Witness Statement Ref. No. 009/1

NAME OF CHILD: Adam Strain

Name: Terence Montague

Title: Dr

Present position and institution:

Consultant in Anaesthesia and Intensive Care, Our Lady's Children's Hospital, Crumlin, Dublin 12.

Previous position(s) and institution(s):
[As at the time of the child's death]
In November 1995 I was a Senior Registrar in Anaesthesia in RBHSC

Membership of Advisory Panels and Committees:
[Identify by date and title all of those between January 1995-December 2010]
Nov 2007 to present Medical Representative of the Hospital Risk Management Committee
Sept 2006 to present Paediatric Emergency Transfer Sub-group of HSE

Other Statements, Depositions and Reports:
[Identify by date and title all those made in relation to the child's death]
30.11.2007 Statement to PSNI

OFFICIAL USE:
List of previous statements, depositions and reports attached :

Ref:	Date:	
093-037	30.11.2007	Statement to PSNI

IMPORTANT INSTRUCTIONS FOR ANSWERING:
Please identify clearly any document to which you refer or rely upon for your answer. If the document has an Inquiry reference number, e.g. Ref: 049-001-001 which is 'Chart No.1 Old Notes', then please provide that number. If the document does not have such a number then please provide a copy of the document.

I QUERIES ARISING OUT OF YOUR PSNI STATEMENT

With reference to your PSNI Witness Statement dated 30th November 2007, please provide clarification and/or further information in respect of the following:

(1) ***"In 1995 I was a Senior Registrar in Anaesthesia and in November 1995 I was in my first month of training in the Royal Belfast Hospital for Sick Children. I had five years experience of anaesthesia training prior to commencing paediatric anaesthesia."*** **(Ref: 093-037-117)**

(a) Describe your work commitments to the Royal Belfast Hospital for Sick Children (RBHSC) from the start of your employment there and particularly over the period 26th November to 28th November 1995

I started as a Senior Registrar in Anaesthesia in RBHSC in November 1995. Typically during the day I would have been assigned to cover one of the various lists in theatre, so that I could receive training and gain experience in anaesthesia for the different surgical specialties there. I worked under the supervision of one of the consultant anaesthetists.

When on call, my time was divided between cover for the Labour Ward in Royal Maternity Hospital and theatres in RBHSC. Typically, one spent most of the on call period in the Labour Ward as this was the busier of the two locations.

On Sunday November 26 1995, I was resident on call, providing cover for both the Labour Ward in Royal Maternity and theatres in RBHSC. This was a 24 hour shift, which was due to finish at 09.00 on Monday 27 November. I would then have been free to go home, having worked for the previous 24 hours.

On Tuesday November 28 1995, I was assigned to work in one of the theatres in RBHSC.

(b) In relation to your *"five years experience of anaesthesia training"*:

- **identify the institution(s)**
- **state the dates**
- **identify those involved in your training**

August 1 1990 - July 31 1991 Belfast City Hospital
Tutor Dr Alan McKay

August 1 1991 - July 31 1993 The Ulster Hospital, Dundonald
Tutor Dr Jim Murray

August 1 1993 – July 31 1994 Altnagelvin Area Hospital, Derry
Tutor Dr Geoff Nesbitt

August 1994 – August 1995 Research Fellow in Paediatric Anaesthesia, QUB & RBHSC
Supervisor Dr Peter Crean

August 1995 – November 1995 ICU, Royal Group of Hospitals
Supervisor Dr Julian Johnston

(c) Describe what you considered to be your role in relation to and responsibilities towards Adam from learning on 26th November 1995 of a potential donor kidney for him until 28th November 1995 when ventilatory support for him was withdrawn, and in particular:

- **from Adam's admission to RBHSC until his arrival in theatre**
- **while Adam was in theatre until his admission to PICU**
- **from admission to PICU until his death**

For 24 hours beginning at 09.00 26th November 1995 I was the resident Anaesthetic Senior Registrar, working in theatre in RBHSC and the Labour Ward in RMH. Adam's proposed renal transplant operation was not discussed with me. I believe that Dr Savage discussed the transplant directly with Dr Taylor, the Consultant Anaesthetist on call. I only became aware of Adam's admission to hospital for his kidney transplant some time well after midnight. I don't remember the exact time. I was called by one of the ward doctors who was having great difficulty inserting an intravenous line so that fluids could be administered while Adam was fasting. The ward doctor wanted help to site an intravenous cannula. Cannulation was going to be very difficult, as Adam had had several intravenous lines previously. It would also be difficult because the ward staff had been trying to site one for some time. I knew that Adam was very distressed. This would also have made cannulation more difficult. At this time I contacted Dr Taylor and discussed this with him. He told me to leave Adam alone. There were only a few hours to go until the beginning of the procedure. He said he would site an intravenous line at that time. I passed this message to the ward doctor.
In the morning I assisted Dr Taylor at the beginning of the anaesthetic for the transplant. I was due to finish work at 09.00 as I had been working for the previous 24 hours.

I consider that my role and responsibility was to convey the messages from the ward to Dr Taylor after I had been contacted about Adam and to try to carry out his instructions.
In theatre Dr Taylor directly supervised me and I carried out his instructions. The transplant operation had just begun when I left. My responsibility ended there.

I was never involved in Adam's care in PICU – I had no role or responsibility for children in PICU.

(d)Prior to 27th November 1995:

- **state your experience and involvement in anaesthesia for renal transplants in children aged less than 6 years, the dates of those renal transplants and the location where they took place**
- **state your experience in anaesthesia for paediatric renal transplants in children who were polyuric**
- **describe your paediatric experience in terms of the average number of children per month**

aged less than 6 years that you anaesthetised in 1995

I had never been involved in a renal transplant procedure in a child prior to Adam's transplant.

Between August 1994 and August 1995 I was a Research Fellow based initially in the Department of Physiology, Queens's University Belfast. Up until May 1995, I was based exclusively in the Laboratory in QUB.
From May 1995 I was carrying out clinical research on healthy children undergoing anaesthesia, based mainly in the Ulster Hospital Dundonald. Some of these children were less than 6 years of age. However I was never solely responsible for their clinical care. I did not anaesthetise these children - I carried out physiological research while another anaesthetist was in charge of the course of the anaesthetic.

From August to November 1995, I worked in adult ICU and did not look after any children.

So from January 1995 until November 1995 I had not actually anaesthetised any children, supervised or unsupervised.

(e) Since 27th November 1995:

- **state your experience and involvement in anaesthesia for renal transplants in children aged less than 6 years, the dates of those renal transplants and the location where they took place**
- **state your experience in anaesthesia for renal transplants in children who were polyuric**

I have only ever been involved in 1 renal transplant in a child and that was Adam Strain's.

(2) ***"I remember the operation involving Adam Strain in November 1995"*** **(Ref: 093-037-117)**

(a) State what role, if any, you had in the care of Adam prior to his admission to RBHSC at or about 8pm on 26th November 1995, including your knowledge of his condition, medication and previous treatment
I never had any role in Adam's care or management except for that described above.

(b) State what role, if any, you had in the care of Adam from 8.00pm on 26th November 1995 until the beginning of his renal transplant surgery on 27th November 1995, including your knowledge of his condition, medication and previous treatment
As I described above, I only became aware that Adam was in the hospital when I received a call form one of the ward doctors. I had no knowledge of his previous treatment or medication.

(3) ***"I recall that I was on-call and was phoned during the night to be informed that multiple attempts to insert an IV line in Adam had failed. I consulted Dr Taylor and he advised me to advise the ward to make no further attempts as the child was very upset. I could hear Adam crying on the phone. Dr Taylor was content that he would deal with this in the morning. I also recall Adam being very upset when he arrived at theatre but Dr Taylor succeeded very well in calming Adam."*** **(Ref: 093-037-117)**

(a) State where you were over the period from the evening of 26th November 1995 until 7.00am on 27th November 1995:

- **on call at home or present in the hospital**
- **if you were at home, state if there was any other member of the anaesthetic team on site in the hospital**

  I was the resident on call Anaesthetic Senior Registrar, working in theatre in RBHSC and the Labour Ward in RMH.

(b) State the time *"during the night"* you were telephoned *"to be informed that multiple attempts to insert an IV line in Adam had failed"*

I do not recall the exact time, but I believe that it was many hours after midnight.

(c) Identify the person that telephoned you

I do not remember the doctor who phoned me but it was either the on call paediatric registrar or the paediatric SHO on call.

(d) Describe your 'consultation' with Dr. Taylor regarding the failure to insert an IV line in Adam, including:

- **the time at which you *"consulted Dr. Taylor"***

  I don't recall the exact time but it was immediately after the ward doctor called me.
- **how Dr. Taylor proposed to *"deal with this in the morning"***

  I do not recall the exact words used but after our discussion I understood that Dr Taylor intended to establish intravenous access when Adam was under anaesthesia.
- **Whether Dr. Taylor proposed to visit the ward himself before surgery to obtain IV access and take the blood sample and if so, at what time**

  As I said above I believe Dr Taylor intended to establish intravenous access when Adam was anaesthetised. I do not recall any discussion about blood samples or any discussion with me about visiting the ward. It was customary in RBHSC for all patients to be reviewed on the ward by one of the anaesthetic team.

(e) State whether you informed any other person of this and if so, where and when

I contacted the ward doctor following my conversation with Dr Taylor and conveyed Dr Taylor's instructions.

(f) State whether you saw Adam at any time before he presented to the anaesthetic room on the morning of the 27th November 1995 and if so, where and at what time

The first time I saw Adam was when he arrived in the theatre on the morning of November 27, 1995.

(g) State whether you were asked to see Adam at any time in the preoperative period and if so:

- **state the time you were asked to do so**
- **identify the person who asked you**
- **state the reason you were being asked to see him**
- **state what you did in response and when, and describe the result of any examination of him that you made**

I was not asked to see Adam at any time in the preoperative period.

(4) *"I recall also that I was not present for the whole of the operation. It was practice that I would be on leave the day after a night's on-call. As Adam's operation was started early I was present at the start but Dr Taylor sent me home. I cannot recall the time at which I left but can state that surgery had just commenced. I also recall being told the next day that Adam was going to die."* **(Ref: 093-037-117)**

(a) Describe what happened whilst you were in theatre, including:

- **when you arrived in the theatre suite**
  I arrived in theatre before Adam and his mother arrived. Medications and equipment were prepared.
- **who was present in the anaesthetic room whilst you were there, including whether there was a designated anaesthetic nurse and/or ODA present during this time, and if so, the identity(ies) of that nurse and/or ODA**
  Adam was anaesthetised in theatre. The anaesthetic room was not used. I do not recall who else was present. Normally one of the theatre nurses helped the anaesthetist. I don't recall which nurses were there.
- **who was present in the operating theatre whilst you were there, including whether there was a designated anaesthetic nurse and/or ODA present, and if so, the identity(ies) of that nurse and/or ODA**
  Dr Taylor and I were there together from the start. I don't recall who helped us. At some point Mr Brown and Mr Keane arrived.
- **any discussion that took place about Adam, with whom and to what end, including in respect of Adam's fluid management during the course of his surgery**
  I was aware at some time during the morning that Adam had polyuric renal failure. I am unsure whether Dr Taylor informed me of this or whether I had been told by the ward doctor who had contacted me during the night. I was not involved in any discussion of fluid management for Adam.
- **what time was anaesthesia induced**
  We commenced the anaesthetic at approximately 07.00.
- **what you did whilst you were in the anaesthetic room**
  We did not use an anaesthetic room.
- **what you did whilst you were in the operating theatre**
  I assisted Dr Taylor with Adam's anaesthetic. After he was anaesthetised I sited the epidural used for post operative pain management and tried to help Dr Taylor with the procedures he was undertaking. I remember that he sited the central line. I don't recall which one of us intubated Adam, or sited the arterial line or the peripheral lines.
- **what time the surgery started**
  I do not recall the time that surgery commenced.
- **what stage the procedure had reached when you left**
  I don't recall the exact time that I left. I was told I could go home some time after Adam had his lines and epidural sited. The surgery had started but the kidney had not been transplanted.
- **why Dr. Taylor sent you home at this time**
  Dr Taylor sent me home at this time as my period of duty had ended. I had been resident in the hospital for approximately 24 hours at this time. I had helped him get the case started. He no longer required my help. There would have been some of the other anaesthetic registrars starting work in theatres in RBHSC at approximately 08.30 and one of those registrars would have been available to assist Dr Taylor.

(b) Describe any discussions that you had about Adam whilst his transplant surgery was in progress:

- **the identity of the person(s) with whom you had such discussions**
- **when the discussions took place in relation to the progress of the surgery**
- **the matters discussed and the reason for it**
- **any action taken in relation to those discussions**

I do not recall any discussions that may have taken place. Our focus at the start of the case was to get Adam safely anaesthetised and to get the practical procedures necessary for monitoring and pain relief performed as efficiently as possible.

(5) ***"My role was to assist Dr Taylor in starting the case. I recall putting in the epidural. Dr Taylor put in the CV lines. I cannot recall who put in the breathing tube. I recall that Dr Brown and Dr Keane were the surgeons. I knew them well from working in Belfast but can recall nothing specific about the surgery. "*** **(Ref: 093-037-117 to Ref: 093-037-118)**

(a) Describe and explain how you came to act as assistant to Dr. Taylor for Adam's transplant surgery, including:

- **when were you first contacted about the transplant surgery**
- **who contacted you**

I only became aware of the impending transplant some time after midnight. I don't remember the exact time. I was called by one of the ward doctors who was having great difficulty siting an intravenous line. I do not know the identity of the doctor who called me. This doctor informed me that Adam was being prepared for a transplant operation, scheduled to commence early in the morning. This was the only contact made with me about Adam's transplant.

As the transplant was starting early in the morning, before the usual start time for the other anaesthetists, it was agreed between Dr Taylor and myself that I would help him with this case. I also wanted to be involved as I had never looked after a child having a renal transplant before - I was interested in Paediatric Anaesthesia and was in RBHSC for training and experience.

(b) Describe what you mean by *"My role was to assist Dr Taylor in starting the case"* and what was entailed in that role

My job was to help Dr Taylor to get the anaesthetic started safely and efficiently. I was able to assist him with the procedures that were essential for Adam's anaesthetic, such as inserting a breathing tube, intravenous lines, an arterial line, a central line and to site an epidural.

(c) State who was principally responsible for producing the anaesthetic record

Under normal circumstances, when 2 anaesthetists are involved in a case, the chart would be updated during the course of the procedure by whichever anaesthetist was free to do so - whichever anaesthetist was not currently carrying out a practical procedure. The electronic monitor captures and stores all the patient data. Periodically one of the anaesthetists would have entered this data in the anaesthetic chart.

At the end of the case, the doctor handing over care to the ICU team would be responsible for ensuring that the anaesthetic chart is an accurate reflection of the course of the anaesthetic.

(d) Describe any attempts that were made to measure Adam's urine output during his transplant surgery

I do not remember how urine output was measured that day.

(e) State if there was a discussion regarding whether to insert a urinary catheter after induction of anaesthesia and if so identify those that were party to the discussion.

I don't remember any discussion about a urinary catheter.

(f) Explain whether anyone present was aware of any contraindications to inserting a urinary catheter immediately after induction of anaesthesia.

I don't remember any discussion about a urinary catheter. Mr Brown was there for the surgery and if there were any contraindications to a urinary catheter, he would probably have known.

(6) ***"I do not remember having any role in the planning of fluid administration. I remember that Adam had polyuric renal failure and that would complicate fluid management. It is my recollection that he received 180ml/hr fluid to cope with his polyuric renal failure at night"*** **(Ref: 093-037-114 to Ref: 093-037-118)**

(a) Explain the way in which Adam's polyuric renal failure would complicate fluid management

A minimal urinary volume of 0.5 - 1 ml/kg/hr would be expected in normal healthy children undergoing anaesthesia. Adam's kidneys normally produced significantly more than this volume. This suggests to me that Adam's kidneys did not respond normally to secreted Anti Diuretic Hormone (ADH). During anaesthesia and surgery it is anticipated that extra ADH would be secreted. The manner in which Adam's own kidneys responded to ADH may have made the determination of adequate intravascular volume and thus fluid balance more unpredictable.

(b) Describe the calculation of fluid requirement for Adam you worked out and/or agreed with Dr. Taylor

I do not recall having any discussion about fluid management for Adam with Dr Taylor.

(c) Explain the basis of your recollection that Adam received 180ml/h fluid to cope with his polyuric renal failure at night

I am not sure how I remember a figure of 180 ml/hr of fluid overnight. I am unsure whether the doctor on the ward team told me this when I was phoned during the night or whether Dr Taylor mentioned this to me.

(7) ***"I have no recollection that electrolytes were not measured before or at the start of the operation. I can understand that the difficulty in achieving an IV line during the night meant that electrolytes were not measured. That would be a decision for the anaesthetist or the nephrologist. I do not recall being made aware of the low sodium level at 0930 hrs approximately. I believe I had gone home by then. I believe if I had been present when the low sodium level was discovered I would have remembered it."*** **(Ref: 093-037-115 to Ref: 093-037-118)**

(a) State what, if anything, you and Dr. Taylor discussed regarding the:

- **impact of the lack of post-dialysis U&E results and IV fluids**
- **prospect for obtaining U&E results prior to the surgery**
- **checking Adam's U&E as soon as venous access was obtained**

I have no recollection of any discussion about blood tests for U&E.

(8) ***"I have no recollection of high CVP levels being recognised or discussed as a problem during the time I was present during the operation."*** **(Ref: 093-037-118)**

(a) Describe your recollection of the reaction of Dr. Taylor to the first CVP reading at just before 0800 of 17 mm Hg

I do not remember any discussion about the CVP reading.

(b) Describe the discussions, if any, you had with Dr. Taylor about:

- **the position of the CVP catheter tip**
- **the accuracy of the CVP reading**

I do not remember any discussion about the CVP catheter tip or the accuracy of the CVP reading. I recall that it was difficult to site the CVP catheter, as I understood that Adam had undergone previous surgery to his neck veins.

(9) ***"I have had access to the notes prior to making this statement" (p.2)***

(a) Identify the individual that recorded *"vascular anastomosis ~ 10.30am 27/11/95"* in Adam's notes and when the entry was made (Ref: 059-006-012)

I do not know who made that note or when that note was made.

II ADDITIONAL INFORMATION

(10) Describe in detail the education and training that you received in fluid management (in particular hyponatraemia) and record keeping through the following, providing dates and names of the institutions/bodies:

(a) Undergraduate education

(b) Postgraduate education and training

(c) Hospital induction programmes

(d) Continuous professional development

Education and training with regard to fluid management and hyponatraemia:
The Undergraduate programme that I attended in UCD between 1980 and 1986 would have included basic information about renal function, fluid balance and renal disease.
The same would apply to my post-graduate training in Anaesthesia (Belfast 1990 - 1996) except the clinical aspects of these topics would have been covered in more detail. When I started as a trainee in RBHSC in November 1995, the consultant anaesthetists provided induction lectures that included fluid management for common conditions in children.
The teaching that I received about hyponatraemia would have included the causes and the emergency management.
I am unable to provide detailed information to include dates and exact content.

In reality education and training in medicine generally is a continuing process which draws from many sources. Knowledge develops through a combination of formal education and training, practical experience, peer discussion and consultation and access to the scientific literature which is evolving and developing over time.

Record keeping:
The importance of good note keeping has been emphasised throughout my medical training. Learning has been largely by example. Clinical audit, specifically including a regular qualitative review of anaesthesia records was carried out in The Ulster Hospital. Defence bodies such as the MPS continually highlight the importance of good comprehensive note keeping.

(11) Prior to 26th November 1995, describe in detail your experience of children:

(a) With hyponatraemia, including:

- **the estimated total number of such cases, together with the dates and where they took place**
- **the number of the children who were aged less than 6 years old**
- **the nature of your involvement**
- **the outcome for the children**
  Most of the children I would have looked after up to that point were normal healthy children undergoing anaesthesia to have a minor or moderately complex procedure performed. Up to that point I had never spent any time in Paediatric Intensive Care where children with significant hyponatraemia would be treated and monitored. To the best of my recollection, Adam Strain was the first such patient I had encountered.

(b)Undergoing anaesthesia, including:

- **the estimated total number of children aged less than 6 years anaesthetised by you personally (with or without supervision)**
- I estimate that I anaesthetised between 500 and 600 children under 6 years old. It is impossible for me to give an accurate number.

(12) Describe in detail your role in the care and treatment of Adam prior to 26th November 1995, including:

(a) Date of each occasion when you acted as anaesthetist for Adam and the procedure/surgery which Adam was undergoing on each occasion

(b)The fluid management regime employed on each occasion

(c) The lessons that you learned from your prior treatment of Adam

I never treated Adam prior to the day of his renal transplant operation.

(13) Identify any 'Protocols' and/or 'Guidelines' which governed Adam's renal transplant surgery
I am not aware of any protocols that were used for the management of renal transplantation in children in RBHSC in 1995. As I have stated previously, this was the first and only renal transplant operation in a child that I have been involved with.

(14) Identify precisely on Adam's medical notes and records the entries that you made or which were made on your direction and state below:

(a) When each of the identified entries was made

(b) The source of the information recorded in the entry

I never made any entries in Adam's chart.
I did not direct anybody to make entries in Adam's notes.

(15) Provide any further points and comments that you wish to make, together with any documents, in relation to:

(a) The care and treatment of Adam from his admission for the renal transplant surgery on 26th November 1995 to his death on 28th November 1995

(b) Record keeping

(c) Communications with Adam's family about his care and treatment in respect of the renal transplant surgery

While I saw Adam's mother when she was with him in the theatre at the induction of anaesthesia, I never actually spoke to her at any time.

(d) Lessons learned from Adam's death and how that has affected your practice

While I was a senior registrar in anaesthesia at the time of Adam's death, I had very limited experience of caring for children of such complexity. I had no specialist knowledge about the fluid management for children undergoing anaesthesia with renal failure.
As my experience has increased and my knowledge has broadened and with expanding literature in this area, I would have a greater understanding now of the fluid needs of such children. Nonetheless I believe such complex cases need to be managed by an experienced multidisciplinary transplant team which manages sufficient numbers of cases.

Because of Adam's death I would have a much greater awareness of the risks of hyponatraemia and place emphasis on this when teaching about fluid management.

(e) Current 'protocols' and procedures

(f) Any other relevant matter

I am very sorry that Adam died – it is a terrible loss for his family.

THIS STATEMENT IS TRUE TO THE BEST OF MY KNOWLEDGE AND BELIEF

Signed: Terence Montague **Dated:** 4/4/11