CLOSING SUBMISSION TO THE INQUIRY INTO HYPONATRAEMIA-RELATED DEATHS ON BEHALF OF THE FAMILY OF ADAM STRAIN

Adam's family would wish to express their gratitude to the Chairman and Senior Counsel to the Inquiry and the whole Inquiry team for their hard work and dedication to attempt to find out the truth about what happened to Adam on 27 November 1995.

It is intended in this submission to set out a synopsis of the core proposition on behalf of the family of Adam.

In his oral evidence to the Inquiry at Banbridge, Professor Maurice Savage, Adam's nephrologist admitted that the paediatric kidney transplant service in 1995 was a fledgling service and mistakes were made.

Dr Taylor, the anaesthetist caring for Adam during his transplant surgery on his own admissions 16 years after the operation and Adam's death made mistakes in his management of Adam's fluids. The Inquiry's experts described these mistakes as fundamental and catastrophic and as a result Adam developed dilutional hyponatraemia, which led to cerebral oedema and his death.

Adam was doing well on peritoneal dialysis. There were problems with the kidney that was accepted by Professor Savage, for Adam, according the Inquiry's experts Professor Forsythe and Mr Rigg. They gave oral evidence to the Inquiry about this on (Day 18, Pages 11 to 30) of the transcript.

Their evidence was that the kidney was a half-match. Also they believed that there were two main arteries or even three arteries on the patch, with the possibility of the third one being tied off. The significance of this is that if accepting this kidney for a child is that they say;

"We are talking about trying to get good flow to a kidney that may be slightly large through vessels that are quite small" (Day 18, Page 25, line 1)

Anastomosing one large vessel with good flow is relatively straightforward compared to one with two or three smaller vessels on a patch.

We submit that this issue is of critical importance to the events that happened in theatre.

Whilst Professor Forsythe and Mr Rigg said there were positives with the kidney and they agreed that some surgeons in 1995, would have accepted this kidney, they would not, and we submit that the crucial point they make about this is;

"If you're in a smaller centre where perhaps you don't do as many transplants, it's perhaps increasingly important that those transplants are..... that you don't take as many risks whereas if you're in a larger centre where you have gained more experience over the years you perhaps are prepared to take one or two more risks". (Day 18, Page 27, line 24)

In addition, the renal transplant surgeon, Mr Koffman stated that precise concern quite clearly and identified further difficulties with the kidney that was accepted for Adam. He said in evidence that;

"Any child under the age of 5 or 6 with a weight of 20 kilos or below represents a major challenge for transplantation and should be confined to major centres". (Day 23, Page 81, line 14)

Dr Coulthard, the Inquiry's expert nephrologist gave evidence that if the child was doing well on dialysis he would not accept a poorly matched kidney but would hold out for a good one. (Day 19, Page 50)

There were also concerns expressed by most of the experts about the cold ischaemic time of the kidney.

There were numerous comments made by the various experts in relation to the suitability of the kidney. They criticised the lack of proper multi-disciplinary meetings, between surgeons, nephrologist and anaesthetists, and the lack of proper planning for the transplant on Adam. There were negative comments made about the lack of information given to Adam's mother, Debra regarding the condition of the kidney and the experience of the transplant team. We submit on her behalf, that the consent she gave for the operation proceeding was not a proper informed consent.

Major complicated surgery was commenced on Adam without the surgeon or anaesthetist seeing Adam first. Mr Keane was the only surgeon available to carry out the transplant and he had other surgery planned for the same day.

According to Peter Shaw, at the time Adam's surgery was commenced, early in the morning, there would only have been a skeleton staff. (Day 24, Page 53, line 25)

Mr Shaw admitted to the Inquiry that at times, he would have acted as the runner during surgery. It would be the job of the runner to complete the blood loss sheet, or swab count.

However, when asked if he completed the entries on the blood loss sheet that preceded, Nurse Matthewson's entries, he said that the writing was too neat to be his handwriting. (Day 24, Page 85, line 16)

Therefore the early entries remain unexplained leaving open the possibility that the entries were made by a person whose identity is still unknown.

There were a number of views from the experts as to the length of time it would take to perform the anastomosis.

Professor Forsythe and Mr Rigg gave estimates of 50 to 100 minutes from the time of initial incision to venous and arterial anastomoses and reinfusion of the kidney. (Inquiry Document 203-011-003)

Mr Koffman gave evidence that the national average time for anastomosis would be 45 minutes. (Day 23, Page 93, line 1)

Mr Keane, Adam's renal transplant surgeon stated in a witness statement made for the Inquiry, that the surgery began around 8.00a.m. (WS-006/3. P6)

Mr Keane decided to use the external iliac artery to join the donor kidney.

Professor Forsythe, Mr Rigg and Mr Koffman told the Inquiry that they would normally use the larger blood vessels. Mr Koffman concurred with the views of Professor Forsythe and Mr Rigg that they would have used the larger blood vessels to ensure that the child's blood supply was getting to what was essentially an adult sized kidney, effectively ensuring that it had its best chance of perfusion.

(Day 23, Page 35, lines 1-7)

Mr Koffman went on to say that in adult practice and teenage children it's very common to use the iliac artery, but he prefers to use the common iliac because it's larger, and he adds that he thinks it's unusual to use the external iliac artery for a young child and an adult sized kidney.

During his oral evidence Mr Koffman talked about the difference between using different arteries such as the common iliac or the external iliac.

What Mr Koffman says on (Day 23 at Page 36) we submit is of critical importance about this issue, he says;

"When I say it's easier, it's easier to perform the anastomosis, which is actually where you stitch the blood vessels together. But to get access to the aorta, or the common iliac artery is more difficult in preparation for that. So you have to do quite a lot of dissection to get to those vessels. It's more difficult to get to those vessels but once you've got those vessels immobilized, it's then easier to do the transplant itself. So it's a decision to make about whether to spend maybe an extra half an hour trying to get to the aorta or common iliac vessels and then making the anastomosis easier, or saving time on that and having a slightly more difficult anastomosis to create. The other factor is that this child had had a lot of previous surgery to the lower end of his ureters, two re-implantations, and that's right at the area where the common iliac vessels are and that would have made it very difficult to get at those blood vessels. So I presume Mr Keane chose the external iliac because it was more accessible and he must have felt it was the right size to be able to perform the operation".

We would submit that since Mr Keane may be saving time in getting to anastomosis (possibly half an hour) then on the timings of Mr Koffman and Professor Forsythe and Mr Rigg given earlier, it is possible that anastomosis could have taken place sometime around 9.30a.m.

Since the conclusion of the operation and throughout the period of the Inquest, the police investigation, and even during the recent weeks of the Inquiry, we suggest that Dr Taylor's version of events contains many inconsistencies and inaccuracies. Indeed, Dr Taylor admitted this himself whilst giving oral evidence to the Inquiry. However, on some matters, Dr Taylor'a account of events, given when his memory was fresh at the Inquest into Adam's death in 1996, matches some of his evidence given at the Inquiry.

According to the note of his evidence at the Inquest, taken by Heather Neil, Dr Taylor said that he was expecting the kidney to be in within an hour, in fact with Mr Keane, he states, it can be 45 minutes to an hour. (Inquiry Document – 122-044-044)

In answer to a question from Mr Brangam, the Trust's legal representative at the Inquest, Dr Taylor agreed with him that at 9.32 the clamps were being removed.

At the oral hearing of the Inquiry on Day 36 when Dr Taylor is asked about the phrase contained in the note of Heather Neil of 14 June 1995;

"In this case the kidney was in at around 9.30a.m. The vein was in and the arteries were being finished".

He said that this phrase suggested that the kidney was in the abdomen and that the anastomosis was happening around 9.30a.m. (Day 36, Page 55 lines 14-18)

It is put to Dr Taylor in questioning by the Chairman that the operation note says clamps were released at 10.35a.m. and this is at variance with what Dr Taylor had said about clamps off at 9.30a.m. (Day 23, Page 57)

Dr Taylor answers that "9.32 a.m. does seem to be an important time from my side of things because that's when I checked the blood gas, that's when things seemed to be happening ".

Again we would submit that this is critical for a number of reasons.

Dr Taylor may have taken a blood gas reading at 9.32a.m. because the kidney was not perfusing.

He then proceeded to give HPPF and packed cells which he described in his evidence at the Inquest to replace blood loss and extra fluid for perfusion of the kidney.
(122-044-043 Note of Heather Neil)

Crucially Dr Taylor agrees with Senior Counsel to the Inquiry when she puts to him at
(Day 36, Page 59, line 9)
"What does tally Dr Taylor is your evidence about 9.32a.m. and the point that was made in the consultation about 9.32a.m.? Those two times do tally".

and he answers

"They do tally with several things happening, yes".

Dr Taylor according to his evidence at the Inquest gave a bolus of dopamine in addition to the infusion of dopamine. Senior Counsel to the Inquiry questions one of the expert witnesses Dr Coulthard about this on (Day 19, Page 182 and 183)

Senior Counsel puts it to Dr Coulthard that there were two small increases in systolic blood pressure at 10.00a.m. corresponding to two small boluses of dopamine and Dr Taylor had said;

"The rationale for this was to increase the perfusion pressure (without fluid challenge)to the donor kidney, which at that stage was not looking good and not producing urine".

and she asks Dr Coulthard

"Can you comment on its use? If this is outside your area, do say, but can you comment on its use".

and Dr Coulthard answers

"It's outside my area in the sense that I would be unlikely to prescribe it. My experience is that it is used as a, it's a drug related to a little bit like adrenaline, it improves the way your heart beats and has a very slight impact on increasing blood flow specifically within the kidneys. So on theoretical grounds it's a drug that can be used if a child's blood pressure is not ideal and you are concerned about kidney perfusion".

And he goes on to say might help benchmark when anastomosis was complete as Senior Counsel puts that to him and he adds it implies that at the time he (Dr Taylor) administered it it would have been because the kidney wasn't perfused as well as the team would like, which would have been evidenced by the colour of the kidney.

During Dr Haynes oral evidence, a series of questions were put to Dr Haynes about the drug atracurium that was used during Adam's surgery. The Inquiry heard how this drug, being a muscle relaxant, would be necessary for the surgeon to relax the abdominal muscles at the operation site. Adam had been given atracurium up until 9.30a.m. According to Dr Haynes, the effect of a dose would be to provide muscle relaxant so that the surgeon could work in the surgical field. As it is short-acting, the effects of the last dose should be wearing off in approximately 20 minutes, yet the operation proceeded for some prolonged time after that. Dr Haynes explains that the anaesthetist would be prompted by the patient coughing or gagging which would be a signal for more atracurium. Alternatively, the anaesthetist would notice that the patient had lost their muscle tone. He is asked about his view on why no further atracurium was given and he opined that Adam had sustained massive irreversible brain damage between 9.30 and 10.00a.m.

"That is my view given the information available to me after giving it a great deal of consideration that Adam beyond 9.30, or certainly beyond 10 o'clock when the last dose of Atracurium's effect would have gone, was no longer in a position to be able to cough and had lost abdominal wall muscle tone because at this point, perhaps 'brain dysfunction' might be a better term than 'brain death'.

(Day 17 Page 75 and 76)

There is no mention of the drug neostigmine being administered to Adam. Dr Campbell in her evidence said that this is the last drug administered during an anaesthetic and it is the family's belief that Dr Taylor did not administer this drug because he knew there was no point.

Dr O'Connor, who took over as Adam's nephrologist from Dr Savage from sometime after 9.00a.m. until Adam's transfer to PICU gave evidence that she saw the CVP readings on the monitor when she was in theatre and that she was concerned when she saw a CVP reading of 30 and she says at

(Day 11, Page 84)

in the oral hearings that;

"It's too high and you worry that there's excess fluid".

However she says that she accepted what Dr Taylor told her about the CVP readings. Dr O'Connor raised concerns with Dr Taylor when she saw a CVP reading of 30 at 10.00a.m. and it is of note that the monitor seems to have been re-zeroed at 10.00a.m. according to the tracing at 094-037-211.

The time of the anastomosis was recorded on the anaesthethic record as 10.30 and she says about this (Day 11, Page 136)

"I have scribbled in the side of the notes, but what I'm not clear is if I was there or somebody told me, that was the time or if it is written in the board and I wrote it down".

She also states on (Page 136) that she presumes she was there at 10.30a.m. for clamp release but does not have a clear recollection. At(Page 57) Dr O'Connor had described the event of the clamps coming off and the kidney pinking up as a modern day miracle.

Adam's mothers recollection is that at 10.30a.m. Dr O'Connor spoke to her and told her that Adam's surgery was proving more difficult because of Adam's previous procedures. (Para 45(b) 001/3)

There was no mention of either of any miracle or of any concern of a CVP reading of 30.

When it is put to Dr O'Connor by Senior Counsel to the Inquiry (Day 11, Page 135)
about Dr Taylor's deposition to the Coroner at (001-014-101)
that the donor kidney at 10.00a.m. was not looking good and not producing urine, she does not recall having any concern and she does not say that this could not be correct because clamps were off at 10.30a.m.

So we submit that on the balance of probabilities Dr O'Connor was not present when the clamps came off or she is mistaken about the timings. She does not say who may have told her the timing if she was not present and both Nurse Popplestone at (Day 39, Page 190)
and Nurse Matthewson at (Day 39, Page 208)
said that the timing of anastomosis would not be recorded on the white board.

Dr O'Connor does state throughout her evidence that she made presumptions and assumptions and based on those admissions and what has been outlined above we submit that her evidence about the timing of anastomosis could not be correct.

Professor Gross, the Inquiry's expert on hyponatraemia states that;

"Adam could have reached the critical volume at approx 9.32a.m. or perhaps within 20 minutes before that time". (306-017-169)

Dr Coulthard the Inquiry's nephrologist says at; (306-017-168)

"R+s administration of 1.51 of n/s saline in 3 hours, one third of it during the first half of the procedure. Most was retained in the body and inevitably reduced Adam's body salt

concentration considerably and dramatically fast. This killed him and he estimates the time of brain stem death between 7.00 and 10.00 and probably before 8.00".

Mr Koffman talks about the nightmare scenario (Day 23, Page 99 onwards)

when kidney looks good to start with and then less good and he says that unless he can convince himself that the artery and vein anastomosis are okay, then he won't close up.

When Adam's mother first saw Adam after the operation had finished she commented to Dr Savage about how swollen Adam was. Dr Sumner at Adam's Inquest in 1996 said swelling can occur very quickly within an hour (122-044-020)

and Dr Haynes says at (204-012-381)

"I have seen numerous children with a CVP measuring 17-20 m/m Hg. They never appear normal. There is invariably swelling of the head and neck, even when sitting up, the liver is enlarged and there is leg oedema. There is nothing to suggest Adam was in this condition at the start of the anaesthetic.

There was considerable evidence given in relation to the CVP. We suggest that the evidence from all the witnesses was that the CVP is an important parameter and should not be ignored. The CVP reading starts at 8.00a.m. and is high at 17. Professor Savage does not mention any problems to Debra when he talks to her after 9.00a.m. Dr Montague who is assisting Dr Taylor is unaware of the CVP reading until he reads it in the transcripts 16 years later (Day 21, Page 91)
Yet he had previous experience of adult kidney transplants in the City Hospital where CVP was the major concern of the nephrologists. (Day 21, Page 92, line 20)

The evidence in relation to the CVP is so overwhelming that we do not need to re-hearse it for the Chairman any further.

Dr Montague talks about who might have replaced him and during this evidence he says (Day 21, Page 41)

"The theatre complex in the Childrens Hospital was a small place and you would know that something was going on".

Indeed Eleanor Boyce knew that something was going on and went into theatre to see for herself. She is asked about what she had said in her previous statement about the mood being sombre and she says; (Day 13, Page 115, line 6)

"I think it changed slightly but it was always very serious, and there was an awareness that we were dealing with a very serious situation".

Of all of the witnesses who gave evidence she is one of the few who has a clear memory, and when asked if she could have been mistaken about what she saw in theatre, she answers; (Page 118, line 4 and line 13)

"In theatre, no, because the operation was still going on, otherwise I wouldn't have thought why are they continuing with the procedure".

She also clearly sees Mr Keane, whom she knows in theatre.

What Mrs Boyce says at (Page 122, line 25 onwards)
we submit is a very critical point;

"I am wondering after the arterial clamps were released if it was possible after that Dr Taylor could have started to reduce even the muscle relaxants and then known. If there was a window of opportunity even a few minutes where he would have known the child wasn't breathing on his own and then somehow that communicated itself to me and I came in and even though they were starting to identify a problem, the bladder anastomosis was still being done at that point and Mr Keane was still there".

We suggest that the value of Mrs Boyces evidence is best summed up by the Inquiry's own experts Professor Forsythe and Mr Rigg in their additional report dealing with the contents of the note of 14 June 1996 in dealing with the issue of what was meant by the phrase "the performance of the kidney was no longer relevant at this stage".

They say;

"This course of events is not consistent with what is recorded in the case notes, within the witness statements or the oral evidence given, with perhaps the exception of those given by Eleanor Donaghy (Mrs Boyce)".

All of this has come about as a direct result of Dr Taylor administering an extreme volume of $1/5^{th}$ saline solution in a very short time to Adam, which caused him to suffer from dilutional hyponatraemia. The evidence of the Inquiry experts, Professor Gross, Dr Coulthard and Dr Haynes is very clear on this. Only now, after 16 years, has Dr Taylor admitted his wrongdoing and then only in the face of such overwhelming evidence against him. Once again we see no reason to rehearse this evidence for the Chairman, as it is so completely overwhelming.

What is of significance to add however is that Dr Taylor seemed to ignore all the warning signs. CVP is extremely important in paediatric surgery according to Dr Coulthard and Dr Taylor did not manage the situation properly. His correct action would have been to delay surgery until he had a satisfactory plausible CVP. (200-022-207)

According to Dr Haynes Dr Taylor should have acted on the blood gas result at 9.32a.m., he did not.

Dr Coulthard talks at length in his reports as do Dr Haynes and Professor Gross of the simple principles that Dr Taylor failed to observe in relation to Adam's fluid management and his care.

Dr Taylor deviated from those simple principles and thereby made major mistakes when he anaesthetised Adam which resulted in him being given very large volumes of inappropriately dilute intravenous fluids. Dr Haynes believes that Adam's condition may have become irrecoverable as early as 9.32a.m.

Dr Coulthard sums up his position by saying at (200-022-269)

"Altogether by these mechanisms, the result was that Adam was given 1.5 litres of n/s saline during a 3 hour period that he didn't need, half of it during the first hour. Most of this was retained in his body and inevitably reduced his body salt concentration considerably, and dramatically fast. This is what killed him".

He then continues at (200-022-270)

"Cerebral oedema is the inevitable consequence of a child having their plasma sodium concentration fall".

He goes on to say that sometimes the oedema may not be severe enough to cause symptoms before it resolves and sometime the condition can be reversed. But he says;

"Sometimes it is so fast and extreme that the child's brain stem dies, and this is irreversible brain death. This is what happened to Adam".

He concludes by saying at (200-022-271)

"I believe that Adam brain-stem died somewhere between 7.00a.m. and 10.00a.m. and that it was probably before 8.00a.m. in response to the most dramatically fast component in his fall in plasma sodium. Once that happened the situation for him was irretrievable. How this kidney did or did not function is not relevant to this".

Dr Alison Armour gave evidence on her autopsy on Adam and she at the very start of her evidence wanted to state that she may have mistaken a piece of fibrous tissue for a tied off vein. She concluded as she had done so at the time that Adam's death was caused by cerebral oedema due to dilutional hyponatraemia.

Dr Waney Squier an eminent pathologist herself gave very measured evidence on Dr Armour's autopsy and felt that on the whole Dr Armour had got things right. Dr Squier had been particularly helpful at the meeting of experts in Newcastle in providing a very clear explanation in relation to whether the vein might have been ligated or not and what effect this would have on blood flow. However the matter of whether the vein was ligated or not was we submit completely put beyond doubt by the evidence of Mr McCallion who gave totally conclusive evidence, being the surgeon involved that the vein was not tied off.

The note of the consultation of 14 June 1996 was sent to the Inquiry's experts Professor Forsythe, Mr Rigg and Dr Haynes. They are asked to comment on phrases contained in the note. They were asked what Dr Taylor meant by the kidney could have been in place in one hour and Professor Forsythe and Mr Rigg answer that they would take this to mean that anastomosis was complete and the kidney perfused, in a straightforward case. They doubt that Adam's was a straightforward case. We suggest, however for reasons we have outlined earlier in this submission this was possible in Adam's case.

They are asked about the phrase beginning;

"A query was raised about whether the new kidney had been properly perfused. The kidney was not performing well and it was felt that more fluids were required".

They answer at (203-011-004)

that if there was concern about blood supply to the new kidney various manoeuvres would be tried and if these failed the kidney would be removed.

They are further asked about the phrase in the note which begins;

"During surgery when this kidney was failing to operate a needle was put into the artery and no blood came out and clearly the kidney was not working when the operation site was closed".

They explain the reason for putting a needle into the artery. They say this is very uncommon, and is only done when there is concern about whether there is a blood flow in the artery.

Mr Keane and Mr Brown described such a procedure as outrageous but neither said that Professor Forsythe or Mr Rigg were wrong and that such a procedure did not exist.

We submit for the reasons that we have outlined earlier, there could well have been problems with blood flow to the kidney, given the site picked for the anastomosis, the obvious problems with perfusion leading to more fluids being given and more dopamine being given to try and stimulate things, so that we submit the surgeons were probably in a desperate situation and possibly considering what could be done, even if it were a bit unusual.

Professor Forsythe and Mr Rigg say at (203-011-005)

in relation to the phrase in the note

"the performance of the kidney was no longer relevant at this stage"

This would suggest to us that the surgical and anaesthetic teams must have recognised the seriousness of Adam's condition and of his very poor prognosis and Dr Haynes comment on the same paragraph of the note is (204-016-017)

"It appears to me that something had obviously gone far wrong by the time the operation site was closed".

We submit that some of the witnesses who were questioned in relation to the note were not able to challenge its accuracy or veracity to any significant degree and we submit that the Chairman should regard it as an accurate and truthful record of a meeting held on 14 June 1996.

Professor Savage himself stated in relation to the notes of evidence taken by Mrs Neil at Adam's Inquest at (Day 38, Page 86, line 3)

"Mrs Neil, sorry. It's much more explicit in her record than the Coroner's record of my views. In other words the Coroner hasn't recorded it in detail but she has".

Dr Gaston was asked (Day 39, Page61/62)

by the Chairman if Mrs Neil's note was broadly accurate in respect of two main issues and he answers yes.

Dr Gaston also remembers a discussion over issues around the kidney, the renal artery flow at a meeting and he felt Mr Keane was there. Whilst he disputed hearing anything about a needle being put into the artery, he remembers something about the renal artery flow.
(Day 39, Page 69)

Finally Dr Murnaghan who was present at the consultation on 14 June 1996, was aked about how he would interpret the phrase beginning

"A query was raised etc.."

and he gave evidence that his interpretation was that, (Page 171, onwards at Day 39)

" the kidney transplant was deemed unsuccessful so the priority changed"

"But in the meantime there was a greater imperative, and therefore the clinical direction was different. So the performance of the kidney was no longer relevant at that stage. It was now intensive care of the child and was the fact that he had fixed dilated pupils, was that something permanent or was that something that might be transient. That's how I interpreted it".

Dr Gaston, Dr Murnaghan, Professor Savage all said in their evidence that they wished they had done more at the time about pushing for a more thorough investigation.

Dr Gaston seemed to be torn by a loyalty to Dr Taylor. He had persuaded Dr Taylor to stay at the Royal when he was looking for another job. He seemed to be more interested in counseling and looking after Dr Taylor than exposing faults and learning lessons. He also said that if Dr Taylor were to go it would have put into jeopardy the whole of Paediatric Anaesthetics in Northern Ireland.

The Inquiry's experts took a different view. Dr Haynes said that if Dr Taylor had not accepted at the time what went wrong he would have turned an informal progress into a formal one.

Dr Coulthard would have spoken to the anaesthetist and tried to re-educate him. He would then initiate a formal concern with the clinical director. If that proved unsatisfactory he would have gone to the GMC. (Day 20, Pages 58/59)

Mr Koffman would have suspended the programme.

At the time it was agreed to hand a statement to the Coroner, which was not distributed to anyone other than the paediatric anaesthetists who helped prepare the statement.

This we submit was a sop to the Coroner.

Dr Taylor was allowed to continue to practice and nothing seemed to change.

Adam's family legal representative at the time asked the Coroner to make a recommendation, no recommendation was made.

It would seem that not enough was done to highlight the dangers of hyponatraemia in children, and further children were to die due to the condition.

Based on the synopsis above and on the totality of all the evidence and how it came about and the manner in which it came about the family's belief is as follows:-

1. There can be no doubt that Adam died from cerebral oedema as the result of dilutional hyponatraemia.
2. That Dr O'Connor's timing of anastomosis could not be correct.
3. That the only other timing of anastomosis, given by Dr Taylor of sometime around 9.30a.m. is correct and fits with the clinical picture as outlined above and the contents of the note of 14 June 1996.
4. That sometime during attempts to perfuse the kidney the focus changed as Adam's condition was realised to be so serious. This belief is likely to have been before 10.00a.m. The operation carried on for some time after that to close the wound site on a kidney that was known not to have a viable blood supply, in a child with no hope of recovery.
Adam was then handed over to PICU brain stem dead.

Finally,

If it had not been for the courageous investigative journalism of the UTV Insight programme, broadcast in 2004 called, "When Hospitals Kill", these matters may never have come to public notice.

It is Adam's family's hope that lessons that still need to be learned about dilutional hyponatraemia are learnt.

Further it is their hope also that attitudes within the medical profession might change and that in future such matters can be dealt with in a more open and honest manner so that families could be spared the heartache that Adam's family has had to endure for the last 16 years.

David Hunter, Solicitor