

INQUIRY CHRONOLOGY OF EVENTS: ADAM (CLINICAL)
From 26th November 1995 to 29th November 1995

TIME ON 26TH NOVEMBER 1995	EVENT	REFERENCE
01:42	Kidneys of a 16 year old live donor were perfused with Baxter's solution ¹ at Glasgow Southern General Hospital Ventilation of the donor ceased and circulatory arrest ² was recorded as 01:42	Ref: 058-009-028 (Kidney Donor Information Form) Ref: 058-035-134 (Clinical History, Examination and Progress)
circa 02:42	Both of the donor's kidneys were removed by Mr. John Casey at Southern General Hospital in Glasgow The receiving centre was Western Infirmary in Glasgow. It noted on the Kidney Donor Information Form that the left kidney (the one offered to Adam) had 2 arteries. The form did not record any damage to the kidney	Ref: 306-007-043 (Letter dated 3 rd June 2010 from NHS Blood and Transplant to the Inquiry) Ref: 058-009-028 (Kidney Donor Information Form)
? ³	Dr. Maurice Savage ⁴ was the Consultant Paediatric Nephrologist ⁵ on call at the Royal Belfast Hospital for Sick Children (RBHSC). UK Transplant Support Service Authority (UKTSSA) contacted Dr. Maurice Savage by telephone to inform him that there was a kidney (the left) which was a potential match for Adam	Ref: 093-006-016 (Dr. Savage's PSNI Statement)
? ⁶	Dr. Maurice Savage informed Debra Slavin (at that time Strain) of the offer of a kidney for Adam	Ref: 093-006-016 (Dr. Savage's PSNI Statement)
20:00	Adam was admitted into RBHSC.	Ref: 057-006-007 (Admission Sheet)
? ⁷	Dr. Maurice Savage considered the match of the donor kidney was acceptable and accepted it from UKTSSA	

¹ For 'perfusion' and 'Baxter's solution' see: Glossary of Terms

² For 'circulatory arrest' see: Glossary of Terms

³ Time unknown

⁴ Dr. Maurice Savage (Consultant Paediatric Nephrologist, RBHSC): See List of Persons for details

⁵ For 'nephrology' see: Glossary of Terms

⁶ Time unknown but shortly after receipt of the offer of the kidney

⁷ The time of the donor kidney's arrival in Belfast is not known

TIME ON 26 TH NOVEMBER 1995	EVENT	REFERENCE
	The donor kidney was dispatched to the Renal Unit in the Tower Block of the Belfast City Hospital (BCH) for 'cross matching' ⁸ of sample tissues with Adam's white cells ⁹ at the Tissue Typing Laboratory on the BCH site	
21:00	<p>Adam was admitted onto Musgrave Ward by SN Catherine Murphy¹⁰ to be under the care of his nephrologist Dr. Maurice Savage for possible renal transplant. She recorded: (i) "<i>dyplastic kidneys, obstructive uropathy</i>"¹¹; (ii) numerous previous hospital admissions; (iii) temperature at 36.4C; (iv) weight at 20.2kgs; (v) bag in situ for urinalysis¹²</p> <p>Pre-operative investigations for possible renal transplant were carried out by Dr. Jacqueline Cartmill.¹³ She took blood samples for: (i) full blood picture (FBP)¹⁴; (ii) coagulation screen¹⁵; (iii) urea and electrolytes (U+E)¹⁶; (iv) albumin¹⁷; (v) bone profile¹⁸; (vi) cytomegalovirus (CMV) titre¹⁹; (vii) blood group²⁰</p> <p>She also requested 4 units of white cell filtered and CMV negative packed cells to be cross-matched. She recorded that she was informed by "<i>lab. staff that whole blood is not available at such short notice</i>"</p> <p>Dr. Jacqueline Cartmill prescribed 2 amounts of 500mls iv fluids of 0.18% sodium chloride/4% dextrose²¹ to run at a rate of 75 ml/h – described as "<i>maintenance</i>"²²</p>	<p>Ref: 057-013-017 (Nursing Admission Sheet, signed by Catherine Murphy)</p> <p>Ref: 058-035-144 (Extract Clinical History, Examination and Progress); Ref: 093-008-025 (Dr. Cartmill's PSNI Statement)</p> <p>Ref: 058-035-144 (Extract Clinical History, Examination and Progress)</p> <p>Ref: 057-010-014 (Intravenous Fluid Prescription Chart)</p>
21:30	Dr. Maurice Savage contacted the operating theatre and telephoned Dr. Robert Taylor ²³ and	Ref: 093-006-016 (Dr. Savage's PSNI Statement);

⁸ For 'cross-matching' see: Glossary of Terms

⁹ For 'white cells' see: Glossary of Terms

¹⁰ SN Catherine Murphy (Staff Nurse – Musgrave Ward, RBHSC): See List of Persons for details

¹¹ For "*dyplastic kidneys, obstructive uropathy*" see: Glossary of Terms

¹² For 'urinalysis' see: Glossary of Terms

¹³ Dr. Jacqueline Cartmill (Surgical SHO in Paediatrics, RBHSC): See List of Persons for details

¹⁴ For 'full blood picture' see: Glossary of Terms

¹⁵ For 'coagulation screen' see: Glossary of Terms

¹⁶ For 'urea' and 'electrolytes' see: Glossary of Terms

¹⁷ For 'albumin' see: Glossary of Terms

¹⁸ For 'bone profile' see: Glossary of Terms

¹⁹ For cytomegalovirus (CMV) titre see: Glossary of Terms

²⁰ For 'blood groups' see: Glossary of Terms.

²¹ For '0.18% sodium chloride/4% dextrose' see: Glossary of Terms

²² For 'maintenance rate' for i.v. fluids see: Glossary of Terms

²³ Dr. Robert Taylor (Consultant Paediatric Anaesthetist, RBHSC): See List of Persons for details

TIME ON 26 TH NOVEMBER 1995	EVENT	REFERENCE
	Mr. Patrick Keane ²⁴ to inform them of a potential renal ²⁵ transplant for Adam early the next morning. At some stage Mr. Stephen Brown ²⁶ was also contacted with a view to him assisting Mr. Patrick Keane	Ref: 093-038-123 (Dr. Taylor's PSNI Statement under caution) Ref: 093-010-030 (Mr. Keane's PSNI Statement; Ref: 093-011-031 (Mr. Brown's PSNI Statement)
?	Pre-surgery chest x-ray was requested by Dr. Donagh O'Neill ²⁷	Ref: 057-019-028 (x-ray request form) ²⁸ and Ref: WS-004/1, page 2 & WS-004/2, pages.3, 6 (Dr. O'Neill's Inquiry Witness Statements)
22:00	Enteral fluids ²⁹ prescribed by Dr. Jacqueline Cartmill were commenced: 180ml/h of " <i>clear fluids</i> " through his gastrostomy tube. ³⁰ This was in addition to his iv. fluids which were reduced to 20 ml/h. The 'clear fluids' were instead of his usual gastrostomy feed of Nutrison ³¹ and were prescribed following discussions between Dr. Maurice Savage and Dr. Robert Taylor Dialysis (Pac X) ³² until 06:00	Ref: 057-010-013 (Fluid Balance and i.v. Prescription Sheet) Ref: 058-035-144 (Clinical History, Examination and Progress) Ref: 057-014-019 (Nursing notes signed by SN Catherine Murphy);
circa 23:00	Results of the pre-op investigations carried out by Dr. Jacqueline Cartmill at 21:30 were recorded by Dr. Donagh O'Neill, with the serum sodium concentration (for which there is no laboratory report) being recorded as 139 mmol/L ³³ in	Ref: 058-035-144 (Clinical History, Examination and Progress)

²⁴ Mr. Patrick Keane (Consultant Urologist and Transplant Surgeon, BCH & RBHSC): See List of Persons for details

²⁵ For 'renal' see: Glossary of Terms

²⁶ Mr. Stephen Brown (Consultant Paediatric Surgeon, RBHSC & Ulster Hospital, Dundonald): See List of Persons for details

²⁷ Dr. Donagh O'Neill (SHO in Paediatrics, RBHSC): See List of Persons for details

²⁸ No chest x-ray has been provided that corresponds to this request and there is a query in correspondence from the DLS whether such an x-ray was actually performed. See DLS letter to the Inquiry dated 28th October 2011 (Ref: 301-118-650)

²⁹ For 'enteral feeding' see: Glossary of Terms

³⁰ For 'gastrostomy tube' see: Glossary of Terms

³¹ For 'Nutrison' see: Glossary of Terms

³² For 'Pac X' see: Glossary of Terms

³³ For sodium measurement 'mmol/L' see: Glossary of Terms

TIME ON 26 TH NOVEMBER 1995	EVENT	REFERENCE
	Adam's notes. ³⁴ He also noted the other biochemical results and the haematology results	
23:30	Medical history and clinical examination was carried out by Dr. Donagh O'Neill who signed the note recording Adam as well, alert and bright, chest clear and his weight as 20.2 kg. He also recorded the presence of a gastrostomy tube and a peritoneal dialysis catheter ³⁵	Ref: 058-035-131 (Clinical History, Examination and Progress)
Before 00:00	Further blood specimen was taken for biochemistry and haematology analysis	Ref: 301-081-547

TIME ON 27 TH NOVEMBER 1995	EVENT	REFERENCE
? ³⁶	<p>Blood specimen results received from sample taken before midnight:</p> <p>Sodium 133 Potassium 4.3 Urea 16.0 Creatinine 676 Calcium 2.46 Phosphate 1.21</p> <p>Haemoglobin 10.5 Erythrocytes 3.47 PCV 0.321 MCV 92.5 MCHC 32.7 MCH 30.3 Leucocytes 9.54 Platelets 336</p>	Ref: 301-081-547
circa 01:00	<p>Transplant cross-match process completed. Dr. Maurice Savage recorded that the 'cross-match' was favourable</p> <p>Dr. Maurice Savage noted that "<i>planned for theatre 6am</i>".³⁷ He also recorded: (i) history of urological</p>	Ref: 058-035-133 (Clinical History, Examination and Progress)

³⁴ It is recorded as 134mmol/L by Dr. Mary O'Connor on the Transplant Form: Ref: 057-007-008 (Transplant Form). She has subsequently claimed she misread 139 as 134 Ref: WS-014-2 Page 8

³⁵ For 'peritoneal dialysis catheter' see: Glossary of Terms

³⁶ It is not known when these were received and the laboratory report is untimed. These results are not recorded in Adam's clinical notes and are part of a set received from Directorate of Legal Services in October 2011

³⁷ At a time as yet unknown 06:00 is changed to 07:00

TIME ON 27 TH NOVEMBER 1995	EVENT	REFERENCE
	<p>problems and queried bladder function; (ii) <i>"x-rays all available and present"</i>; (iii) <i>"electrolytes satisfactory – should be repeated first thing in am"</i>; (iv) Dioralyte³⁸ overnight rather than Nutrison³⁹; (v) no Mannitol⁴⁰ required <i>"in view of natural polyuric⁴¹ state"</i>; (vi) weight at 21kg</p> <p>Dr. Maurice Savage recorded the requirements for theatre including double or triple lumen line⁴² for <i>"drugs/sampling/CVP⁴³"</i>. He also recorded Acyclovir⁴⁴ post-operatively <i>"+ as per protocol"</i></p>	
01:42	<p>The results of the cross-matching were recorded as: Donor HLA⁴⁵ Adam's HLA Phenotype⁴⁶ Phenotype A 1, 29 A 1, 32 B 8,44 B 44, 14 DR 3, 7 DR 7, 8</p> <p>Mismatch = 1, 1, 1 (ie the donor kidney was a half match for Adam)</p>	Ref: 059-006-012 (Clinical History, Examination and Progress); Ref: 058-009-027 (Kidney Donor Information Form)
01:30	<p>Adam's i.v. cannula tissue⁴⁷</p> <p>SN Catherine Murphy informed Dr. Donagh O'Neill about the cannula who prescribed an increase in Adam's gastrostomy fluids to 200 ml/h</p>	Ref: 057-014-019 (Nursing Notes); Ref: 057-010-013 (Fluid Balance and i.v. Prescription Sheet)
? ⁴⁸	Consent was taken from Debra Slavin by Dr. Maurice Savage, who signed the form	Ref: 058-039-185 (Consent Form dated 27 th November 1995)
05:00	<p>The nursing notes signed by SN Catherine Murphy state that the i.v. cannula was reinserted.⁴⁹</p> <p>Enteral fluids⁵⁰ were stopped. As at this time</p>	<p>Ref: 057-014-019 (Nursing Notes)</p> <p>Ref: 057-010-013 (Fluid</p>

³⁸ For 'Dioralyte' see: Glossary of Terms

³⁹ For 'Nutrison' see: Glossary of Terms

⁴⁰ For 'Mannitol' see: Glossary of Terms

⁴¹ For 'polyuric' see: Glossary of Terms

⁴² For 'lumen line' see: Glossary of Terms

⁴³ For 'central venous pressure' see: Glossary of Terms

⁴⁴ For 'Acyclovir' see: Glossary of Terms

⁴⁵ For 'human leukocyte antigens (HLA)' see: Glossary of Terms

⁴⁶ For 'phenotype' see: Glossary of Terms

⁴⁷ For 'cannula tissue' see: Glossary of Terms

⁴⁸ The time of this is not presently known

⁴⁹ SN Catherine Murphy was subsequently unclear whether re-insertion happened. See: Ref: 093-007-024 (SN Murphy's PSNI Statement)

TIME ON 27 TH NOVEMBER 1995	EVENT	REFERENCE
	Adam had received 952 ml of the “clear fluids”. No further fluids were recorded as having been administered prior to the fluids administered by Dr. Robert Taylor	Balance and i.v. Prescription Sheet); Ref: 058-003-007 (Anaesthetic Record) Ref: 057-014-019 (Nursing Notes)
circa 05:45	Dr. Maurice Savage met with Debra Slavin and Adam	
? ⁵¹	Start time for Adam’s transplant surgery was put back to 07:00	Ref: 058-035-133 (Clinical History, Examination and Progress); 093-038-125 (Dr. Taylor’s PSNI Statement under caution)
06:00	Adam’s peritoneal dialysis ⁵² , which had been performed overnight for a shorter time than usual, was stopped as per Dr. Robert Taylor’s instructions. Adam had received 8 cycles ⁵³	Ref: 093-006-017 (Dr. Savage’s PSNI Statement)
06:55	Start time of the operation according to the Theatre Log	Ref: 094-006-022 (Theatre log);
Pre 07:00 ⁵⁴	Donor kidney was delivered to the RBHSC SN Patricia Conway ⁵⁵ was on night duty on 26 th November 1995 and as part of the team helped to prepare the theatre for Adam’s surgery. She counted out the swabs, instruments and blades preoperatively and signed the ‘Swab Count and Blood Loss Record’	Ref: 093-009-027 (SN Patricia Conway’s PSNI statement) Ref: 058-007-020 (Swab Count and Blood Loss Record)
07:00	Adam was transferred to theatre. i.v. access was established in right antecubital fossa ⁵⁶ . General anaesthesia was induced in the presence of Adam’s mother. Drugs administered i.v. to Adam: atropine ⁵⁷ (0.3 mg), sodium thiopentone ⁵⁸ (125 mg) and	Ref: 057-014-019 (Nursing Notes) Ref: 058-003-005 (Anaesthetic Record)

⁵⁰ For ‘Enteral Feeding’ see: Glossary of Terms

⁵¹ The time of this is not presently known

⁵² For ‘peritoneal dialysis’ see: Glossary of Terms

⁵³ For ‘cycles of dialysis’ see: Glossary of Terms

⁵⁴ The exact time at which the donor kidney arrived in RBHSC is not presently known

⁵⁵ SN Patricia Conway (Paediatric Staff Nurse – Theatres, RBHSC): See List of Persons for details

⁵⁶ For ‘antecubital fossa’ see: Glossary of Terms

TIME ON 27 TH NOVEMBER 1995	EVENT	REFERENCE
	<p>atracurium (10 mg)⁵⁹</p> <p>Another cannula was inserted into a peripheral vein in his left hand. 0.18% saline/4% dextrose started i.v. by Dr. Robert Taylor. The record, which was signed by Dr. Robert Taylor, shows that 500 ml was given from 07:00 to 07:30</p> <p>Dr. Terence Montague⁶⁰ assisted Dr. Robert Taylor. He inserted lumbar epidural catheter⁶¹.</p> <p>The 'scrub nurse'⁶² SN Gillian Popplestone⁶³ arrived to prepare her instrument trays ready to scrub for surgery</p>	<p>Ref: 058-003-005 (Anaesthetic Record)</p> <p>Ref: 058-003-006 (Anaesthetic Record)</p> <p>Ref: 094-006-022 (Theatre log); Ref: 058-007-020 (Swab Count and Blood Loss Record)</p> <p>Ref: WS 060/2, page 3 (Patricia Conway's 2nd Inquiry Witness Statement)</p>
07:30	<p>Cannula inserted into the right radial artery⁶⁴.</p> <p>Central venous line⁶⁵ inserted in the right subclavian vein⁶⁶ after 3 attempts</p> <p>Further administration of atracurium (10 mg) to Adam i.v.</p> <p>From 07:30 to 08:40 a further 500 ml of 0.18% saline 4% dextrose was given</p>	<p>Ref: 058-008-023 (print out of computerised record); Ref: 011-014-099 (Dr. Taylor's Deposition)</p> <p>Ref: 058-003-005 (Anaesthetic Record)</p>
circa 07:45	Augmentin ⁶⁷ administered i.v. to Adam	Ref: 058-003-005 (Anaesthetic Record)
circa 08:00	SN Patricia Conway Staff Nurse in Theatres went	Ref: 058-007-020 (Swab

⁵⁷ For 'atropine' see: Glossary of Terms

⁵⁸ For 'sodium thiopentone (STP)' see: Glossary of Terms

⁵⁹ For 'atracurium' see: Glossary of Terms

⁶⁰ Dr. Terence Montague (Senior Registrar in Anaesthesia, RBHSC): See List of Persons for details

⁶¹ For 'lumbar epidural' see: Glossary of Terms

⁶² For 'scrub nurse' see: Glossary of Terms

⁶³ SN Gillian Popplestone (Staff Nurse - Theatres, RBHSC): See List of Persons for details

⁶⁴ For 'radial artery' see: Glossary of Terms

⁶⁵ For 'Central Venous Line' see: Glossary of Terms

⁶⁶ For 'subclavian vein' see: Glossary of Terms

⁶⁷ For 'Augmentin' see: Glossary of Terms

TIME ON 27 TH NOVEMBER 1995	EVENT	REFERENCE
	off duty and handed over to SN Janice Mathewson ⁶⁸ who was acting as 'runner' ⁶⁹ in the operation Central Venous Pressure (CVP) ⁷⁰ recording commenced at just prior to 08:00 with a reading of 17 mmHg. ⁷¹ Dr. Robert Taylor re-zeroed ⁷² the equipment	Count and Blood Loss Record) Ref: 058-008-023 (print out of computerised record)
circa 08:00	Transplant surgery commenced (knife to skin)	Ref: 093-038-127 (Dr. Taylor's PSNI Statement under caution) Ref: WS-006/3 (p.12 of Mr Keane's 3 rd Inquiry Witness Statement)
circa 08:30	Further administration of atracurium (10 mg) to Adam i.v. First infusion ⁷³ of 400 ml Human Plasma Protein Fraction (HPPF) ⁷⁴ was started at 0820 Donor kidney removed from ice	Ref: 058-003-005 (Anaesthetic Record) Ref: 058-009-027 (Kidney Donor Information Form)
circa 08:45	500 ml Hartmann's solution ⁷⁵ commenced and 500 ml of 0.18% saline 4% dextrose was given between approximately 08:40 and 11:00	Ref: 058-003-005 (Anaesthetic Record)
09:00	Adam's Central Venous Pressure reading was recorded as rising to over 20 mmHg	Ref: 058-008-023 (print out of computerised record)
circa 09:00 ⁷⁶	Dr. Terence Montague went off duty at the end of a 24-hour shift	Ref: 093-037-117 (Dr. Montague's PSNI Statement)
09:15	Second fluid infusion of 400 ml of Human Plasma Protein Fraction (HPPF) started	Ref: 058-003-005 (Anaesthetic Record)
circa 09:30 ⁷⁷	Debra Slavin was informed of the progress of	Ref: 093-003-003 (Debra

⁶⁸ SN Janice Mathewson (Staff Nurse – Theatre, RBHSC): See List of Persons for details

⁶⁹ For 'runner' see: Glossary of Terms

⁷⁰ Central Venous Pressure see: Glossary of Terms

⁷¹ For pressure reading of 'mmHg' see: Glossary of Terms

⁷² For 'zeroing' and 're-zeroing' the reading from the Siemens Patient Monitor see: Glossary of Terms

⁷³ For 'infusion' see: Glossary of Terms

⁷⁴ For 'Human Plasma Protein Fraction' see: Glossary of Terms

⁷⁵ For 'Hartmann's solution' see: Glossary of Terms

⁷⁶ This time is not certain and it is possible that it could have been around 08:30 to coincide with the Anaesthetic Registrars coming on duty: Ref: WS-009-01 (Dr. Montague's Inquiry Witness Statement)

⁷⁷ This time is not certain and it is possible that it was earlier at around 09:00: Ref: 093-006-021 (Dr. Maurice Savage's PSNI Statement of 8th May 2006)

TIME ON 27 TH NOVEMBER 1995	EVENT	REFERENCE
	Adam's surgery by Dr. Maurice Savage. She was told that things were progressing well and was informed, for the first time, that Mr. Stephen Browne was assisting Mr. Patrick Keane Infusion of 250 ml packed red blood cells started Dr Savage left the hospital (University duties) and Dr Mary O'Connor ⁷⁸ took over his hospital commitments.	Slavin's PSNI Statement); Ref: 093-006-021 (Dr. Savage's PSNI Statement) Ref: 058-003-005 (Anaesthetic Record) Ref: 093-003-004 (Debra Slavin's PSNI Statement)
09:32	Results of pH blood gases and electrolytes received from a blood gas analyser, ⁷⁹ showing a sodium level of 123 mmol/L and a haematocrit ⁸⁰ of 18% The 'Na+ and K+ electrodes' ⁸¹ on the blood gas analyser had been changed on 2 nd November 1995 The rate of infusion of the 0.18% saline 4% dextrose was reduced by Dr. Robert Taylor	Ref: 058-003-003 (BGE Report); Ref: 058-003-005 (Anaesthetic Record) Service Reports for IL Blood Gas Analyser no.1400, serial no. 89070125 Ref: 093-035-106 (Dr. Taylor's PSNI interview under caution)
circa 10:00	CVP level reached 30 mmHg	Ref: 094-037-211 (CVP recording)
After 10:00	Sometime after 10:00, Debra Slavin was told by Dr. Mary O'Connor that the surgery was taking longer than expected because of adhesions ⁸² caused by Adam's previous surgery and his weight.	Ref: 093-003-004 (Debra Slavin's PSNI Statement)
circa 10:15	Methylprednisolone (200) ⁸³ and azathioprine (25) ⁸⁴ administered i.v. to Adam under the direction of Dr. Mary O'Connor	Ref: 058-003-005 (Anaesthetic Record)
pre 10:30	Suprapubic ⁸⁵ and bladder catheters inserted	Ref: 058-035-136 (Clinical History, Examination and Progress)

⁷⁸ Dr. Mary O'Connor (Consultant Paediatric Nephrologist, RBHSC): See List of Persons for details

⁷⁹ For 'Blood Gas Analyser' see: Glossary of Terms

⁸⁰ For 'haematocrit' see: Glossary of Terms

⁸¹ For 'Na+ and K+ electrodes' see: Glossary of Terms

⁸² For 'adhesion' see: Glossary of Terms

⁸³ For 'prednisolone' see: Glossary of Terms

⁸⁴ For 'azathioprine' see: Glossary of Terms

⁸⁵ For 'suprapubic' see: Glossary of Terms

TIME ON 27 TH NOVEMBER 1995	EVENT	REFERENCE
circa 10:30	<p>Vascular anastomosis had been completed⁸⁶</p> <p>Donor kidney was perfused with Adam's blood</p> <p>Mr. Patrick Keane recorded that the <i>"kidney perfused reasonably at end"</i></p> <p>Dr. Mary O'Connor recorded in Adam's notes that: <i>"kidney – looked 'bluish' at end of theatre"</i></p>	<p>Ref: 059-006-012 (Clinical History, Examination and Progress)</p> <p>Ref: 058-009-027 (Kidney Donor Information Form)</p> <p>Ref: 059-006-013 (Clinical History, Examination and Progress)</p> <p>Ref: 058-035-136 (Clinical History, Examination and Progress)</p>
11:00	<p>Total i.v. fluids given by Dr. Robert Taylor to Adam during course of procedure: (i) 1500 ml 0.18% saline 4% dextrose; (ii) 1000 ml Human Plasma Protein Fraction (HPPF); (iii) 500 ml packed red blood cells⁸⁷ & (iv) 500 ml Hartmann's solution</p>	<p>Ref: 058-003-005 (Anaesthetic Record)</p>
circa 11:00 ⁸⁸	<p>Skin closure⁸⁹</p> <p>Neostigmine⁹⁰ and glycopyrrolate⁹¹ administered by Dr. Robert Taylor to reverse the neuromuscular blockade⁹²</p> <p>End of anaesthetic record</p> <p>Blood loss recorded from swabs (328 ml), suction (500 ml) and towels (300 ml)</p> <p>Over a further 30 to 40 mins Adam was prepared for transfer to paediatric intensive care unit (PICU)</p>	<p>Ref: 058-003-005 (Anaesthetic Record)</p> <p>Ref: 058-007-021 (Swab Count and Blood Loss Record); Ref: 058-003-005 (Anaesthetic Record); Fluid Balance and Intravenous Fluid Prescription Sheet (Ref: 057-018-026)</p> <p>Ref: WS-008-01, p.6 (Dr. Taylor's Inquiry Witness Statement)</p>

⁸⁶ For 'vascular anastomosis' see: Glossary of Terms

⁸⁷ For 'red blood cells' see: Glossary of Terms

⁸⁸ It is unclear exactly when the transplant surgery ended. Debra Slavin states in her letter to the Coroner that Dr. Mary O'Connor informed her that the surgery ended at 11:50: Ref: 011-049-182 (Debra Slavin's letter to the Coroner dated 6th February 1996)

⁸⁹ Mr. Patrick Keane claims that he left Mr. Stephen Brown to close the wound: Ref: 093-010-030 (Mr. Keane's PSNI Statement). Mr. Stephen Brown claims to have no recollection of that: Ref: 093-011-032 (Mr. Brown PSNI Statement)

⁹⁰ For 'neostigmine' see: Glossary of Terms

⁹¹ For 'glycopyrrolate' see: Glossary of Terms

⁹² For 'neuromuscular blockade' see: Glossary of Terms

TIME ON 27 TH NOVEMBER 1995	EVENT	REFERENCE
11:30	Blood was taken from Adam, which produced the laboratory test result at 13:00 of a serum Na concentration of 119 mmol/L.	
circa 12:00	<p>Adam failed to wake, did not breathe and his pupils were recorded as being fixed and dilated⁹³</p> <p>Adam was transferred to PICU⁹⁴ by Dr. Robert Taylor for further investigation, assessment and continuing life support.</p>	<p>Ref: 058-035-135 (Clinical History Examination and Progress)</p> <p>Ref: WS-008-01, p.7 (Dr. Taylor's Inquiry Witness Statement)</p>
12:05	<p>The 'scrub nurse' SN Gillian Popplestone left the theatre</p> <p>About 12.05 Adam arrives in PICU. It was noted that post-operatively Adam did not breathe and his pupils were fixed and dilated.</p> <p>Adam's total fluid intake in theatre was recorded as 3000 ml (plus an unspecified volume of packed blood cells) and his blood loss as 1200mls</p> <p>Adam's CVP was recorded as approx. 11 mmHg.</p> <p>Dr. Mary O'Connor recorded at 12:05 that the fluids in the theatre had been: (i) losses of 911 (in the suction bottle); and (ii) input of 3000 (HPPF 1000, Hartmann's 500, packed cells 250, 1500 ml of 0.18% saline/4% dextrose). She also recorded that the kidney <i>"looked 'bluish' at end of theatre"</i>⁹⁵ Additionally she recorded Adam's appearance as <i>"puffy"</i>⁹⁶</p> <p>In addition she recorded that 'in view of the high initial CVP, the accuracy of recordings was uncertain'⁹⁷ she felt it likely (following discussion with Dr. Robert Taylor) that the CVP measurement may have been unreliable. She</p>	<p>Ref: 094-006-022 (Theatre log); Ref: 094-014-344 (Clinical History Examination and Progress)</p> <p>Ref: 094-006-022 (Theatre log); Ref: 058-035-136 (Clinical History Examination and Progress)</p> <p>Ref: 057-018-026 (Fluid Balance and Intravenous Fluid Prescription Sheet)</p> <p>Ref: 058-008-023 (print out of computerised record)</p> <p>Ref: 058-035-136 (Clinical History Examination and Progress); Ref: 057-018-026 (Fluid Balance Sheet)</p> <p>Ref: 058-035-137 (Clinical History Examination and Progress)</p>

⁹³ For 'fixed and dilated pupils' see: Glossary of Terms

⁹⁴ For 'PICU' see: Glossary of Terms

⁹⁵ Ref: 058-035-136 (Clinical History, Examination and Progress)

⁹⁶ Ref: 058-035-136 (Clinical History, Examination and Progress)

⁹⁷ Ref: 093-020-057 (Dr Mary O'Connor's PSNI Statement)

TIME ON 27 TH NOVEMBER 1995	EVENT	REFERENCE
	<p>noted her view that it was more likely that Adam had 'coned'⁹⁸ in theatre due to <i>"high fluid input + abnormal cerebral venous drainage"</i>⁹⁹</p> <p>Dr. Mary O'Connor requested urgent urea and electrolyte profile, CT scan and neurology¹⁰⁰ opinion¹⁰¹ Routine anti-rejection therapy¹⁰² also prescribed.</p> <p>Intravenous 20% mannitol 50 ml was prescribed by Dr. Mary O'Connor to decrease any possible cerebral oedema¹⁰³ and she also reduced his fluid intake and noted <i>"prob will need to restrict further"</i> and that Dr. Maurice Savage and Dr. Robert Taylor would speak to Adam's mother</p> <p>Adam's pupils were measured at 7 mm and were equal and fixed. Haemorrhages¹⁰⁴ were noted on both right and left fundi.¹⁰⁵ Adam was intubated¹⁰⁶ and hand ventilated¹⁰⁷ on admission.</p> <p>Nurse Kathryn Knaggs¹⁰⁸ was working in PICU</p> <p>Adam's mother was told that Adam was out of theatre</p>	<p>Ref: 058-038-182 (ICU Notes); Ref: 058-038-155 (Nursing care plan); Ref: 011-010-035 (Autopsy Report of Dr. Armour dated 29th November 1995); Ref: 058-035-136 (Clinical History Examination and Progress)</p> <p>Ref: 093-018-052 (Kathryn Knaggs' PSNI Statement)</p>
12:15	Debra Slavin mother saw Adam for the first time after his transfer to PICU and claims that he appeared <i>"bloated"</i> . She was told that Adam was slow to waken	<p>Ref: 011-009-029 (Deposition of Debra Slavin); Ref: 093-005-008 to 013 (photographs attached to Debra Slavin's PSNI Statement of Ref: 093-005-007); Ref: 093-003-004 (Debra Slavin's PSNI Statement)</p> <p>Ref: 011-049-182 (Letter of Debra Slavin to Coroner dated 6th February 1996)</p>
? ¹⁰⁹	Debra Slavin was told that there was 'something	Ref: 011-009-026

⁹⁸ For 'coned' see: Glossary of Terms

⁹⁹ For 'abnormal cerebral venous drainage' see: Glossary of Terms

¹⁰⁰ For 'neurology' see: Glossary of Terms

¹⁰¹ Ref: 093-020-058 (Dr Mary O'Connor's PSNI Statement)

¹⁰² For 'anti-rejection therapy' see: Glossary of Terms

¹⁰³ For 'cerebral oedema' see: Glossary of Terms

¹⁰⁴ For 'haemorrhage' see: Glossary of Terms

¹⁰⁵ For 'right and left fundi' see: Glossary of Terms

¹⁰⁶ For 'intubated' see: Glossary of Terms

¹⁰⁷ For 'hand ventilated' see: Glossary of Terms

¹⁰⁸ SN Kathryn Knaggs (Staff Nurse- PICU, RBHSC): See List of Persons for details

TIME ON 27 TH NOVEMBER 1995	EVENT	REFERENCE
	seriously wrong’.	(Deposition of Ms. Debra Slavin)
? ¹¹⁰	Dr. Maurice Savage, with Dr. Robert Taylor and SN Beattie, ¹¹¹ explained the ‘grave situation’ to Adam’s mother	Ref: 058-038-180 (Nursing Care Plan)
Pre 13:00	Adam’s output was recorded as 49 ml from his native kidneys and nil from his transplanted kidney (since the suprapubic catheter was inserted)	Ref: 058-035-137 (Clinical History, Examination and Progress); Ref: 058-038-170 (Nursing Care Plan - ICU)
13:00	<p>The result of the sodium test on the blood sample taken at 11:30 was received back from the laboratory showing a serum Na of 119 mmol/L</p> <p>Adam’s fluid intake was reduced to 10 ml/h</p> <p>Dr. Maurice Savage and Dr. Robert Taylor explained to Debra Slavin and Adam’s aunt that he had failed to wake after the anaesthetic and that his condition was causing grave concern</p>	<p>Ref: 058-040-186 (Laboratory result)</p> <p>Ref: 058-035-137 (Clinical History, Examination and Progress)</p> <p>Ref: 058-038-181 (Relative Counselling Record)</p>
circa 13:00	Dr. Maurice Savage took over from Dr. Mary O’Connor	Ref: 093-020-059 (Dr. O’Connor’s PSNI Statement)
13:15	<p>Adam was taken for an emergency CT scan,¹¹² accompanied by Dr. Robert Taylor. It revealed gross cerebral oedema and herniation and compression of the brain stem¹¹³</p> <p>SN Kathryn Knaggs¹¹⁴ recorded: BP gradually rising 170/110, no effect after 5 mg of nifedipine,¹¹⁵ but good effect after further 5 mg.</p>	<p>Ref: 011-014-098 (Deposition of Dr. Taylor); Ref: 058-035-138 (Clinical History Examination and Progress); Ref: 011-010-035 (Autopsy Report of Dr Alison Armour)</p> <p>Ref: 058-038-153 (Nursing Care Plan)</p>
13.20	Chest X-ray which Dr. Maurice Savage recorded	Ref: 011-001-002

¹⁰⁹ Time unknown

¹¹⁰ Time unknown

¹¹¹ SN Susan Beattie (Staff Nurse – Paediatric Intensive Care Unit, RBHSC): See List of Persons for details

¹¹² For ‘CT scan’ see: Glossary of Terms

¹¹³ For ‘herniation and compression of the brain stem’ see: Glossary of Terms

¹¹⁴ Kathryn Knaggs (Staff Nurse): See List of Persons for details

¹¹⁵ For ‘adalat’ see: Glossary of Terms

TIME ON 27 TH NOVEMBER 1995	EVENT	REFERENCE
	as showing pulmonary oedema: ¹¹⁶ <i>"Repeat CXR at bedtime to see if pulmonary oedema cleared"</i> . The x-ray also revealed the CVP catheter tip in a neck vessel.	(Deposition of Dr Maurice Savage); 058-035-140 (Clinical History Examination and Progress)
14:00	SN Cathy Hall ¹¹⁷ took over from SN Kathryn Knaggs in PICU The following were recorded: Na: 119 mmol/L, Potassium 4.8 mmol/L, Urea 11.5 mmol/L, Creatinine ¹¹⁸ 477 µmol/L SN Cathy Hall recorded further doses of sublingual nifedipine to relieve hypertension. ¹¹⁹ Heart rate and O ₂ saturation stable. Dopamine ¹²⁰ continued at 0.5 ml/h = 2.5 µg/kg/min. No spontaneous respiration – secretions minimal	Ref: 093-019-054 (Cathy Hall's PSNI Statement) Ref: 057-009-011 (ICU Daily Record Sheet) Ref: 058-038-153 (Nursing Care Plan); Ref: 058-005-012 (Drug Recording Sheet)
17:10	Adam was noted to have some 'decerebrate movement' ¹²¹ ; his urine output was 529 ml between 1200 and 1700 Incontinence pad weighed – 25g at 5pm Na: 124 mmol/L, Potassium 5 mmol/L, Urea 12.4 mmol/L, Creatinine 467 µmol/L	Ref: 058-035-139 (Clinical History, Examination and Progress) Ref: 058-038-150 (Nursing Care Plan - ICU) Ref: 057-009-011 (ICU Daily Record Sheet)
? ¹²²	Adam was recorded as having fixed and dilated pupils and <i>"no movement apart from shrugging of shoulders to nail bed stimuli"</i> ¹²³	Ref: 058-038-160 (Nursing Care Plan – ICU)
19:35	First brain stem test ¹²⁴ carried out by Dr. Webb ¹²⁵ Dr. David Webb noted: On no muscle relaxants or sedation; vital signs stable; not hypothermic ¹²⁶ ;	Ref: 058-004-009 (Brain Death Form), Ref: 058-035-139 (Clinical History, Examination and Progress) Ref: 058-035-139 (Clinical History, Examination and

¹¹⁶ For 'pulmonary oedema' see: Glossary of Terms

¹¹⁷ SN Cathy Hall (Staff Nurse - Paediatric Intensive Care Unit, RBHSC): See List of Persons for details

¹¹⁸ For 'creatinine' see: Glossary of Terms

¹¹⁹ For 'hypertension' see: Glossary of Terms

¹²⁰ For 'dopamine' see: Glossary of Terms

¹²¹ For 'decerebrate movement' see: Glossary of Terms

¹²² Time as yet unknown

¹²³ For 'nail bed stimuli' see: Glossary of Terms

¹²⁴ For 'brain stem test' see: Glossary of Terms

¹²⁵ Dr. David Webb (Consultant Paediatric Neurologist): See List of Persons for details

¹²⁶ For 'hypothermia' see: Glossary of Terms

TIME ON 27 TH NOVEMBER 1995	EVENT	REFERENCE
	fully ventilated with no respiratory effort; CT scan showed severe bilateral fundal haemorrhages ¹²⁷ suggestive of acute raised intracranial pressure ¹²⁸ (coning); no response to deep supraorbital ¹²⁹ pain; pupils fixed and unresponsive	Progress)
20:30	<p>Adam's mother and grandparents were informed of the neurology opinion. Debra Slavin wished to discuss organ donation and was not keen on a post mortem</p> <p>SN Katie Kyle¹³⁰ recorded Adam's heart rate as satisfactory, O₂ saturation¹³¹ within normal limits, no spontaneous respiration (secretions minimal).</p> <p>Dr Savage recorded his intention to repeat chest x-ray at bed-time to see if pulmonary oedema has cleared, and to repeat U&E and check LFTs (liver function tests).</p>	<p>Ref: 058-035-140 (Clinical History, Examination and Progress); Ref: 058-004-009 (Brain Death Form);</p> <p>Ref: 058-038-153 (Nursing Care Plan – ICU); Ref: 058-038-155 (Nursing Care Plan – ICU)</p> <p>Ref: 058-035-140 (Clinical History, Examination and Progress)</p>
21:30	Portable chest X-ray was repeated. Dr McKnight recorded <i>'Repeat CXR 10pm – still quite marked pul oedema. Fluid in horizontal fissure'</i> .	Ref: 058-035-142 (Clinical History, Examination and Progress)
After 21:30	SN Karen Kyle recorded <i>"(R) hand slightly puffy. S/B (seen by) Dr McKnight. No [illegible] unless hand discoloured"</i>	Ref: 058-038-151 (Nursing Care Plan – ICU)
22:00	Na: 120 mmol/L, Urea: 14 mmol/L, Potassium 6 mmol/L	Ref: 057-007-008 (Transplant Form); Ref: 057-009-011 (Daily Record Sheet)
23:00	<p>Adam's serum potassium was recorded as rising – at 6 mmol/L. Serum Na still low- N Saline commenced at 10 ml/h</p> <p>SN Karen Kyle recorded Adam's heart rate dropping – 100 ml HPPF given with only transient effect</p> <p>Dialysis machine was brought from Musgrave</p>	<p>Ref: 058-035-140 (Clinical History, Examination and Progress)</p> <p>Ref: 057-015-021 (Paediatric Peritoneal Dialysis prescription);</p>

¹²⁷ For 'bilateral fundal haemorrhages' see: Glossary of Terms

¹²⁸ For 'raised intracranial pressure' see: Glossary of Terms

¹²⁹ For 'supraorbital' see: Glossary of Terms

¹³⁰ SN Karen Kyle (Staff Nurse): See List of Persons for details

¹³¹ For 'O₂ saturation' see: Glossary of Terms

TIME ON 27 TH NOVEMBER 1995	EVENT	REFERENCE
	Ward and dialysis begins in 10x30min cycles	

TIME ON 28 TH NOVEMBER 1995	EVENT	REFERENCE
24:00	Charting blood pressure and respiratory support from 24:00 to 12:00	Ref: 057-020-030 (General Record Sheet for PICU)
01:00	<p>Na 122 mmol/L</p> <p>Blood pressure dropping over last hour – Mean arterial pressure (MAP)¹³² AP down to 70 mmHg, O₂ saturation 97-98%.</p> <p>HCO₃: 16.3 mmol/L, Base excess: -7.8, CVP: 17 mmHg</p> <p>Total output (urine) so far 1200 ml over 12 h Intake less than 300 ml</p> <p>Dopamine¹³³ at 5 µg/kg/min Bolus¹³⁴ at 100 ml HPPF given</p> <p>Dialysis continues</p>	<p>Ref: 057-020-031 (Fluid Record)</p> <p>Ref: 058-035-141 (Clinical History, Examination and Progress)</p>
03:00	<p>Peritoneal dialysis stopped after discussion with Dr. Maurice Savage – fluid leaking +++ through wound</p> <p>BP began to fall again MAP 85 mmHg</p>	Ref: 058-035-141 (Clinical History, Examination and Progress), Ref: 058-038-149 (Nursing Care Plan - ICU)
04:00	<p>Serum Na: 121 mmol/L, urea: 15 mmol/L, potassium 6.4 mmol/L, creatinine: 537 µmol/L.</p> <p>SN Karen Kyle recorded Adam's BP as dropping (75 ml HPPF having had no effect), dopamine continuing, BP 118/84</p>	Ref: 057-007-008 (Transplant Form)
07:45	Dr. Robert Taylor recorded 'diffuse oedema ¹³⁵ on CXR, ventilation stable but electrolyte/fluid problems over night'	Ref: 058-035-142 (Clinical History, Examination and Progress)
08:00	Na: 125 mmol/L, Urea: 16.4 mmol/L Potassium 6.3 mmol/L, Creatinine: 545 µmol/L.	Ref: 057-007-008 (Transplant Form)

¹³² For 'mean arterial pressure (MAP)' see: Glossary of Terms

¹³³ For 'dopamine' see: Glossary of Terms

¹³⁴ For 'bolus' see: Glossary of Terms

¹³⁵ For 'diffuse oedema' see: Glossary of Terms

TIME ON 28 TH NOVEMBER 1995	EVENT	REFERENCE
	Hospital priest visited – Adam was given the last rites	Ref: 058-038-176 (Nursing Care Plan - ICU)
09:10	Second brain stem test carried out by Dr. David Webb with Dr. Mary O'Connor present. He recorded that the brain stem death criteria were fulfilled Debra Slavin wished to discuss organ donation. Coroner advised against organ donation 'in view of medico-legal reasons'	Ref: 058-004-009 (Brain Death Form). Ref: 058-035-142 (Clinical History, Examination and Progress) Ref: 058-035-142 (Clinical History, Examination and Progress); Ref: 058-004-009 (Brain Death Form)
? ¹³⁶	3 photographs taken of Adam	Ref: 093-005-007 (Debra Slavin's PSNI Statement)
11:30	Ventilatory support withdrawn from Adam with Debra Slavin's consent and in her presence	Ref: 058-035-142 (Clinical History, Examination and Progress); Ref: 011-015-109 (Deposition of Dr. Savage)
	Fluids and monitors discontinued and all lines removed as per Dr. Maurice Savage's instructions	Ref: 058-038-162 (Nursing Care Plan - ICU); Ref: 058-038-150 & 153 (Nursing Care Plan - ICU)
13:00	Nursing observations discontinued	Ref: 058-038-164 (Nursing Care Plan - ICU)
	Further photograph taken of Adam	Ref: 093-005-007 (Debra Slavin's PSNI Statement)
	Constable Stephen Tester ¹³⁷ made aware of death of Adam Strain	Ref: 011-008-024 (Deposition of Constable Stephen Tester)
	Adam's mother identified Adam's body in presence of Constable Tester	Ref: 011-008-024 (Deposition of Constable Stephen Tester)
	Coroner informed of Adam's death	
	Coroner orders a post-mortem	

¹³⁶ Time as yet unknown

¹³⁷ Constable Stephen Tester: See List of Persons for details

TIME ON 29 TH NOVEMBER 1995	EVENT	REFERENCE
14:00	Constable Tester identified Adam's body in the presence of Dr Alison Armour ¹³⁸	Ref: 011-008-024 (Deposition of Constable Stephen Tester)
14:40	<p>Post-mortem examination carried out by Dr. Armour, reporting that the principal findings were Cerebral Oedema and that a completed report would follow.</p> <p>Blocks were taken from the brain on 12th January 1996 after 'fixing'¹³⁹ as follows: (a) Right frontal white matter¹⁴⁰, (b) left cingulated gyrus¹⁴¹, (c) left basal ganglia¹⁴², (d) right and left hippocampus¹⁴³, (e) left occipital lobe¹⁴⁴, (f) cerebellum¹⁴⁵, (g) pons in toto¹⁴⁶, (h) thalamus¹⁴⁷. The brain was photographed sequentially. Blocks were taken from the cervical cord¹⁴⁸ as follows: (a) cervical, (b) thoracic¹⁴⁹, (c) lumbar¹⁵⁰.</p> <p>Histological slides were taken from (a) lungs (b) larynx (c) liver (d) kidney (e) transplanted kidney (f) spleen (g) lymph nodes¹⁵¹ (h) brain (i) spinal cord</p> <p>Histological slides (a)-(g) were examined for a second opinion by Professor Jeremy Berry¹⁵² and (h)-(i) by Dr. Meenakshi Mirakhur.¹⁵³</p> <p>Dr. Armour also showed certain, unidentified, "slides etc" to Dr. O'Hara¹⁵⁴ and Dr. Bharucha¹⁵⁵</p>	<p>Ref: 094-114-321 (Notification of Autopsy Findings)</p> <p>Ref: 011-025-125 (Coroner's note of 8th December 1995)</p>

¹³⁸ Dr. Alison Armour (Senior Registrar State Pathologist's Dept): See List of Persons for details

¹³⁹ For 'fixing of the brain' see: Glossary of Terms

¹⁴⁰ For 'frontal white matter' see: Glossary of Terms

¹⁴¹ For 'cingulated gyrus' see: Glossary of Terms

¹⁴² For 'basal ganglia' see: Glossary of Terms

¹⁴³ For 'hippocampus' see: Glossary of Terms

¹⁴⁴ For 'occipital lobe' see: Glossary of Terms

¹⁴⁵ For 'cerebellum' see: Glossary of Terms

¹⁴⁶ For 'pons in toto' see: Glossary of Terms

¹⁴⁷ For 'thalamus' see: Glossary of Terms

¹⁴⁸ For 'cervical cord' see: Glossary of Terms

¹⁴⁹ For 'thoracic' see: Glossary of Terms

¹⁵⁰ For 'lumbar' see: Glossary of Terms

¹⁵¹ For 'lymph nodes' see: Glossary of Terms

¹⁵² Professor Jeremy Berry (Consultant Paediatric Pathologist & Emeritus Professor of Paediatric Pathology, University of Bristol): See List of Persons for details

¹⁵³ Dr. Meenakshi Mirakhur (Consultant Neuropathologist, Royal): See List of Persons for details. She has no recollection of this Ref: WS-223-1

¹⁵⁴ Dr. O'Hara (Consultant Paediatric Pathologist at the Royal): See List of Persons for details

¹⁵⁵ Dr. Bharucha (Consultant Haematologist at Belfast City Hospital): See List of Persons for details. This has yet to be confirmed by Dr Bharucha as their witness statement is outstanding.

TIME ON 29 TH NOVEMBER 1995	EVENT	REFERENCE
	The subsequent Report of Autopsy that was provided on 24 th April 1996 reported the following cause of death 1(a) cerebral oedema due to (b) dilutional hyponatraemia ¹⁵⁶ and impaired cerebral perfusion during renal transplant operation for chronic renal failure (congenital obstructive uropathy) ¹⁵⁷	Ref: 011-010-035 (Report of Autopsy)

¹⁵⁶ For 'dilutional hyponatraemia' see: Glossary of Terms

¹⁵⁷ For 'congenital obstructive uropathy' see: Glossary of Terms