role applied time" is noted as a date, not a time, namely "18/11/2011".

Philip McKiddie could not give an explanation for why there is a date in this box rather than a time. Evidence from Derek Louttit suggested that this is simply a record-keeping error by the person inputting the data on-screen."

Mrs. Fairbairn gave evidence that the record keeping errors caused her concern and weakened her confidence in the Scottish Ambulance Service. Mrs. Fairbairn spoke to Crown production number 17, a letter addressed to the Crown Office and Procurator Fiscal's Service dated 7 December 2012 from Calum Kerr of the Scottish Ambulance Service in which he noted in respect of discrepancies that he could only assume that the wrong times were entered into the patient report forms.

I am entirely satisfied that the wrong times were recorded through some deficiency in the formatting of the electronic recording system as opposed to any attempt to falsify information. Both the Crown and Scottish Ambulance Service submissions were to the effect that explanations had been given for the anomalies, any failures in the record keeping had not affected the care of Miss. Fairbairn and there was no public interest in making any finding in relation to these matters under section 6(1)(e).

I disagree. There would seem to be limited purpose in keeping patient record forms which are formatted in such a way that they cannot accurately record actual times but rather substitute the time at which the information is entered onto the electronic form. An explanation that the wrong times were entered or that double tapping of the screen records

an incorrect time provides little reassurance. In respect of Miss. Fairbairn, at least four entries were incorrect and nonsensical. I leave out of account the inaccurate reference to her age which can be understood as having been incorrectly communicated or noted.

Irrespective of the explanation, there was no evidence that it is proposed to improve upon the electronic record forms in use at the time of Miss. Fairbairn's death, that they have been improved upon or that ambulance crew will be trained to complete the forms in a different and so accurate manner. Accordingly I consider it appropriate to make a finding under section 6(1)(e) of the 1976 Act.

Finally, I should like to extend my sympathy to Miss. Fairbairn's family, to her mother Linda Fairbairn and to her brother Craig Fairbairn. Present throughout the Inquiry, they both showed considerable dignity. Mrs. Fairbairn bore the additional stress of representing herself which she achieved with focus and courtesy to the Inquiry and to all witnesses in what must have been difficult circumstances for her.